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PARALLEL BUSINESS MODELS IN FIRMS
Utilisation of dynamic capabilities in their management

ABSTRACT

Firms have begun to employ multiple business models in parallel to each other for achieving new ways of value creation, but the theoretical field is still lacking detailed understanding of the phenomenon to support managerial decision making. Dynamic capability theory has been suggested to be fruitful in explaining the behaviour of firms attempting to innovate through adopting additional business models, but currently the research field is missing studies that would analyse the relationship between parallel business models and dynamic capabilities from a systemic perspective with the specific empirical context in incumbent firms. The aim of this research was to analyse the development and portfolio interactions of parallel business models, and the effects of dynamic capabilities in their management.

The research was conducted as a qualitative embedded case study, by using a deductive approach for theory development. Multiple embedded cases enabled assessing the replicability of the findings across them, and the embedded context allowed more generalisable findings to be made about the firm specific dynamic capabilities. The study followed a pragmatic research philosophy with exploratory purposes, to create understanding for supporting managerial decision making, even though the phenomenon is not yet fully understood in the theoretical field. Data collection included in-depth interviews of the key managerial personnel regarding both cases, and interview data was analysed by thematic analysis based on the theoretical background of this research. Results across cases were compared and discussed for building explanations about the phenomenon.

Results show that business models create portfolio interactions regarding activity, resource, and customer sharing within firms. The primary conflicts emerged from sharing of internal critical resources and customer channels, and activity system connections increased the between complexity of the portfolio. Dynamic capabilities had a pivotal role in enabling the concurrent development, and they were utilised for enabling and moderating the interactions. Seizing capabilities were used for managing resource conflicts with solution harvesting and investing prioritisations in the presence of scarcity, and they allowed aligning the business practices and establishing activity system connections. Sensing capabilities were used to pace the resource usage according to external demands, and transforming capabilities allowed building and separating critical resources and sustaining balance between resource flows. Transforming capabilities were used for controlling, guiding, and separating shared activity systems, and they allowed increasing the sharing efficiencies. The sharing conflicts regarding customer channels were mitigated through balancing their usage or overriding them through transforming and seizing capabilities. Dynamic capabilities allowed the firm to develop its business model portfolio towards increased alignment.

Findings of this study advance the literatures of dynamic capabilities about their effective mechanisms, and parallel business models by developing understanding about portfolio interactions. Increased value creation is possible through establishing parallel complementary business models, and dynamic capabilities can be utilised effectively in their management. Competing business models with low sharing of non-critical assets are recommended to be established in separate organisational structures, without dependencies with firm's other business models. Further theoretical studies are required for strengthening the foundation of parallel business model and dynamic capability literatures. Empirical research should study the topics in different industry contexts, but also in the light of alternative theoretical lenses, such as strategic entrepreneurship.

Keywords: parallel business models, business model innovation, business model portfolios, diversification, portfolio alignment, dynamic capabilities, organisational capabilities

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TIIVISTELMÄ

Harri Hård: Rinnakkaiset liiketoimintamallit yrityksissä – dynaamisten kyvykkyyksien hyödyntäminen niiden johtamisessa
Diplomityö
Tampereen yliopisto
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Yritykset ottavat yhä useammin käyttöön useita liiketoimintamalleja rinnakkain etsiessään uusia tapoja arvonluontiin, mutta aiheeseen liittyvä tutkimus ei vielä täysin selitä kyseistä ilmiötä yritysten päätöksenteon tukemiseksi. Dynaamisten kyvykkyyksien teorian on ehdotettu selittävän yritysten käyttäytymistä uusien liiketoimintamallien adoptioon liittyen, mutta tutkimuskenttä on toistaiseksi puutteellinen rinnakkaisien liiketoimintamallien ja dynaamisten kyvykkyyksien suhdetta analysoivien tutkimusten osalta markkinapaikkansa vakiinnuttaneiden yritysten empiirisessä kontekstissa. Tämän työn päämäärä oli tutkia rinnakkaisia liiketoimintamalleja omaavien portfolioiden kehitystä ja vuorovaikutussuhteita, sekä analysoida dynaamisten kyvykkyyksien vaikutuksia niiden johtamisessa.

Tutkimus toteutettiin kvalitatiivisena upotettuna tapaustutkimuksena, sekä käyttäen deduktiivista päättelyä teorian kehitykseen. Useat upotetut tapaukset mahdollistivat tulosten toistettavuuden arvioinnin tapausten välillä, ja upotettu konteksti mahdollisti siten yleistettävien johtopäätösten tekemisen yksittäiselle yritykselle muodostuneista dynaamisista kyvykkyyksistä. Tutkimus noudatti pragmaattista tieteen filosofiaa tutkimuskenttää kartoittavia tarkoitusperiä varten, jotta yritysjohtoa tukevia löydöksiä voitiin saada aikaiseksi teoreettisen tutkimuskentän vaillinaisesta nykytilasta huolimatta. Tiedonkeräys muodostui avainhenkilöiden syvällisistä haastatteluista, ja haastatteludataa analysoitiin teoriaan pohjautuvaa temaattista analyysiä soveltaen. Tapausten tuloksia vertailtiin keskenään, ja tämän pohjalta rakennettiin laajempia selitysmalleja.

Tulokset osoittavat, että liiketoimintamallien välillä on havaittavissa portfolio vuorovaikutuksia aktiviteettien, resurssien ja asiakkaiden jakamiseen liittyen. Pääasiallisten konfliktien juuret juontuivat sisäisten kriittisten resurssien sekä asiakaskanavien jakamisesta, ja yhteydet aktiviteettisysteemien välillä kasvattivat portfolion välillistä kompleksisuutta. Dynaamisia kyvykkyyksillä oli avainrooli uusien liiketoimintamallien rinnakkaisessa kehityksessä, ja niitä hyödynnettiin portfoliovuorovaikutusten hallinnassa. Mahdollisuuksiin tarttumisen kyvykkyyksillä hallittiin resurssikonflikteja ratkaisujen uudelleenhyödyntämisen sekä resurssipuutteiden vallitessa toteutettavien investointien priorisoinnin muodossa, sekä ne mahdollistivat liiketoimintojen keskinäisen harmisoinnin ja uusien yhteyksien luomisen aktiviteettisysteemien välille. Havainnointikyvykkyyksien rooli liittyi resurssien käytön tahdittamiseen ulkoisiin tarpeisiin vastaamiseksi, sekä muuntautumisen kyvykkyydet mahdollistivat kriittisten resurssien rakentamisen ja erottelun, sekä resurssivirtojen tasapainottamisen. Muuntautumisen kyvykkyyksiä käytettiin aktiviteettisysteemien kontrollointiin, ohjaamiseen sekä erotteluun, ja niiden ansiosta jakamisen tehokkuutta voitiin kasvattaa. Asiakaskanavien jakamiskonflikteja hallittiin tasapainottamalla niiden käyttöä tai ohittamalla ne mahdollisuuksiin tarttumisen ja muuntautumisen kyvykkyyksien avulla. Dynaamiset kyvykkyydet mahdollistivat liiketoimintamalliportfolion kehityksen harmonisempaan suuntaan.

Tutkimuksen tulokset täydentävät dynaamisten kyvykkyyksien kirjallisuutta liittyen niiden vaikutusmekanismeihin, sekä rinnakkaisten liiketoimintamallien kirjallisuutta liiketoimintamalliportfolioiden osalta. Arvon luontia voidaan kasvattaa ottamalla käyttöön rinnakkaisia komplementaarisia liiketoimintamalleja, ja dynaamisilla kyvykkyyksillä on merkittävä rooli näiden johtamisessa. Kilpailevat liiketoimintamallit, joiden välillä ei ole jakamista, on suositeltavaa perustaa omiin erillisiin organisaatiorakenteisiin, ilman riippuvuuksia yrityksen pääasiallisen liiketoimintamallin kanssa. Tulevaa teoreettista tutkimusta tarvitaan rinnakkaisiin liiketoimintamalleihin ja dynaamisiin kyvykkyyksiin liittyvän kirjallisuuden tukemiseksi. Empiirisiä tutkimuksia tulisi kohdistaa aihepiirien tutkimiseen erilaisissa toimialakonteksteissa, mutta myös lisäksi vaihtoehtoisia teoreettisia näkökulmia, kuten esimerkiksi yrittäjyysteoriaa, hyödyntäen.

Avainsanat: rinnakkaiset liiketoimintamallit, liiketoimintamalli-innovaatiot, liiketoimintamalliportfolio, portfolion yhdenmukaisuus, dynaamiset kyvykkyydet, organisaation kyvykkyydet

Tämän julkaisun alkuperäisyys on tarkastettu Turnitin OriginalityCheck –ohjelmalla.

PREFACE

Never underestimate a job before its done. Research is difficult and burdensome work after all, and I'm happy to finally finish this project. But heavy work also tends to produce more fruit, and so was the case with this project eventually. But all this wouldn't have been possible without the support and encouragement from my closest ones, and therefore I send my thanks to you all there in homefront. Kirsi, without your support I would still be lost, thank you for being there for me. And boys, thanks for helping mommy and your sister while daddy was working. It was also very important.

Also great thanks to all my collegues, who shared their ideas about the topic of this project with me. Tuomo, throughout the year your visionary thinking also encouraged me to expand my thinking beoynd the ordinary. Special thanks also to my previous supervisor Mikko, who set me on this journey and gave me guidance right in the early phases of the project. That definitely helped to find the right direction, and discussions with you helped to challenge my own original viewpoints. And Marko, I am grateful for all the patience I received from you for seeing this project through with all of its twists and turns alongside the way, from the early conceptualisations, eventually to the final paper.

I was asked that how I would describe the results of this project, or what really is the wisdom gained from all this work, if I were only given one phrase to explain it. That's a difficult question, and a proper answer would require thorough thinking. Fortunately I happened to stumble upon this passage from William Shakepeare's work, which I think managed to capture the implications of the findings quite nicely, and therefore I let those words speak for me:

> *" ... I thank my fortune for it,*
> *My ventures are not in one bottom trusted,*
> *Nor to one place; nor is my whole estate*
> *Upon the fortune of this present year…"*

> – William Shakespeare,
> The Merchant of Venice, Act I, Scene I.

Tampere, 16th September 2022

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LIST OF SYMBOLS AND ABBREVIATIONS

BM	Business Model
BU	Business Unit
DG	Delivery Group
MDC	Managed Digital Core
P&L	Profit and Loss
SaaS	Software as a Service
SDO	Secure Development and Operations
SIM	Service Insight and Monitoring
SSS	Secured and Scalable Solutions

1. INTRODUCTION

1.1 Background of the study

The development of digital technologies has had a tremendous impact on businesses globally (Ayres & Williams 2004), and this can be witnessed today by analysing the digital economy, which is growing at an increasing rate and faster than the total economy overall (Oxford Economics 2021). Despite the dot-com crash at the end of the second millennium (Ofek & Richardson 2003), the growth of the digital economy has sustained (Byrne et al. 2013). Much of this growth can be attributed to the direct cost, productivity, quality, and efficiency benefits created with information technology (Mooney et al. 1996, Atkinson & McKay 2007) as enabling technology driving digital economy (Carlsson 2004). Digital economy, sometimes also referred to as new economy (Ayres & Williams 2004), is a relatively new concept with the earliest western usages of the term coining back to the 1990s when Don Tapscott was writing his book "The Digital Economy: Promise and Peril in the Age of Networked Intelligence" (1996). According to the Web of Science database, the term 'Digital Economy' has occurred in the business management literature with an increasing frequency ever since, indicating the ever-growing importance of digitalisation on industry and society by large.

This fast-paced economic growth is a good indicator about the disruption that information technology has created in economic and business environment, and as with other technological disruptions, there are always both winners and losers (Wessel & Christensen 2012). Kodak, Webvan, Blockbuster – the cemetery of digital disruption is filled with both: the companies that didn't see the disruption coming (Gershon 2013 pp.46-68), but also those that attempted to face the disruption and still failed (Asprey et al. 2013). These are of course just some of the most well-known examples from history, but they still provide a good example how profound a technological change can be for companies and industry. Apple, Google, Microsoft – luckily the list of successes even is greater (Parker et al. 2016), and these positive winds are driving the economy forward. These success stories are coloured with brilliant innovations on value creation and efficient utilisation of digital technologies.

The most recent 'gold rush' of digitalisation has been seen in the form of newly emerged business models, such as a platform business model (Kenney & Zyzman 2016), which

highlights the importance of digitalisation on firm strategy. Companies utilising these novel business models have been able to dethrone industry leaders (Van Alstyne et al. 2016) and become the dominant forces in global markets (Parker et al. 2016, Sampere 2016, McIntyre & Srinivasan 2017). The digital artifacts and infrastructure (Gawer & Cusumano 2014, Kallinikos et al. 2013) underlying the interaction mechanisms and elements of the platforms (Hein et al. 2020, Sorri et al. 2019) are relevant not only for platform companies (Hagiu & Wright 2015, Korhonen et al. 2017, Schreieck et al. 2016), but their relevancy is also high for other businesses (Hein et al. 2019), as firms are trying to find new avenues for value creation through digital technologies (Adner et al. 2020, Barrett et al. 2015, Kohtamäki et al. 2019, Yoo et al. 2012).

Digitalisation enabled business models are related to the concept of digital business ecosystems (Senyo et al. 2019), and the strategic options firms have in digital ecosystems can be analysed between value chain and ecosystem -based business model designs (Weil & Woerner 2015). Ecosystem business design differs from traditional value chain business logics, offering ecosystem driver and modular producer business models (Weill & Woerner 2015), emphasising especially the benefits of scalability (Van Alstyne et al. 2016) in the business model design. High scalability in the business model can be achieved e.g., through information technology-based products (Weil & Woerner 2015), which are enabling new strategic options for firms to gain competitive advantage in the markets (Porter & Heppelmann 2014). Despite the vast economic possibilities, adopting the new type of approaches for value creation in the digital era has been a challenge in many industries (Veit et al. 2014). New technologies require corresponding changes in business models for profiting from them (Teece 2010) but attempting to pursue alternative business models often leads to a strategic failure of the firm (Casadesus-Masanell & Tarziján 2012). Despite the vast economic possibilities, it seems that the difficulties in realising this potential are also internal to firms.

Some firms have been clearly more successful in pursuing additional business models in alongside their existing business. Amazon is probably one of the most well-known examples, being able to move from online bookstore to a multisided marketplace platform, and recently to a cloud infrastructure provider (Aversa et al. 2021). Traditional views on strategic management often view pursuing multiple strategies to be inferior as opposed to following individual strategies (Porter 1996), and as a result, the classical recipe for success considering e.g., the commercialisation of a new technology has been to separate the business to a different corporate structure (Bower & Christensen 1995, Abetti 2002, Markides 2013). However, the traditional laws of strategy have been somewhat challenged in this regard by the recent developments of digitalisation (Bharawaj et

al. 2013, Caputo et al. 2021), and today increasing number of firms are choosing to adopt multiple different value chains to gain competitive advantage (Chesbrough 2010, Teece 2010, Aversa et al. 2015, Kim & Min 2015, Bosbach et al. 2020).

The popularity of a business model concept has been gaining more and more attention in the literature due to these recent developments (Zott et al. 2011), offering possibly an alternative framework for dealing with complex strategies with multiple or overlapping goals. However, the concept of business model has been criticised heavily in the literature ever since its early days (Porter 2001), and even to this day, the research field is lacking consistency in many ways (Massa et al. 2017). Additionally, today's market dynamics have been characterised as increasingly fast paced, complex and volatile (Miller et al. 2018), for which strategic management has offered theories such as complexity and portfolio management (Ritter & Lettl 2018). Yet, the urge of researchers to write and discuss business models in the literature in ever increasing number of publications speaks for the insufficiency of these traditional approaches to guide companies in the modern business environment.

The research stream on business model innovations has attempted to reconcile the knowledge gap between the modern day's Silicon Valley unicorns and old-time industry players by offering theories and frameworks for pursuing these innovative new business models (Foss & Saebi 2017), but the dominant focus has been previously in pursuing changes to existing business model or in entrepreneurial attempts to create new businesses (Bosbach et al. 2020). Schwartz et al. (2017) even stated the current management literature to ignore the implications on the finding that a firm can employ multiple business models simultaneously. The reason why studies on multiple business models have received less attention directly in the literature seems to stem from varying interpretations of the business model concept itself, definitions varying from an abstract cognitive consensus of a firm's managers to a real attribute of a firm (Massa et al. 2017). Business model innovation literature still directly recognises that even implementing changes to existing business model can be a complex and long process, leading to the coexistence of different business models (Foss & Saebi 2017), and therefore answers can be searched also from this stream of business model research.

Foss & Saebi (2017) recognise, that the antecedents and moderating factors regarding the development of business model innovations have been less studied, and they state that there is "still significant gaps in the understanding of the internal drivers of [business model innovation]", and they suggest that dynamic capabilities research could offer answers to these questions. Business models are very central to dynamic capabilities, but still there is need for studies exploring their more detailed connection, which was noted

by Teece (2018): "While these relationships are understood at a theoretical level, there is a need for future empirical work to flesh out the details. Studies that provide a better understanding of business model innovation, implementation, and change will also shed light on important aspects of dynamic capabilities". Additionally, dynamic capabilities research is also missing studies on the more detailed mechanisms through which they take effect (Schilke et al. 2018). A more detailed image of these interactions between business models and dynamic capabilities is clearly missing, and despite the ability to develop new business models is recognised as important driver of strategic renewal for incumbent firms (Foss & Saebi 2017, Warner & Wäger 2019), few empirical studies touching this research gap have studied the problem with a focus on newly found firms (Velu 2017), instead of established companies. This identified research gap is depicted in Figure 1.
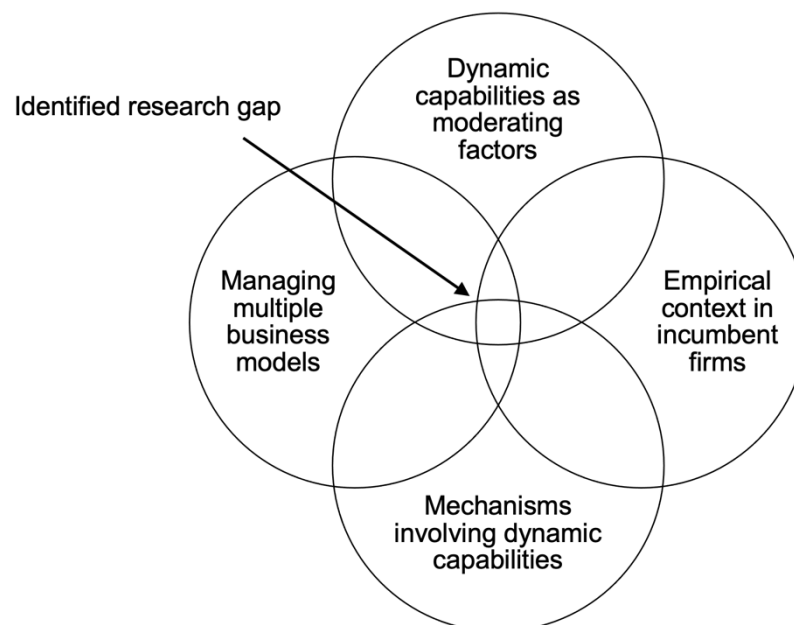
Figure 1. Identified research gap in the literature.

1.2 Research objective

To address the research gap described above, this research attempts to answer the following research question: How incumbent firms utilise dynamic capabilities for managing multiple business models in parallel to each? The question implies, that firms can concurrently possess more than one business models at a time, and specific mechanisms, separate from ordinary organisational capabilities and operations, are in place to enable their simultaneous management. Firms are also expected to be able to sustain these mechanics for a prolonged period. Answering the question requires studying parallel business model management, and the theory and conceptualisations of dynamic

capabilities. The research question can be broken down to several sub-questions, represented with the list below.

- How incumbent firms utilise dynamic capabilities for managing multiple business models in parallel to each other?

    o How parallel business models develop in incumbent firms?

    o What kind of interactions exist between the business models?

    o How dynamic capabilities are utilised for their management?

Aim of this research is to expand the knowledge of how parallel business models emerge and are managed during their development within established companies. The research attempts to explain the emergence of these new business models in firms, and to map the steps occurring in the during their development. The research provides insights about how incumbent companies could successfully manage the process of exploring and pursuing the new opportunities for value creation within their current organisational structure, without ending up with a strategic failure. The insights from this research can be valuable for companies searching for new ways to create growth and to benefit from the possibilities of business model innovations.

Theoretical foundations of this study are built on the fields of business models and dynamic capabilities research in strategic management. First, as suggested by Massa et al. (2017) regarding studies to be conducted in the field of business model research, the concept of business model is defined, and the chosen interpretation is explained. A working definition of the business model concept will be used in this research, to overcome conflicts regarding the interpretations of the business model concept itself. Second, existing studies regarding parallel business model management are analysed, and the interactions between parallel business models analysed. Literature considering parallel business model management directly is relatively scarce, but this narrow focus is intentional, to protect from making false conclusions about the existing knowledge in the field. Third, dynamic capabilities theory is visited, and its relationship with business model management is discussed. The dynamic capability framework utilised in this research is based on the literature stream initiated by the work of Teece et al. (1997), as the more recent definitions of this framework already encompass a connection with business model research (Teece 2018).

This study aims to support the current research about business models by offering an empirical study with an incumbent firm in information technology industry, with a focus

on a pragmatically relevant research phenomenon. Parallel business model management has received only narrow attention within business model research, and most of the studies have focused on larger units of analysis, such as whole firms (e.g., Velu & Stiles 2013, Aversa et al. 2021). Therefore, this study supplements this prior research with a specific empirical context. The novelty of this research comes from introducing a more detailed case study within a highly relevant empirical context, in an industry effected strongly by the recent developments of digitalisation. As the current research on business models is still searching its own place in regarding strategic management literature, this research can turn our sights away from the academic battlefield and instead offer perspectives closer to the practical management issues in modern business environment. The pragmatic and explorative focus of this case study, combined with possible replicable solutions emerging from this research, form the main theoretical contribution for both research and practise.

Researcher makes few assumptions regarding the research question. First, it is assumed that incumbent firms develop emerging business models within their current organisational structure. These type of business models wouldn't necessarily represent a very novel innovation, but rather a natural extension to the existing business, or new-to-the-firm innovation, in order to be developed in this way. These business models would still represent a fundamentally different way of doing business, because otherwise they could be considered as normal offering extensions. For the firm to approach the development of these new models within current organisational structure, the most required knowledge and resources for their development must be assumingly present within the firm, and this narrows down the possible options regarding what kind of business models are viable to research within this context. Second, it is assumed that the contextual factors behind e.g., the innovation efforts in the pre-development of the emergent business model can be disregarded when researching this phenomenon. This assumption therefore also attributes any development achieved to the managerial actions occurring during their concurrent management. Third, it is assumed that the question can be answered with only assessing the period after the establishment of the emergent business model. Fourth, it is assumed that the possible dynamic capabilities present in the firm can be utilised for managing parallel business model interactions, as this is not directly confirmed in the literature, and explains the explorative nature of this study.

1.3 Structure of the thesis

The paper proceeds as follows. In Chapter 2, the theories of business models, parallel business model management and dynamic capabilities will be reviewed and discussed.

These theories form the foundation for conducting the research and maps out the current state of the literature considering the relevant fields of research. The chapter is divided into three primary sections. In the first part, business models and complexity are discussed from a systemic perspective. Second part includes reviewing the literature on parallel business models and developing framework for analysing them. Third part of the chapter visits dynamic capabilities theory and discusses its relationship with business model management.

Chapter 3 of the paper describes the research methods applied in this study and discusses their suitability. This research has been carried out as an embedded case study, following a pragmatic research philosophy. A qualitative research methodology was decided to be followed in the research, as it was required due to the explorative nature of this research. Data collection included semi-structured in-depth interviews, and they were analysed using thematic analysis. A deductive approach was used for theory development. Chapter 3 explains the methods more detail, discusses the research design from quality perspective and additionally introduces the case context.

Chapter 4 and 5 are the result chapters, from which chapter 4 is denoted for Iiris case and chapter 5 for ProDiary case. The structure of both chapters is similar, but their analyses have been conducted separately. Chapters begins with a of historical narrative building, which is summarised in a development roadmap. Next, the chapters include an analysis of the interactions between the business models, described as portfolio interactions. Resulting list was achieved through the first thematic analyses conducted for both cases about the analysed interactions, and it is presented in the end of the chapter. Last, result chapters include the second thematic analyses of the cases, regarding dynamic capabilities. Results of these second analyses are discussed, and they are presented accordingly in the end the third part of the results chapter.

Chapter 6 combines the results from the individual cases and discusses different portfolio interaction areas and types, mechanisms through which dynamic capabilities are utilised in their management, and patterns in the development and portfolio alignment are discussed. In the beginning of chapter 7, an overall summary of the key findings if this research is presented, and conclusions are provided regarding the theoretical and managerial implications of this research. Last, the limitations of this study are discussed and recommendations about further research is given.

2. THEORY

2.1 Business models and their complexity

2.1.1 Definition and interpretations

The concept of business model has strong roots in the development of digital technologies, and in the utilisation of information technologies in new ways of making business. Digitalisation in general has been linked to the creation of new business models (Caputo et al. 2021), and interestingly the emergence of internet – probably the most important driver of digitalisation – has made the whole stream of business model research as prevalent as it is today (Zott et al. 2011). Additionally, changes in business models are also one of the most important intended outcomes of digital transformations in companies (Vial 2019). These changes are a very clear and easily observed effect digitalisation requires from or enables to firms, but from a research point of view, the business model concept is a bit troublesome, as it is still searching for its place between being its own standalone field of research and being a part of strategic management research in general (Massa et al. 2017). Because of this, the definitions of the concept are very varying (Massa et al. 2017), and for long there was a lot of ambiguity related to the term (Zott et al. 2011).

Three distinct types of understanding exist currently in the literature about business models. Business model can be either assumed as *attributes* of a firm, describing the core logic of how the firm operates; as *cognitive schema* describing the dominant logic of how the firm is believed to operate; or as *formal conceptual representations* describing a simplified model of how the firm operates (Massa et al. 2017) (Figure 2). Criticism related to the business model concept fights against the idea of a business model being an attribute of a firm. For example, M.E. Porter, in his article regarding firm strategy and internet, referred the term business model as being "Destructive Lexicon", and stated the following: "[business model] seems to refer to a loose conception of how a company does business and generates revenue. Yet simply having a business model is an exceedingly low bar to set for building a company. Generating revenue is a far cry from creating economic value, and no business model can be evaluated independently of industry structure. The business model approach to management becomes an invitation for faulty thinking and self-delusion." (Porter 2001). Opposing views base this criticism on the argument that business model construct doesn't add anything new to our knowledge, and

instead it combines different elements of strategic management to a new framework (Ritter & Lettl 2018), which contradicts the idea of a business model being an attribute, or a distinctive core logic of the firm's value creation.
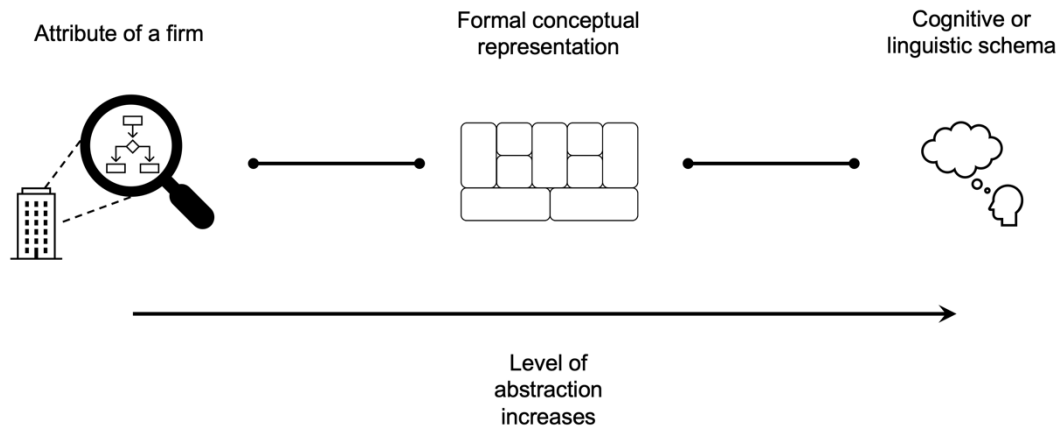
Figure 2. Different interpretations of business models in the literature.
(Adapted from: Massa & Tucci 2013 p.439, Massa et al. 2017)

Proponents of the business model construct on the other hand emphasize its importance for understanding firm's performance (Chesbrough 2010), innovativeness (Teece 2010), and the ability to adapt to disruption brought by digital technologies (Caputo et al. 2021). In cases such as Netflix, Google, Amazon Airbnb etc., the firm's success has been deliberately attributed to an innovative new business model the firm has established (Massa et al. 2017), which speaks for the importance of analysing the concept as a separate entity, or an attribute, of those firms. This kind of argumentation is indeed more prevalent within industries touched more effectively by digitalisation (Caputo et al. 2021), but still it can be argued, that analysing business models as attributes of the firm can reveal details, which would be otherwise difficult to capture (Massa et al. 2017). Therefore, in this research, business model is assumed as a real attribute of a firm, as this type of conceptualisation provides a suitable approach for analysing firms in modern business environment.

Literature provides various definitions for the concept of business model. Smith et al. (2010) define business model as "the design by which an organization converts a given set of strategic choices – about markets, customers, value propositions – into value, and uses a particular organizational architecture – of people, competencies, processes, culture and measurement systems – in order to create and capture this value". According to Zott & Amit (2010), business model depicts "the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities" and can be described as "a different set of activities, as well as the resources

and capabilities to perform them – either within the firm, or beyond it through cooperation with partners, suppliers or customers". Furthermore, Dahan et al. describe business models as "a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network" (2010). Velu & Stiles also defined business models as "the architecture and logic of business" (2013). Definitions of the concept vary in the literature, but they all contain many similarities regarding different elements, logics and activities that are part of the model.

In this research, the definition by Zott & Amit (2010) is adopted for the working definition, as it captures the relevant aspects of business models considering the objectives of the study. However, *core logics* (Dahan et al. 2010), *architecture* (Velu & Stiles 2013) and *design* (Smith et al. 2010) can be argued to be properties of a structure and activity set (Zott & Amit 2010), and they are additionally used in this study to describe business models. Despite there are many different interpretations of business models, these interpretations support each other by offering additional perspectives for the concept. These additional perspective on business models are important to understand to study interactions between different business models and their management.

2.1.2 Activities, logics, elements & alignment

Breaking these definitions of business models down to its parts helps us to understand how the concept can be analysed as an attribute of a firm. Activity system perspective describes a firm's business model through its value creating activities, which are independent from each other, and extend beyond the firm to its partners, suppliers, and customers (Zott & Amit 2010). *Activities* are therefore "the engagement of human, physical and/or capital resources of any party to the business model (the focal firm, end customers, vendors, etc.) to serve a specific purpose toward the fulfilment of the overall objective" (Zott & Amit 2010). This perspective may seem to be quite all-encompassing view of business, but activity system is also something tangible, and provides context for analysing the design, structure, and architecture that business model is, based on the previous definitions. Activity system view has also linkages to business process management (DaSilva & Trkman 2014), but the focus here is more on the value creation activities, which can be also described as a simplified model of business *logics* (Casadesus-Masanell Ricart 2011).

Elements of business models can be used to describe what areas of business are considered in business model design. Business models are probably the most well-known from the conceptualisation by Osterwalder & Pigneur (2010), in which the authors define

business model to comprise from nine elements: key partners, key activities, key resources, value proposition, customer relationship, delivery channels, customer segments, cost structure and revenue streams. Different elements of a business model can used to assist in the designing the contents of activity systems (Zott & Amit 2010). These different elements also give hint about how business models are most often used, or functions they serve in firms. Business models can be used in the companies for e.g., articulating value proposition, identifying market segment, defining value creation mechanisms, but also for positioning the firm within its value network (Chesbrough 2010) and in business ecosystems (Zott & Amit 2013).
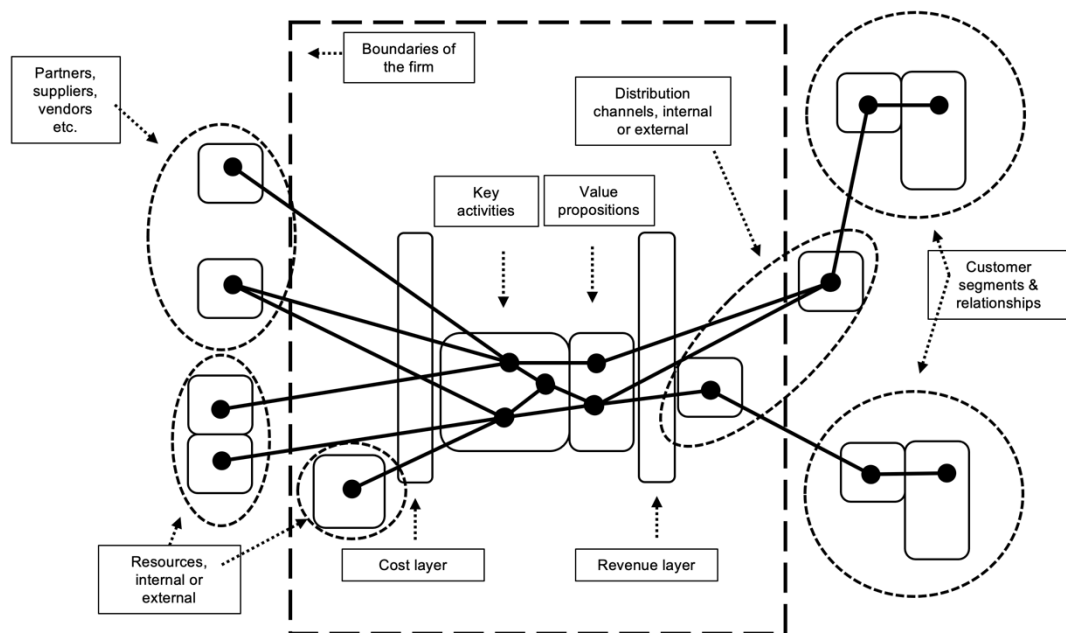
Figure 3. Overlapping the activity system and element perspectives reveal the sources of internal complexity with business models. (Authors own elaboration)

Both views on business models offer alternative perspectives for analysing them, but as individual views they narrow down the concept. In figure 3, researcher has visualised, how the perspectives could be brought together. Business model can describe activities in both firm's internal organisation and external environment (Zott & Amit 2010), and therefore boundaries of the firm are highlighted in the visualisation. Nodes present activities, and lines their connections to each other. The model includes all the typical elements of business model, as presented by Osterwalder & Pigneur (2010), but their relative positions have been altered. Resources and distribution channels can theoretically be either internal or external, and therefore they have been depicted on both sides of the boundary. This denotation isn't important when creating a narrative of the business model based on its elements, but it's more important regarding visualising the underlying activity system. The relationship expected by certain customer segments are also tightly

connected to that very customer group, and therefore these appear as bundled with corresponding segment. Firm's activities can yield multiple different value propositions, such as different product in the offering, and therefore there are different activity nodes connected to them. Revenues and costs are depicted by very simple layers, through which both are accrued during activities.

This visualisation (Figure 3) shows how much inherent complexity there exists within a business model, but also how much possibilities there are within various interactions to produce alternative value propositions, for example. This image is still very simplified, and is leaving probably many possible combinations without attention, and is leaving out many mechanisms for both value creation and capture. Authors within the field of business model research probably refrain from making these visualisations for a reason, but conceptualisations are at the very heart of business model research (Massa et al. 2017), and this visualisation clearly points us the architectural and design complexity within business models. In addition to this, it can be stated, that attempting to capture all the different elements belonging to a business model, enriches the possibilities to observe interactions within the activity system and the elements of a business.

The wide array of elements considered in business models are one of the biggest weaknesses of the concept, but it offers a lens for analysing a wide range of interactions with them. The variety of elements has caused the conception to seem very loose, and it has been a source for many heavy criticisms (e.g., Porter 2001). Critics find then conceptualisation overlapping with each other (Arend 2013), but also with other theories in strategic management, such as positioning view for competitive advantage, resource-based view, dynamic capabilities, and complexity management (Ritter & Lettl 2014, Massa & Tucci 2017). Therefore, the usage of these elements to analyse business models must be clear, to avoid unnecessary overlap between alternative views for business management. As the activities within different element of a business model can be either within the firm's boundaries or exceeding them (Zott & Amit 2010), elements can therefore exist partially as internal and partially as external to the firm. Elemental separation of different activities also raises the question of how these elements work together, which brings us to the *alignment* of a business model elements.

The question of how different pieces of business fit together is important both to the firm strategy (Porter 2001) and to its business model (Magretta 2002). Ritter (2018) states that "the success and failure of organizations are determined not only by the elements of the business model but also by their complementarity, interrelationships, and alignment". This alignment can be therefore reached in business models if there is a strategic fit between different parts of the business model. When defined as an activity system,

business model alignment could be analysed based on the strategic fit of these independent activities (Zott & Amit 2010) of the system. On practical terms, it would be therefore difficult for firms to diversify their business onto something extremely unrelated, and this could be recognised as a misalignment in their business model. Furthermore, Foss & Saebi (2018) argue that alignment can be both related to the internal arrangement of the business, or to the external environment.

2.1.3 Complexity of business models

As a systemic concept, business models can have varying degrees of complexity. Complexity stems from the aspects of *emergent properties* and *behaviour of the system*, which create unexpected interdependencies between different parts of the system (Massa et al. 2018). Massa et al. define emergent properties of complex systems in business model context with a following way: "Emergent properties are properties that cannot be reduced to the properties of the system's components. Rather they are a function of the properties of the components and of the interdependencies among the components" (2018). Based on this perspective, gaining understanding of the single activities and elemental domains of business models cannot explain the overall success or failure of the model, but also more higher-level attributes do matter, such as design and architecture, as already highlighted in the definitions of a business model.

Business models with extremely high degree of complexity can also cause strategic tensions within the firm. These kind of *complex business models* are in the best case capable of enabling firms to pursue paradoxical strategies, but their management within organisation can be challenging (Smith et al. 2010). Even though the complexities are very systemic by nature, overcoming them can be achieved by more traditional leadership within organisations. Dynamic decision making, committing to an overarching vision, and proper team structures within the firm can assist in managing business models with high complexity (Smith et al. 2010). Paradoxical strategies might not be something worth striving for, but a system that can enable pursuing these strategies can be very difficult to mimic by competitors, and therefore the ability of managing complex systems can theoretically be of competitive advantage.

Systemic complexity of business models has many implications for operational management of firms. Firms can avoid much of this the complexity in their business operations with a good business model design, as it helps to clarify the connections between firm strategy and tactical business operations (Casadesus-Masanell & Ricart 2010). This idea of creating indirect guidance between the strategic, operational, and tactical decision making within the organization is also part of the *governance* business models can offer

in organisations (Zott & Amit 2010). Tactical interactions on the other hand, defined as the activities between firms (Casadesus-Masanell & Ricart 2010), connects the firm with its outside value network or ecosystem, and therefore design aspects of business models create the foundation for operational interaction enablement between the firm, its partners, and customers.

Summa summarum, despite the wide criticism the concept of business mode has received in the literature (Arend 2013, DaSilva & Trkman 2014), it has proven to be increasingly popular research theme ever since, speaking for their relevancy to industry by large. This is especially relevant for the information technology industry because business model innovations are considered the direct outcomes of digital transformation in firms (Verhoef et al. 2021). Business models share interesting linkages with information systems science through the business process management with activity systems perspective of business models (Solaimani & Bouwman 2012). The high interest towards the concept among businesses and the high relevancy regarding current market and technological trends speak for its supportive nature toward strategic management in general.

2.2 From parallel business models to business model portfolios

2.2.1 Firms with multiple business models

The changing dynamics of modern business environment has challenged the norms of strategic management. For example, the approach of pursuing more than one strategy at a time, or combining different strategies, has been seen traditionally as inferior; "becoming all things to all customers" has been viewed as something to avoid (Porter 1996). But today, firms are successfully becoming at least many different things for many different customers. Take Amazon, for example, and the way it has been able to shift from a bookstore to an online marketplace platform, and to a cloud platform provider without dropping any of these from its portfolio, while becoming a "one-stop shop" for its wide customer base in both B2C and B2B markets (Aversa et al. 2021). It is also difficult to apply traditional diversification or product portfolio management lenses for explaining this shift, as the underlying logics of the new service was fundamentally different from the original one. Amazon didn't just develop a new product or a new service, it completely reinvented its business and system architecture, and what resulted, was a new area of business with its own customer base and economics (Aversa et al. 2021). Given the previous definitions of a business models, this new area of Amazon's cloud services was

indeed operating with its own business model, alongside the existing model, and before founding AWS subsidiary, they coexisted within the same organisational structure.

In addition to these most recent higher profile examples of firms adapting multiple business models, this notion has been also made before with a wider number of firms in more traditional industries (Markides & Charitou 2004), and even more commonly among certain types of industries, such as online news industry (Massa et al. 2017). Airlines firms are also often used as an example of this, as many of them have been able to utilise the planes for transporting both people and cargo, and thus serving very different customer groups, with only partially same activities, and therefore with different business models (Casadesus-Masanell & Tarziján 2012). Ryanair has been also used as an example within airline industry from combining airport revenue sharing business models with their existing airline business model (Massa et al. 2017). Many examples exist also from technological industries, often relating to the studies about disruptive innovations and firms' reactions to those (Chesbrough 2010, Teece 2010). These examples emphasize, that the phenomenon isn't solely related to internet companies and digitalisation, speaking for the analytical perspective of attributing multiple business models to firms in general.

The aim of the companies with multiple different business models might not always be to sustain this situation for prolonged period, but instead in many cases it is a gateway for changing the existing business model (Markides & Charitou 2004, Sosna et al. 2010, McGrath 2010). Firms can therefore end up with multiple business models also when searching for new ways to diversify (Markides & Oyon 2010) through business model innovation (Foss & Saebi 2017). Firms with multiple business models have been connected to higher innovativeness of the firm itself (Clausen & Rasmussen 2013), and despite the high number of notorious examples (Markides & Charitou 2004) the potential of successfully implementing multiple business models is significant. Business model innovation literature usually focuses solely on the development and management of the new model, and the fact that firm must operate with multiple business concurrently has received much less attention (Bosbach et al. 2020). Evidently firms still employ parallel business models, and their definition and analysis is important in order to understand the mechanisms and methods for their management.

2.2.2 Complexity and interactions between business models

To understand how employing parallel business models affects the complexity of the overall system, it is required to define what parallel business models are, and how this definition differs from the existing conceptualisations of business model construct. The fundamental difference creating the denotation between separate business models can

be linked to the differences in their corresponding value chain or activity system designs (Markides & Charitou 2004, Zott & Amit 2010, Casadesus-Masanell & Tarziján 2012). New and existing business models can utilise partially the same resources (Markides & Charitou 2004, Casadesus-Masanell & Tarziján 2012) or, in certain cases, serve the same customer segments (Sosna et al. 2010, Velu & Stiles 2013) but still be different business model entities. The previous research has often focused either studying the matter by analysing dual (Markides & Charitou 2004, Casadesus-Masanell & Tarziján 2012, Kim & Min 2015), multiple (Bosbach et al. 2020, Aversa et al. 2021), but also *parallel* business models (Velu & Stiles 2013). In this research, the term parallel business models will be used, as it captures all these other forms of pluralism. Having parallel business models in a firm has been recognised to be very challenging because they often utilise the same underlying assets, while additionally the new model can cannibalise revenues from the existing business model (Chesbrough 2010), and these are the main reasons why it is largely viewed as 'a leading cause of strategic failure' within firms (Casadesus-Masanell & Tarziján 2012).

Asset sharing causes complexity on the supply side of the firm. Often, the requirement to move tangible assets from current business model to a new business model, with lower or possibly yet non-existent profit margins, is detrimental for the existing business, as sharing the assets slows down the growth or hinders the performance indicators of the existing the existing business model (Chesbrough 2010). However, in certain cases asset sharing can be desirable. Casadesus-Masanell & Tarziján (2012) argued that parallel business models can also create positive externalities, feeding each other's growth. The synergies between business models can be achieved e.g., through increased asset utilisation, profit and revenue diversification, and lowered risk of entry by competitors, creating synergies greater than simply changing a firm's current business model (Casadesus-Masanell & Tarziján 2012). They made the distinction between complementary and substitutive business models, defined as a degree to which the models share *non-critical* compatible resources, capabilities, and physical assets (Casadesus-Masanell & Tarziján 2012). Sharing of critical assets was noted to create cannibalisation effects.

This sharing of non-critical assets and resources has been witnessed also in wider number of other empirical studies covering parallel business models (e.g., Aversa et al. 2015, Clausen & Rasmussen 2012, Kim & Min 2015, Markides & Charitou 2004, Markides & Oyon 2010, Sosna et al. 2010), and therefore all these firms have been required to deal with the conflicts arising from sharing the same resources with other activities within the

firm. This causes availability, demand peak, and other operational management struggles to exist between the business models. With non-critical assets these management issues can be trivial and easily overcome, but with critical resources, the firm must choose in which basket to place its eggs, and this is the case when the existing business model is usually allocated resources in abundance. Even with non-critical resources, the matter of managing the sharing of assets still adds complexity to the equation. The process of sharing the assets also implies that these different business models must have at least partially shared activities within their activity system, as can conclude based on the previous definitions of business models.

Having business models in parallel can create also negative externalities, adding complexity to their management. Existing and new business model can possess similar or partially same customer segments (Aversa et al. 2021, Kim & Min 2015, Markides & Charitou 2004, Velu & Stiles 2013, Sosna et al. 2010), which can lead to a situation in which the models compete. Cannibalisation of sales from the existing business occurs, when the implementation of the new model deteriorates the value of existing model or existing firm's assets e.g., through taking sales from existing model, but also by deteriorating the value of co-specialised resources and assets (Chandy & Tellis 1998, Teece 2007, Velu & Stiles 2013). Cannibalisation effects can therefore emerge from both the supply and demand side effects, either as competition from sales to the same customer groups, or from the utilisation of critical or co-specialised assets. Co-specialised assets in this case (Velu & Stiles 2013) means an asset such as a team, which can be expected to be more than the sum of parts, the team members.

Parallel business models are therefore either substitutive, complementary, or non-related, based on their sharing of assets, activities, or certain customers. However, different models also must have their separate element, or they would be the same model (Casadesus-Masanell & Tarziján 2012). E.g., two business models which share a customer segment, cannot share assets and an activity system at the same time, or they could be just considered as same business models. Companies can still target the same customer segment with different business models, e.g., in a case in which the new model is expected to replace the existing business, but the transition will take significant amount of time (Sosna et al. 2010). In this case the models can be argued to be substitutive to each other because they do not create positive externalities (Casadesus-Masanell & Tarziján 2012). Companies should preferably aim for creating specifically *complementary* business models sharing same non-critical assets, to create more value than with a single business model. Preparing for change in the markets (Chesbrough 2010, Sosna et al. 2010, Velu & Stiles 2013) and blocking out competition (Casadesus-Masanell &

Tarziján 2012) are still viable reasons to pursue multiple business models in parallel, despite they don't necessarily create similar synergy benefits. Differences between complementary and substitutive business models, and the possible types of sharing within value systems of parallel business models, is highlighted in figure 4.

Complementary parallel business models

Substitutive parallel business models

R_C	Critical resource
R_N	Non-critical resourse
A_U	Unique activities
A_C	Common activities
C_U	Unique customers
C_C	Common customers
———	Strong linkages
--------	Weak linkages
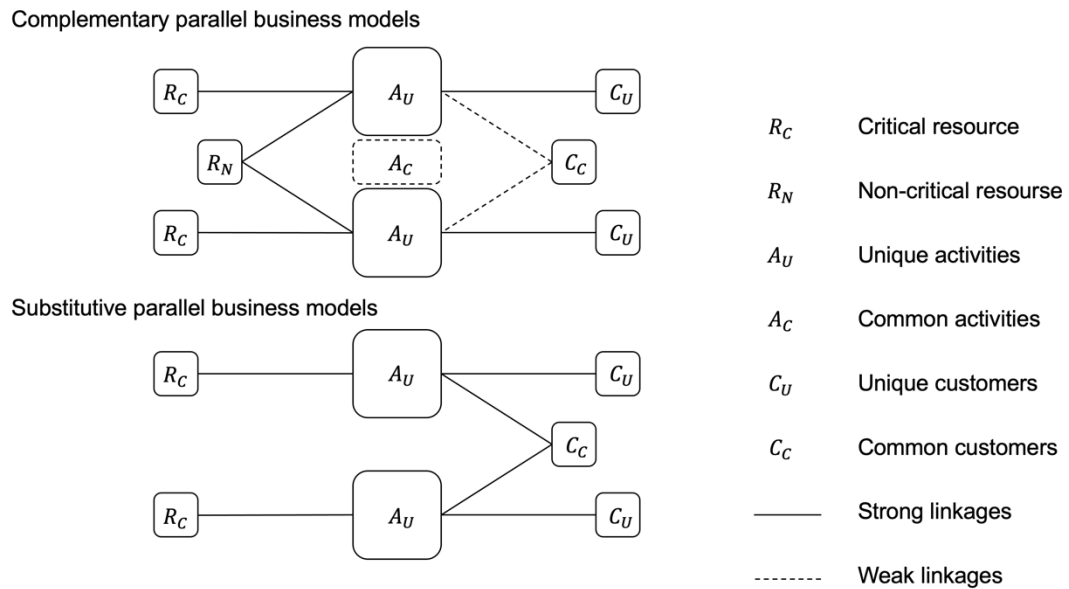
Figure 4. Differences between complementary and substitutive business models, and different types of sharing occurring within a value system of multiple business models. (Authors own elaboration)

2.2.3 Analysing business model portfolios

The conflict and challenges raised by employing multiple business models must be managed, but firms also have to make decisions about which business model to employ. Few authors have suggested a concept of *business model portfolios* to be utilised for describing the organisation of parallel business models within a firm (Aversa et al. 2017, Bosbach et al. 2020, Höök et al. 2015, Sabatier et al. 2010, Schwartz et al. 2017). The idea behind business model portfolios is very similar to that of portfolio management in general: it aims to help firms recognizing the possible challenges related to their different business models (Höök et al. 2015), managing these challenges (Schwarz et al. 2017, Snihur & Tarziján 2018), seeking synergies and benefits between business models (Aversa et al. 2017) and also in deciding what to keep and what to remove from the portfolio in order to manage risks (Sabatier et al. 2010, Schwarz et al. 2017) and to optimise the value of the portfolio (Aversa et al. 2017, Höök et al. 2015). However, very little is currently known about business model portfolios, and current research is still missing frameworks for properly analysing business model portfolios in firms (Bosbach et al. 2020). The existing key research on parallel business models is summarised in Table 1.

Table 1. Existing literature covering parallel business model management directly.

Article	Type of study	Focus area	Main insights
Markides & Charitou 2004	Empirical	Separation versus integration alignment mechanisms in managing dual business models	• Contingency approach should be used with separation/integration decisions based on market similarity and level of conflicts between BMs (Business Models) • Separation requires operational, financial, and cultural autonomy to succeed • Integration requires leveraging strengths of existing BM but also protection from existing policies
Markides & Oyon 2010	Empirical	Firm motivations for adopting second business model	• A second business model can be used as a response to disruption or to pursue new business opportunities aggressively • New business model is needed, if serving the new markets requires a new set of value creation activities Typical solution for managing conflicts with dual business models is separation • Dual business model management requires context specific techniques and solutions

Sabatier et al. 2010	Empirical	BM portfolios and their management	• Same strategy can be served with different BM portfolio contents • BMs can have varying qualities about time-to-market, risks, interdependence with other firms, and returns • Two generic BM portfolio types: Core competence extensions for reaching new markets; core competence redeployments for serving similar customers with same competence
Sosna et al. 2010	Empirical	Learning and experimentation in business model innovation	• Existing BMs can be altered in a longer period of trial and error, during which the old and new model coexist During the experimentation phase, the scale of the new BM is narrowed down • Existing BM must absorb the financial and psychological costs of growing the new BM
Casadesus-Masanell & Tarziján 2012	Empirical	Managing multiple business models	• Multiple BMs can be partially overlapping, sharing non-critical physical assets, and utilising compatible resources, but still serving different customer bases • BMs can be complementary or substitutive, depending on the extend of this sharing

Andries et al. 2013	Empirical	BM development in ventures	• Simultaneous BM experimentation results in higher learning and predicts survival among ventures
			• BM experimentation is more cost-effective strategy when BMs are at least partially related
			• Organisational structure around BM experiments changes gradually from project-based organisation to a more elaborate structure
Benson-Rea et al. 2013	Empirical	Analysing differences between business models among firms within New Zealand wine industry	• Dynamic market conditions within industry drive the change towards developing multiple BMs
			• Firms can pursue both cost leadership and differentiation strategies by developing partially separated BMs
			• Different BMs can share certain value creation elements of the firm, such as those related to quality, with varying degree of separation
Clausen & Rasmussen 2013	Empirical	Innovativeness of research-based spin-offs	• Usage of multiple business models simultaneously is more prevalent within research-based spin-offs
			• Using several parallel BMs is correlated with higher innovation performance

Markides 2013	Conceptual	Applying ambidexterity literature for parallel business model management	• Firm's organisational context has a role in determining whether competing with dual BMs is viable
			• The optimal degree of separation can vary regarding value chain activities and organisational environment
			• Further research should emphasize firm specific solutions
Velu & Stiles 2013	Empirical	Decision making in managing parallel business models	• Two different BMs can serve the same customer base if alignment is achieved between BMs
			• Differentiation–synergy -alignment is required to manage the cannibalisation between BMs
			• Managerial conflicts can be managed with mechanisms of transcendence, separation and integration in decision making
Aversa et al. 2015	Empirical	The relationship between different business model configuration and firm performance in technological industry	• BMs can be complementary based on economic and capability enhancing factors
			• BM configurations leveraging both technological and human resource capabilities are associated with high performance, due to capability-enhancing complementaries between different BMs
			• Adoption of capability-enhancing complementaries accelerates learning, helps to focus on core activities, and develops firm-specific capabilities

Bertels et al. 2015	Empirical	Challenges adopting non-core BM	• Managerial assumptions regarding the existing BM can risk the success of a new BM requiring non-core capabilities
			• Especially the elements of distribution channels and cost structures are prone for conflicts from assumptions when designing new value propositions
			• Non-core BMs can be successfully adopted, if firms are able to adapt to facilitate the new model
Höök et al. 2015	Empirical	Longitudinal case study of multiple business models in a manufacturing firm	• Conflicts arising from firm's strategic decisions can be revealed by utilising BM perspective
			• Multiple business models enable pursuing multiple strategies
			• Unbalanced BMs cause misfits between market position, offerings, and firm's operational platform
Hoßbach 2015	Empirical, conference publication	Integration and separation mechanisms between BMs	• Integration and separation mechanisms are multi-layered between different BM elements
			• Organisational context factors of leadership, strategy values and incentives are often related to the need for integration and separation mechanisms

Kim & Min 2015	Empirical	Effects of adding business models on a firm's performance	• Complementary and conflicting incumbent assets determine the potential for achieving higher performance with new BMs • Opportunities for realising this potential are created by correct timing and organisational mode of new BM addition • Managing conflicting assets with a separate unit, aligned with the complementary assets in existing unit, predicts higher performance in firms with multiple BMs
Aversa et al. 2017	Conceptual, empirical examples	Building BMI portfolios with multiple BMs	• Business model portfolios can be analysed by linking separate BMs to firm's resources, capabilities, and performance • BM diversification can help firms to mitigate risks in revenue streams, especially important in technological industries • Adding new business models should begin with utilising firm's existing resources
Schwarz et al. 2017	Conceptual, conference publication	Exploring research of BMs from portfolio management perspective	• Multiple BMs can exist within firm's boundaries • Firms utilise multiple BMs as a reaction to disruptive technologies, seizing new market opportunities, commercialising product innovations and mitigating risks • Research on BM portfolios is suggested

Verhoeven & Johnson 2017	Conceptual	Portfolio strategy for BM innovation within product-market framework	• Pursuing new markets requires BM innovation, whereas existing markets can be reached with more incremental BM development
			• Different product-market configurations have different strategic goas for BM innovation/development, leading to different responses regarding BMs
Snihur & Tarziján 2018	Empirical	Complexity management in a firm with parallel business models	• BM portfolios can be either autonomous or integrated, depending on whether different BMs in the portfolio have interdependencies with each other
			• BMs can have both within and between complexity
			• Centralisation and decentralisation are both needed for management of integrated BM portfolios
Guyader & Piscicelli 2019	Empirical	Adopting multiple business models in a sharing economy context	• For a sharing economy platform provider, resources of member community, platform technology, user data, customer support, local management teams and partners were important in adopting multiple business models
			• Multiple business models employing supply side complementarity create synergistic benefits
			• Leveraging demand side resources, technological improvement, and user engagement were the key capabilities for operating platform business model portfolio

Bosbach et al. 2020	Empirical	Effects of introducing multiple business models in a corporate portfolio	• BM diversification can support strategic planning & resource allocation, help experimenting new value creation, offer risk management, increase competitive advantage, and enable innovation
			• BM diversification can also bring decision making, operational and organisation challenges
			• Research on strategic portfolio management is suggested
Sohl et al. 2020	Empirical	BM diversification and business models with high demand complementarity	• Demand side complementarities and customer-facing activities define business model relatedness
			• High relatedness of business models increases their profitability
Aversa et al. 2021	Empirical	BM portfolio dynamics regarding customer complementarity	• Customer complementarities can be present between BMs if one-stop-shop or network effects exist
			• Integrative business model is one that creates most complementaries among customers and between the firm's other BMs
			• Digital interactions via different BMs increase possibilities for customer interactions, and therefore for customer complementarities to be present

Theories on corporate portfolio management can still be applied fruitfully in explaining phenomena related to business model portfolios (Snihur & Tarziján 2017, Verhoeven & Johnson 2017), and certain portfolio dynamics have been recognized for business model portfolios especially. Sabatier et al. (2010) conducted a case study of European biopharmaceutical companies employing portfolios of multiple business models and noted that business models in a portfolio can have significant differences regarding their risk and interdependence with each other, and they noted that developing business model portfolios helps firms in "managing a more complex architecture designed to reduce risks and maintain equilibrium across a variety of activities". Höök et al. (2015) also highlighted this need for equilibrium, or balance, as they noted that "the lack of a business model portfolio perspective led to a set of 'unbalanced' business models with different kinds of misfit between market positions, offerings, and operational platforms". The risk mitigation perspective for business model portfolios was noted by Schwartz et al. (2017), but in addition to financial risks they suggested the portfolio view to help reacting for technological disruptions.

Business model portfolio view has been also suggested to offer upside benefits for firms. As Sabatier et al. (2010) stated, "Companies may run parallel, vertical integrated business models to cover more sectors of their value chain, and their consecutive articulation can allow the firm to benefit from synergistic effects, adding more value for customers and (hopefully) more profit for the firm". This is in line what was previously noted on synergies between multiple business models. Aversa et al. (2017) recommended analysing the synergies and performance benefits of business model portfolios based on synergies between firm's resources and capabilities. They argued that these synergies stem especially from business models which "tap into existing company resources" as this helps to build "economies of scope and eliminate redundancies" (Aversa et al. 2017). Sabatier et al. (2010) also noted this by stating that "firms tend to add activities that relate to some aspect of their existing ventures, either based on the same core competence or developed to take exploit certain common technological and market characteristics". These synergy benefits can also be related to the sharing of the activity systems and partners between business models (Snihur & Tarziján 2018), despite the activity systems cannot be same, or this would be a case of a single but complex business model (Smith et al. 2010, Zott & Amit 2010).

Business model portfolios exist within the firms alongside other organizational and portfolio structures, which in typical cases has led to a separation of different business units. Snihur & Tarziján (2018) recognized, that business model portfolios can coexist within these different organizational settings, but with distinctive complexity characteristics.

They argued that "a firm can manage a [business unit] with different [business models] or operate different [business units] with the same [business model], there is no direct correspondence between the [business unit] and the [business model] unit of analysis" (Snihur & Tarziján 2018). This notion has important implications for managing business model portfolios, as it suggests that traditional portfolio management techniques don't seem to provide tools for analysing the risks and synergies with employing multiple business models. Höök et al. (2015) also recognized that their subject of their research "was insufficiently aware of the fact that strategic decisions and events led to the development of new business models and eventually to a portfolio of diverse business models that was not purposefully prioritized in the long term", which highlights this issue further.

Synergies enablement and risk management in firms with parallel business models is very tightly connected to the complexity and interactions between individual business models of the firm, which together form portfolios. Snihur & Tarziján (2018) differentiated the complexities in business models as *within* and *between* complexities of the business models, depending on whether the individual business models per se are complex, or whether they have complex interactions between each other. They stated that differences regarding the *between* complexity leads to either *autonomous* (low between complexity) or *integrated* (high between complexity) business model portfolios (Snihur & Tarziján 2018). Therefore, business models which are completely separated from each other, do not create any interactions with each other, and the complexity of the portfolio with fully separated business models is therefore formed only from *within* complexity of the individual models.

This portfolio complexity theory has several implications on how to analyse the complexity in business model portfolios. First, although business models can be managed in autonomous portfolios, this strategy wouldn't allow any synergies to be present. For companies to allow the synergies to emerge, they should allow sharing between different models, which in turn would create the interactions and the increase in *between* complexity of different business models. However, this increase would be lower when similarity and compatibility for redeployment is present between the business models (Snihur & Tarziján 2018), and therefore business models with similar *within* complexity can form portfolios with very different total complexity, if forced to an integrated management setting. Operating multiple business models within a same firm is already an integrated setting, but furthermore there can exist multiple business models within the same business units of portfolio structures, and in these cases the interactions are very difficult to avoid, although separation would be the target.

Business portfolio structure affects to its risk profile. As it was highlighted in the previous chapter, firms usually employ separation and integration strategies to manage the complexities between different business models (e.g., Markides & Charitou 2004), and it could be assumed by employing these strategies, that firms can create autonomous or integrated management settings within the firm and its business model portfolios, as suggested by Snihur & Tarziján (2018). This implies, that firms can intentionally affect to the overall complexity and the synergy enablement of the business model portfolio, and that certain settings can provide the firm with different complexity and synergy combinations. Even though interactions between business models do add the component of between complexity to the total portfolio complexity, they are also the way to allow synergies to be created. A relatively low increase in the total complexity combined with a relatively significant increase in the total synergies of a business model portfolio leads to a higher *relative synergy* of the portfolio.

Business model diversification has been used to describe the adoption of parallel business models, and therefore also the development of business model portfolios (Sohl et al. 2020). This diversification philosophy refers to the traditional product market strategies presented by Ansoff (1957), in which the firm can aim to diversify its income sources by pursuing new markets, or by establishing new product lines, to reduce unsystematic risk of its portfolio. The previous idea of *relative synergy* is pretty much in line with the financial objectives behind the original diversification strategies to produce Markowitz's efficient set of portfolios (Markowitz 1999). In this context and given the struggles and objectives of parallel business model management, the objective of business model portfolio management should be to produce maximum synergies with the minimum complexity, and thus balance the portfolio in regard of the risk–reward ratio.

Existing portfolio management measures can help creating a framework for putting together the various dynamics in business model portfolios. For example, Verhoeven & Johnson (2017) explored the use of product–market matrix and diversification strategies in the context of business model innovation portfolios. The basic product–market strategies could offer a foundation for approaching the business model portfolio management issue, as there are certain demand side connections between these two. Business model portfolios can be designed to pursue new or existing markets, but they differ also regarding the product strategies. Business models do not differ solely based on their value proposition or product, but instead they represent completely new value system architecture. And regarding this value architecture, the most important differentiating factor denoting for higher performance outcomes compared to running the business models as

separate entities, is the degree of sharing and redeployment of both non-critical resources and similar activities between the business models (Casadesus-Masanell & Tarziján 2012, Kim & Min 2015, Snihur & Tarziján 2018).

Based on these findings, researcher suggests the framework presented in Figure 5 to be used for analysing business model portfolios of parallel business models in this research. Framework summarises the previous theories: business model portfolio complexity; separation and integration strategies; synergy and cannibalization risks; denotation between substitutive and complementary business models; relative synergy; and autonomous and fully integrated business models, defined as specific examples of separated and integrated models. Framework can be used for analysing the contents of business model portfolio, or simply the positions of business models within the overall portfolio context. E.g., the position of a business model can change during its development between classes A–D, depending on the degree of sharing on either the non-critical resources (classes on y-axis) or existing customer groups of the other business models (classes on x-axis).
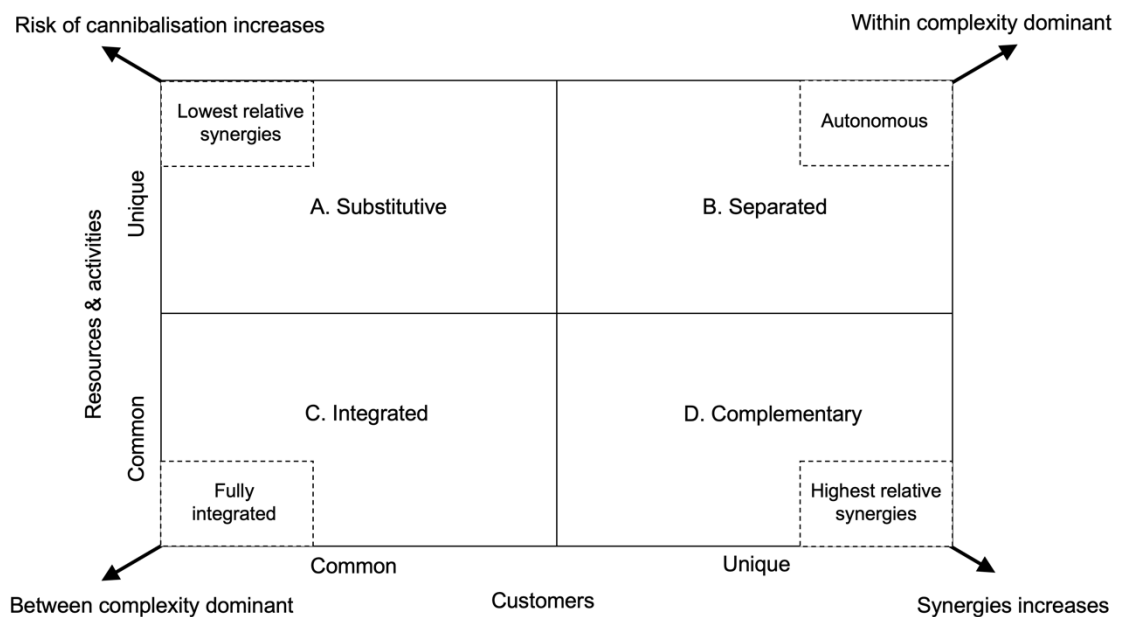
Figure 5. Framework for analysing the synergy and complexity of business models in a portfolio. (Authors own elaboration)

In the lower left corner, the *fully integrated* class represent a specific case of integrated business model (C), which has the highest supply and demand side integration, and therefore also highest absolute between complexity, with other business models. On the opposite, *autonomous* business model shares no interactions with other business models and is therefore free of between complexity in the portfolio. Complementary business models (D) can be considered a specific type of an integrated business model,

which shares the non-core resources and activities, but doesn't cannibalize customers. Complementary business models have also only moderate total complexity, and the complexities are supply side only, and therefore the relative synergies are highest, and this class represents theoretically the optimal portfolio position. Class A, substitutive business models, have no synergies but possess a high risk of demand side conflicts, and they are therefore suboptimal variation of otherwise separated business models. Separated business models (B) have only weak linkages with the rest of the portfolio, or they are completely autonomous with no linkages. Therefore, they enjoy lower levels of complexity, but they also lack synergistic benefits from sharing, due to which their relative synergy isn't higher.

This business model portfolio matrix is quite simplified model of the various connections and complexities between parallel business models, but it still it can offer a powerful visualising tool for assessing the changes of individual business models of the portfolio. There are a couple of assumptions regarding the analysed business models. First, the framework is intended to help revealing the position of a business models in a portfolio. Therefore, it might not be able to describe complete portfolios of business models a whole entity. Second, the framework binds together findings made by several different authors on both parallel business model and business model portfolio management, and therefore certain classifications can have subtle differences between the definitions in original sources. This has been done additionally because the literature also consisted certain conflicting views on the topic, and researcher needed a combining tool for further data analysis.

2.3 Dynamic capabilities in business model management

2.3.1 Origins, definition, and characteristics

Origins & definition

Dynamic capabilities theory has strong roots in the resource-based view of the firm, and the idea of dynamic resource management with considerations about resource building, position, and diversification, paving the way for further theories of dynamic capabilities (Wernerfelt 1984). Theory was originally based on the idea, that firms have specific capabilities, which enable making changes to their resource base and utilising these resources for building competitive advantage, and which cannot be explained solely by formal and replicable structures and between firms (Teece 1997). Teece (1997) argued, that these capabilities become specific to firms through effects of path dependency,

unique adaptations to processes and configuring specific asset positions, extending the assumptions of resource-based view of the firm. Dynamic capabilities therefore represent an ability of a firm to respond to change, and the higher the speed of change, more important these capabilities would become.

Definitions of dynamic capabilities vary, and they have also changed throughout the history. Teece et al. (1997) define dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments", whereas Helfat & Peteraf define them as "the capacity of an organization to purposefully create, extend, and modify its resource base" (2009). Alternatively, Eisenhardt & Martin define dynamic capabilities as "The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain, and release resources – to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die." (2000). These definitions and corresponding conceptualisations highlight the role of specific organisational processes and routines for responding to changing external conditions (Teece et al. 1997, Eisenhardt & Martin 2000), but also other patterns such as organisational structures, learning and asset orchestration are considered as part of dynamic capabilities in firms (Teece 2007).

Unique VS universal

Two distinct approaches exist for explaining the nature of specificity in dynamic capabilities. Teece (1997) argued that dynamic capabilities can be used for building competitive advantage, highlighting their firm specificity and inimitability. Furthermore, Teece (2007) stated that but "…well-understood and replicable 'best' practice [isn't] likely to constitute a dynamic capability". Other views see them more as best practise, thus being valuable but more non-specific, and therefore also prone for imitation from competitors (Eisenhardt & Martin 2000).

The question is highly related to the matter whether dynamic capabilities can offer sustainable competitive advantage to firms. According to Eisenhardt & Martin (2000), competitive advantage can only stem from VRIN resources (valuable, rare, inimitable, and non-substitutable), and because dynamic capabilities can be imitated, they cannot provide sustainable competitive advantage. Teece (2014) argues that "VRIN resources, in and of themselves, are inherently valuable by definition, but they do not generate long-term enterprise value (or military prowess) on their own. For long-term growth and survival of the enterprise, they must be cleverly managed, or orchestrated, by a dynamically capable management team pursuing a good strategy".

Teece (2014) has attempted to reconcile this divide between uniqueness and universality by making distinction between ordinary capabilities and dynamic capabilities. Ordinary capabilities "generally fall into three categories: administration, operations, and governance. Ordinary capabilities are embedded in some combination of (1) skilled personnel, including, under certain circumstances, independent contractors; (2) facilities and equipment; (3) processes and routines, including any supporting technical manuals; and (4) the administrative coordination needed to get the job done" (Teece 2014). On the other hand, dynamic capabilities "are about doing the right things, at the right time, based on new product (and process) development, unique managerial orchestration processes, a strong and change-oriented organizational culture, and a prescient assessment of the business environment and technological opportunities" (Teece 2014). This distinction between ordinary and dynamic capabilities is further highlighted in table 2. These differences help making distinguishing capabilities between ordinary and dynamic, but they also reveal that the two can be confused with each other.

Table 2. Differences between ordinary and dynamic capabilities (Source: Teece 2014)

	Ordinary capabilities	Dynamic capabilities
Purpose	Efficiency in business functions	Congruence with markets and opportunities
Attainability	Through buying or building	Through building
Themes	Operate, administrate and govern	Sense, seize and transform
Key routines	Best practices	Signature processes
Managerial emphasis	Cost control	Entrepreneurial asset orchestration & leadership
Priority	Doing things right	Doing the right things
Imitability	Relatively imitable	Inimitable
Result	Technical fitness (efficiency)	Evolutionary fitness (innovation)

Processual VS experimental

Dynamic capabilities can also vary based on how routinised they are. As we can see from table 2, mere best practices or efficient, routine like business functions are not considered dynamic capabilities per se. However, certain processes, such as *sui generis* product development processes, quality control, technology and knowledge transfer routines, and analytical methodologies can be considered as dynamic capabilities (Teece 2012). On the other end of the spectrum, dynamic capabilities can consist of various agile methods of operating, such as certain agile organisational structures or flexible budgeting methods enabling agility in investment decision making (Teece et al. 2016). These two ends of the continuum between experimental and processual capabilities are also present within the dynamic capabilities -framework. Despite dynamic capabilities are entrepreneurial and highlight agile decision making by nature, they can be also processual and stem from long history of organisational learning, or paths (Teece 1997), enabling firms to build non-transferrable signature processes.

2.3.2 Sensing, seizing, and transforming capabilities

Hierarchies. Differences between ordinary and dynamic capabilities have been also explained by hierarchical relationship, where operational or ordinary capabilities represent the lowest level of hierarchy, or "zero level" (Winter 2003). Above these zero level capabilities, exists the microfoundation layer of dynamics capabilities, which can utilise ordinary capabilities as components (Teece 2007). By recombining and modifying the ordinary capabilities, this layer adds the *sui generis* factor to processes, routines and practices, which enable firms to react to environmental changes (Teece 2014). Examples of these first level (or second order, in some instances) capabilities are "new product development, expansion into new sales regions, the assignment of product mandates across divisions in large companies, and other actions that constitute astute managerial decision making under uncertainty" (Teece 2018). The difference between zero and first level capabilities can be very nuanced, as replicable best practices or efficiency improvements are considered zero level, but "cross-functional R&D teams, new product development routines, quality control routines, and technology transfer and/or knowledge transfer routines, and certain performance measurement systems" count as microfoundations of, or first level, dynamic capabilities (Teece 2007). Above the zero and first level capabilities are the highest order, or second level, dynamic capabilities (Teece 2018), defined as sensing, seizing, and transforming capabilities (Teece 2007).

Functional dimensions. Dynamic capabilities can be recognised to exist at different levels of organisation, and they also differ by the functional domain of a capability. Organisational units of analysis can be either individual, team, organisational or extra-organisational (Felin et al. 2012). Regarding the functional domains, Eisenhardt & Martin (2000) suggested that dynamic capabilities can be effect in functions such as alliancing, mergers & acquisitions, and new product development. It can be seen from these additional dimensions, that dynamic capabilities are extremely multidimensional, and this is challenging regarding their analysis. This is related to the contingency approach, which implies that "dynamic capabilities pertain to specific activities and the context in which they are employed" (Schilke et al. 2018).

Processual dimensions. The highest order dynamic capabilities, namely a) sensing and b) seizing opportunities, and c) transforming the firm, are defined based on the part of the process they serve for an enterprise regarding its ability to change (Teece 2007), and these processual domains determine how firms practically utilise the other level capabilities. Sensing capabilities include both systemic and individual capabilities of the firm to recognise and shape new opportunities, and they include e.g., R&D, and new product development processes, ability to recognise changing customer needs, and utilising external resources, such as suppliers and customers, for innovation (Teece 2007). Sensing activities emphasize the role of experimentation and learning of individuals, but also processes for recognising and assessing both opportunities and threats (Teece 2007). Sensing capabilities are therefore important for coordinating new asset building and empowering organisational learning.

Firms can engage with new opportunities through seizing capabilities. As new opportunities emerge, they "must be addressed through new products, processes, or services", which includes investment decisions about technology and competences (Teece 2007). According to Teece (2007), the ability to design and establish a correct business model for the recognised opportunity is a very "foundational" element of dynamic capabilities, and therefore business model concept is very central in the theory of dynamic capabilities. Seizing capabilities enabling capturing the opportunity include organisational factors, such as value and culture, capabilities for asset operationalisation, and decision-making protocols (Teece 2007).

Sensing	Seizing	Transforming
R&D & innovation processes	Enterprise structures and boundaries	Coordination and integration
Technology scouting & acquiring	Designing customer solutions and business model	Decentralisation
Customer interaction, dialogue and indentification	Loyal and committed teams	Cospecialisation, alignment and realignment
Analytical systems and individual learning capacity	Procedures, incentives	Knowledge management and learning

Figure 6. Examples from the microfoundations of dynamic capabilities
(Adapted from: Teece 2007)

Transforming capabilities are used for enabling dynamic asset utilisation and development. These include achieving organisational decentralisation through coordination and integration skills, cospecialisation of assets, knowledge management capabilities and managerial governance mechanisms (Teece 2007). Organisational decentralisation enables more flexibility in responding to emergent market needs, but it also risks separating parts of the organisation. Coordination and integration mechanisms allows balancing the degree of decentralisation, but they are also utilised in building new combinations from firm's assets. This kind of value enhancing pairs create cospecialised assets, which have increased value compared to keeping them as separate. Knowledge is also an important asset for organisation, and reconfiguration capabilities include learning and knowledge management. (Teece 2007) It is good to note, that coordination, learning, and configuration were also originally considered their own processual categories (Teece 1997), but as the theory has been refined, they have been now included within this framework of sensing, seizing, and transforming (Teece 2007).

Examples from microfoundations. Microfoundations of dynamic capabilities are different depending on the context, and therefore by definition they possess certain unique

characteristics. Similar patterns of microfoundations in different contexts can be still rec-
ognised, and these can assist their analysis in different contexts. Teece (2007) sug-
gested microfoundations presented in figure 6 to form the foundation of dynamic capa-
bilities, but in empirical contexts the exact set of first and second order themes always
vary. In business model context, Teece (2018) suggested similar overarching categori-
sation, and further highlighted the role of technological development in opportunity iden-
tification, committing resources and designing the business model, and the capability
and organisational aspects of transforming capabilities.

2.3.3 Managing business models with dynamic capabilities

Dynamic capabilities theory is very closely related to business model management
(Teece 2018), connections between firm strategy and business models (Ritter & Lettl
2018) and business model innovations (Foss & Saebi 2017), and therefore the theory's
relevancy is high when looking for factors enabling parallel business model manage-
ment. When analysing the previous theories on parallel business models and dynamic
capabilities, many confluences can be recognised. Separation and integration mecha-
nisms for parallel business models have many similarities with the microfoundations of
coordination and integration. Similarly, the need for alignment between business model
elements, resembles the microfoundations of cospecialisation, alignment and realign-
ment. Additionally, alterations to organisational structures belong also to both theories,
reducing business model portfolio complexity, and dynamic capability of enabling change
through organisational structures.

This wide array of commonalities between dynamic capabilities and managing parallel
business models suggest, that the methods for business model portfolio management
may be a subset of dynamic capabilities, similarly as innovation portfolio management
has been suggested to represent a specific subset of dynamic capabilities (Sicotte et al.
2014). Teece commented the interactions between business models and dynamic capa-
bilities in a following way: "Business models are enabled by dynamic capabilities in the
sense that a dynamically capable organization will be able to rapidly implement, test, and
refine new and revised business models. Successful implementation draws on manage-
ment's architectural design, asset orchestration, and learning functions, which are core
dynamic capabilities. At the same time, dynamic capabilities depend in part on the or-
ganizational flexibility allowed or denied by business model choices such as whether to
outsource the manufacture of a new product or build a factory." (2018). This definition of

interactions highlights the different developmental stages of business models and corresponding dynamic capability requirements, but also emphasises the bidirectionality of the relationship.

Interactions between business models and dynamic capabilities are time-bound, and different capabilities can be utilised in different developmental stages. The developmental stages of testing, implementation, and refining (Teece 2018) resemble the processual categories of sensing, seizing, and transforming (Teece 2007), but they should not be mixed up with each other. Teece (2018) states that "business models, dynamic capabilities, and strategy are interdependent", but he also adds that "having an available repertoire of business models is an asset; being able to select, adapt, and match the business model and the environment is a (dynamic) capability". Despite the interdependencies, capabilities and assets are distinct from each other. Additionally, "there are many ways to change" (Winter 2003), and the processual categories of dynamic capabilities are therefore not directly bound to the developmental states of business models, although certain capabilities may have stronger presence during different developmental stages.

A very central unifying theme between parallel business model management and dynamic capabilities is the focus on changes in the asset base and resources of a firm (Casadesus-Masanell & Tarziján 2012, Helfat & Peteraf 2009, Teece 1997). The traditional asset "positions" included technological, complementary, financial, reputational, structural, institutional, market and organisational positions (Teece 1997), and theoretically the corresponding changes in the firm's asset base should be evident regarding the dynamic capabilities for the management of parallel business models. The more recent definitions of dynamic capabilities also include the management of knowledge assets of the firms to this perspective through capabilities for organisational learning and knowledge management (Teece 2007). Especially enabling efficient asset orchestration could help in solving multiple business model asset sharing challenges (Schriber & Löwstedt 2018).

Dynamic capability theory highlights the *transformational interactions* between capabilities and business models. As Teece (2007) states, "The capacity an enterprise has to create, adjust, hone, and, if necessary, replace business models is foundational to dynamic capabilities". Therefore, dynamic capabilities are important for changing the business models. Also, within incumbent firm context, Teece (2018) states that "most [new] business models will be similar to older ones, involving a permutation or hybridization of existing model". Furthermore," the opportunities for recombination are virtually endless. Firms are unlikely, however, to choose from the full menu of business models. As a

practical matter, the choices depend, in part, on the strength of the firm's dynamic capabilities" (Teece 2018). This indicates, that in addition to facilitating the change, dynamic capabilities can extend the possibilities for business model change.

The question whether dynamic capabilities can be present in a situation which is not characterised with a strong component of change and corresponding need for transformation has been a debated question from the early days of dynamic capability theory (Teece 1997, Eisenhardt & Martin 2000, Winter 2003). However, firms have been noted to respond to changes also with sustaining reactions (Jenkins 2010), and the perspectives with more relaxed approach for the component of change in dynamic capability theory (Eisenhardt & Martin 2000) suggest that "Dynamic capabilities are not restricted to new-to-the-world businesses or fast-paced environments or what is perceived as radical change. For example, dynamic capabilities often support existing businesses." (Helfat & Peteraf 2011). Therefore, in addition to transformational interactions between business models and dynamic capabilities, one could suggest that also *sustaining interactions* can exist between these units of analysis, if employing the terminology suggested by Jenkins (2010).

Sustaining interactions between business models and dynamic capabilities are interactions characterised with low transformational effects to business model transformation. Managing both between and within complexity of business model portfolios through achieving alignment (Snihur & Tarziján 2018) is a good example of such interactions. This is important also for individual business models, as "alignment and coherence is desirable so that the business model elements will be mutually reinforcing" (Teece 2018). Interactions also with organisational structures can be sustaining, in addition to interactions promoting rapid transformation. For example, sustaining separation with decentralised organisational structure and coordination mechanisms, or integrating different parts of the organisational structures (Snihur & Tarziján 2018, Teece 2007) can be considered as sustaining interactions between business models and dynamics capabilities, as they do not attempt to transform the organisational structure, but instead sustain conditions through which resource coordination can be achieved. Sustaining effects of dynamic capabilities can therefore assist firms to stabilise the induced change on business models and create conditions enabling continuity.
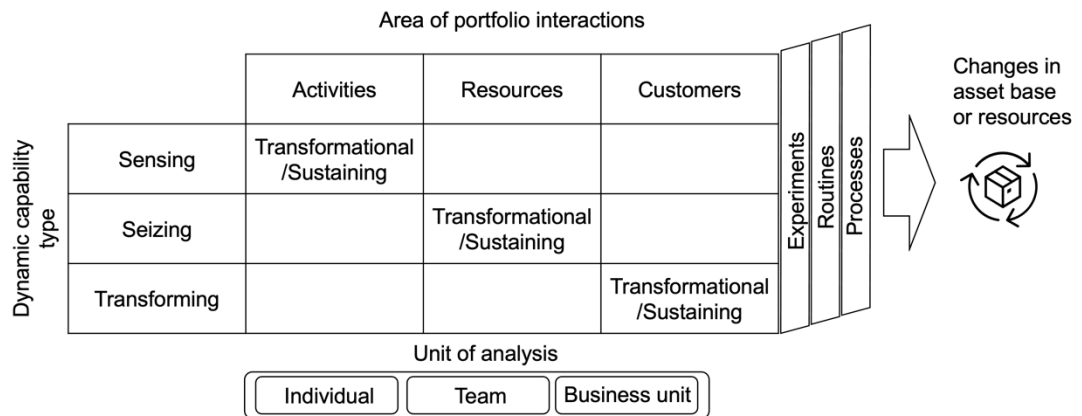
Figure 7. Analysing framework for dynamic capabilities in business model context. (Authors own elaboration)

Figure 7 summarises the relevant characteristics of dynamic capabilities and provides a framework for identifying dynamic capabilities of the firm which contribute for parallel business model management. The categories of sensing, seizing, and transforming capabilities were included as higher-level categories of dynamic capabilities. Their recognition still requires identifying the underlying microfoundations, which can be then used to develop higher order themes. Microfoundations can include capabilities contributing for transformational or sustaining interactions between dynamic capabilities and business model. Moderating effects of dynamic capabilities can be recognised within different domains of portfolio interactions, as discussed previously. Columns in the analysing framework present these. To separate relevant dynamic capabilities for business model management context, the capabilities are assumed to create changes in firm's asset base or resources. Also, sustaining interactions between microfoundations and business models can be assumed to create changes e.g., in the structural asset positions, although the change would not be transformational, as described above.

3. RESEARCH METHODOLOGY

3.1 Research design and strategy

This research is carried out as a mono method qualitative embedded case study, following a research philosophy of pragmatism and with a deductive approach to the theory development. Philosophy of pragmatism in business research emphasises the practical relevancy of theories and concepts (Saunders et al. 2015 pp.137,142–144), and this means that axiologically pragmatistic research emphasises the value of the findings for decision making. Even though pragmatism as a philosophy attempts to resolve the question of subjectivity and objectivity to some degree, researcher acknowledges his own subjective position in the research setting, which emphasises the interpretive nature of this research (Saunders et al. 2015 pp.142–144). Research is still very problem solving oriented, and results of the research are expected to provide insights about decision making related to the proposed research question. A deductive approach to theory development was selected, as the aim of this research is to complement the existing research with practical guidance regarding the research questions, and this required utilising the findings made from the existing theory in the data analysis.

Case study strategy supported achieving the objectives of the research with the limited theoretical models available for explaining the phenomenon, and the restricted availability of data guided the selection of qualitative research methodology. Case study research strategy emphasises the importance of the research context, and it aims to investigate the topic of the research in realistic conditions (Saunders et al. 2015 pp.184–187). The strengths of case study strategy lie in the practical focus of the research and the ability of the strategy to help gaining wider understanding of the phenomenon, even when the phenomenon is still not fully understood (Voss et al. 2002). Case studies have been utilised with various research designs, and for both exploratory and explanatory purposes, and therefore their design is highly context specific (Saunders et al. 2015 p.185). Exploratory studies are useful for gaining deeper understanding of problem or phenomena that are not precisely understood (Saunders et al. 2015 p.174–175), and therefore in this research, the emphasis is in exploring the phenomenon, and in finding links with the existing research. Furthermore, the strategy adopted in this research follows embedded case study design, to allow analysing the replicability of the findings across cases (Yin 2018, Saunders et al. 2015 p.187). The selected embedded cases are analysed separately, but in embedded context.

Because in-depth interviews are considered as suitable data collection methods for explorative studies (Saunders et al. 2015 p.175), the primary data collection method in this research is the interviews of the managers and key personnel within the case context. Interviews are necessary methods for data collection, as much of the data regarding the research phenomenon is quiet knowledge within the organisation and its personnel. Interviews are arranged as partially unstructured, to allow a higher flexibility during the interviews, which is recommended for exploratory studies (Saunders et al. 2015 p.175), but a supportive list of themes and questions will be used to advance the interview to a pre-determined direction. Their results are analysed, and findings compared, with existing research. The explorative analysis of the research will be accompanied by a descriptive extension regarding the historical developments of the chosen cases, and therefore the time horizon in this research will be longitudinal.

3.2 Case context and definition

Digia is a software and information system service provider company, which provides services in the areas of business systems, e-commerce, mobile development, analytics, API and integration development, and business consulting. It operates primary in Finnish markets, but through its subsidiaries also in Sweden, Denmark, and Netherlands. Company has a long history of mergers and acquisitions, which have enabled the company to grow its business in very wide spectrum of digitalisation related services. Some of the acquired companies have been kept in their own organisational structures as subsidiaries of the parent, but certain businesses have been merged with Digia. (Digia 2022a)

Digia was also the home of the Qt Company as we know it, which offers a cross-platform software development product, utilised vastly e.g., in the automotive industry. The history of Qt development platform technology is related to an acquisition of Trolltech by Nokia in 2008, which turned into a separate Qt project within Nokia later. Digia further acquired Qt business from Nokia with a purchase price of approx. 4 million euros in 2012 and continued to develop the business within Digia's corporate structure. (Ilta-Sanomat 2012) Eventually Qt was decided to separate from Digia in 2016 (Digia 2022b), with an initial market value in the public trading of 85,8 million euros (Alma Media 2016). Qt further continued its growth on its own, having a market capitalisation of almost 2 billion euros today (Yahoo Finance 2022). The growth journey of Qt business within Digia is an inspiring example of successfully enabling the growth of a new businesses with a fundamentally different strategy within the same corporate structure, raising many questions relating their parallel management within firms.

Currently Digia still has certain business domains, which deviate from the most dominant project and service business model of Digia. Examples of such offerings are Digia's ProDiary (Digia 2022c) and Iiris monitoring services (Digia 2022d). Both solutions share certain elements of a scalable digital products, and thus their business models differ partially of Digia's project and service businesses, but they still cannot be defined as pure SaaS (Software as a Service) products, such as Qt development platform. Qt, ProDiary and Iiris all have certain characteristics of scalable producer business models in digital ecosystem, while otherwise Digia operates more as a supplier firm within IT industry. Despite these differences, Digia has been able to develop both solutions within their current organisational structure as their separate entities. All these scalable solution offerings share similar characteristics regarding how the business models have been developed within Digia, and they represent an interesting opportunity to research establishing and managing multiple business models within a single firm developing its business model portfolio towards ecosystem business models.

In this research, Iiris and ProDiary business models are studied as embedded cases. This means, that they share the same firm as the case context, but they are analysed as their separate units within this context. However, the personnel responsible for their management within Digia are partially the same, and therefore certain interviews had to be held in a way that they covered both cases. Analyses of the cases have been carried out separately. Iiris and ProDiary cases are suitable for analysing the research problem not only as they are different from Digia's primary model, but also due the reason they have interactions with the primary business model, and they have been shown to utilise same resources. The initial observation period carried out by the researcher confirmed the selected cases to be valid for analysing the research question of this study.

3.3 Data collection and analysis

The in-depth semi-structured interviews served as the primary data collection method in this research, but the interviews were preceded with an extensive period of researcher observing the case contexts. The interviews were conducted during June of 2022, and the researcher began familiarising with the case context already in April 2021. The year 2021 was characterised with independent and more objective observation of the case company, whereas the first half of 2022 the research problem had already begun to formalise, and that period was thus characterised with participant observation. Participant observation helps in forming a more personal relationship with the informants, negotiating the access to data, and building a more nuanced and comprehensive understanding of the social world of the informants (Saunders et al. 2015 pp.356–357,394), and the

observation thus assisted in carrying out the interviews later during the primary data collection.

The informants for interviews were chosen based on non-probability self-selection sampling. Self-selection sampling of volunteers is a suitable sampling method when the access to information is difficult to retrieve, and the purposes of the research exploratory by nature (Saunders et al. 2015 pp.295–303), and therefore the chosen sampling method was suitable for the objectives of this research. Due to the chosen case contexts and the research objectives, the number of people suitable for interviewing was restricted, and thus the selected samples represent adequately the total population people who can viably answer to questions about the chosen topics. A total of five persons were interviewed, from which two of them represented both cases due to their position in the organisation. Informants I-01 and I-02 were used for Iiris case only, whereas the two different interviews conducted with informant P-01 presented the ProDiary case only. Informant P-01 forms 50% of the ProDiary's core team (discussed in more detail in the results chapter), and therefore both cases have adequate presentation without the informants IP-01 and IP-02, who were used for analysing both cases. Informants I-02 and P-01 have operational supervision responsibilities within the cases, whereas I-01 represents middle management in the Iiris business team level. Informants IP-01 and IP-02 have both more responsibilities with the corresponding business unit to which Iiris and ProDiary both belong to, with informant IP-01 representing top management level decision maker. The conducted interviews therefore were able to capture the researched phenomenon from various perspectives, and on both business team and organisational levels. Table 3 presents the conducted interviews, profiles of the informants, and provides additional information on the interviews.

Researcher prepared for the interviews by creating a supportive question template, which was used to guide the development and direction of the interviews, but which didn't determine the exact forms of the questions to be asked. The structure of this template reflected the theoretical foundation of the research but included also more open-ended parts of the interview, such as an open description of the history of cases. Changes to the template were made after the first interview regarding the order of the questions to meet a more natural flow of discussion, and researcher also guided the direction of the interview away from the structure offered by the template, to extend the discussion naturally deeper into themes and events brought up by the informants. Several other tactics, such as probing questions and critical incident questioning (Saunders et al. 2015 pp.407–408) were used during the interviews to develop the discussion and bring up themes that the informants considered relevant to discuss further.

Table 3. Conducted interviews in the data collection phase.

Informant	Date of interview	Managerial responsibility	Discussed case(s)	Approximate duration of the interview
I-01	23.6.2022	Business team management	Iiris	58min
I-02	29.6.2022	Operational supervision	Iiris	107min
IP-01	29.6.2022	Top management, business division level responsibility	Iiris & ProDiary	72min
IP-02	29.6.2022	Upper management, supervising several business teams	Iiris & ProDiary	104min
P-01-1	30.6.2022	Operational supervision	ProDiary	115min
P-01-2	30.6.2022	Operational supervision	ProDiary	107min

The interviews were conducted primarily through a video call due to logistical reasons, except the interview with informant IP-02, with whom the interview was arranged within the office spaces of the case company. The duration of the interviews was restricted by the ability of the informants to allocate their time of the research, and therefore the interviews were arranged within predefined time slots, to prevent running out of time surprisingly. The interview with informant P-01 required more extensive discussion, and a second interview was arranged later during the same day, to go through all the intended themes. Informants were willing to discuss the themes extensively from their own viewpoints, and researcher considered the interviews to be successful regarding the informant participation. The interviews were recorded for further analysis, but the recording part of the interviews was preceded by a discussion, in which some formal aspects regarding the recording requirements such as the usage of the interview data were considered. Researcher additionally took handwritten notes during the interviews, which included taking notes on certain keywords and most important information. Most of the interviews

took about 1,5–2 hours to complete, and the time estimates provided in the table 3 present the length of the interview tapes. The estimated interview durations exclude the preliminary discussion about formalities.

The data analysis was characterised with a deductive approach to the theory development, which formed the basis of the data collection, and determined a suitable process for analysing the data. The first part of the analysis was transcribing the interviews, which was carried out partially by utilising transcribing software, but researcher had to additionally review and edit the transcriptions for allowing proper analysis to be conducted. This data cleaning included correcting errors in the transcriptions and rearranging the text to a proper format. After the interview data was processed to a suitable file format, multiple copies of the transcriptions were printed for further analyses. Research included a descriptive extension of the otherwise explorative study, and this was displayed through development roadmaps regarding both cases. The intention of this part of the research was to produce a clear image of development histories of both business models, and the related analysis included creating a historical timeline of the events mentioned in the different case interviews. The handwritten notes during the interviews formed the initial draft of this timeline, which was then transferred to a digital format for further editing and formatting. This part of the analysis didn't yet include other analytical methods, and therefore the researcher obtained first an overview of both cases before further analyses were made.

Thematic analysis was used as an approach to conduct the primary analyses of the research material. Thematic analysis forms the basis of qualitative research (Saunders et al. 2015 p.579), and it was necessary within the context of this research to enable going through the relatively long and disparate interview data. Due to the deductive nature of theory development, the coding related to the analyses was also mostly theory driven and included *a priori* generated codes for initial theming of the interview data. The initial coding was carried out twice for both cases, first regarding business model portfolio interactions, and then later regarding the dynamic capabilities. The role of the initial coding with predetermined codes was intended to classify the materials and data to carry out further analyses. Practically the coding was carried out on paper with different coloured highlighting pens, and with additional notes taken beside the text when necessary. The two different analyses were carried out independently from each other, on different copies of transcriptions.

The initial coding was followed in both analyses by data driven coding, with researcher generated codes, which were then used to further elaborate the findings highlighted during the initial coding. This part was carried out by transferring the findings from the initial

coding to a computer spreadsheet file, in which each line represented a separate piece of interview data with corresponding codes. This method was used with both analyses regarding the portfolio interactions, and dynamic capabilities. The results from this coding were then regrouped in the spreadsheet and discussed as groups of themes in the research. Additionally, the findings from these analyses were then utilised for building explanations of their relationship and connections, by utilising the theories underlying this research.

4. CASE 1: IIRIS

4.1 History and phases of development

4.1.1 Characteristics of the business model

Iiris is a system monitoring software service offered by Digia, enabling customers to monitor their applications, systems, and other IT infrastructure. The service is based on a packaged collection of both open-source and few licensed commercial technologies, which have been utilised to enable high compatibility with different customer environments. Iiris can be described to be a SaaS -product, as the solutions appears to customers as a unified whole, offering a product-like experience, with a system that is hosted by Digia (I-02). Although, the solution isn't a pure software product in a sense that the customers are not able to implement the solution to their systems fully autonomously (I-01) and the implementation phase therefore includes a small installation & configuration project (IP-01). Due to this, the service component is also very strong part of the solution, and it cannot be separated from the Iiris solution (I-01).

The nature of the business model has effects on the operational characteristics and pricing model utilised. As the technology and product behind Iiris forms the very core of the value proposition, constant technological development is necessary to enable the product to keep up with the development of the information technology it is intended to monitor (I-01). Thus, product development is a crucial part of the business operations, which enabled building the core product of Iiris, and complement its monitoring capabilities and system compatibility. Internal product development incurs non-chargeable costs for the business, but this is compensated from the service fee of Iiris, as the costs of running the service after implementation is restricted to the hosting expenses and purchased licenses (IP-01). Service fee of Iiris depends on the features utilised, and more extensive utilisation leads to a higher service fee (I-02).

Iiris business model has significant differences with the dominant IT consulting, service, and project business model of Digia, as most revenues for Digia comes from either delivering work or third-party licenses (I-01). Although Iiris is not the only business based on commercialising own intellectual property in Digia, it still has unique characteristics compared to other business areas of Digia, such as the feature based pricing model and combining the strategies of forking open-source technologies and building own intellectual property in the product development (I-01). The other product offerings are organisationally unrelated to Iiris, and their development paths have not crossed during the

developmental phases of Iiris. Product based business models represent a clear minority within Digia, and despite Iiris concept was born out of a firm level product strategy established in 2014–2015, this strategy was soon quietly abandoned, and Iiris became eventually the only surviving product to live to this date, as the other concepts withered during their early life struggles and couldn't make commercial success (I-01). The history of Iiris is visualised with the timeline in the end of this chapter 4.1., in Figure 8, and the rest of this chapter describes the developments happening in three distinct phases from the early stages to the most recent developments.

4.1.2 Early-stage development

Building competences from various information technology fields seems to be an important precursor for the establishment of Iiris service. Digia was offering services within the fields of integration development and monitoring to many strategic customers, and building these competences is one of the key elements later, when the Iiris service was conceptualised and implemented (I-01). In the early days, integration monitoring services were part of the service offering related to integration services, but it wasn't until 2015, when the Iiris service concept began to materialise. The concept was put forward in 2015 through a product idea competition, which was part of the firm's product strategy at that time (I-01). The idea came from the business manager in charge of a line of business within Digia, and after getting through the process of assessment and evaluation, developing the core product and service concept began (I-01). The product strategy was abandoned later within Digia, and Iiris was eventually one of the only concepts that survived to live this date (I-01).

The monitoring service concept was released in 2016 with Pulssi brand name (I-01), but the following couple of years were still characterised by a slower development and gradual formation of the service and product. The development during this time happened with the resources available within the line of business, and the first two years the concept faced significant opposition and critique within Digia, e.g., regarding the strategy and technological choices (I-01). During this stage, as the concept was still part of integration development business, the development teams received support from other persons within the same line of business, especially in the form of ideas, consultation, and suggestions for the development of the service, as they saw the possibilities of the new solution to offer relief for many of their own struggles with customers and different systems (I-02).

The development of the service concept happened with only very few developers in this early phase of the service, with the team composing of 1–3 persons during the beginning

of this early development phase (I-01). A key person, who eventually became known as the "master mind" behind the solution, joined the development team soon after the original service release in 2016 (I-01, I-02). He was recruited recently for Digia's integration development team but found the then called Pulssi -concept more intriguing and took more responsibility over its development. The internal motivation of this person drove the development of Iiris and pushed the original vision of the concept forward (I-02), ultimately becoming recognised as the leading character and main responsible person for the success of the service (I-01). In the end of 2017, Digia's Service Center was established, serving as central support function to the customers of Digia, and at this point the support services related to Pulssi were also transferred to transferred to Service Center (I-02, P-01-1)

4.1.3 Growing with co-development

After gaining some traction within the existing customer base, Pulssi service was separated into a different delivery group in 2018 (I-02) while it was also rebranded to Digia Iiris due to IPR (intellectual property rights) related customer conflicts. Until this point, the service concept hadn't yet taken its proper shape, and many areas regarding the product and the operational model needed improvements (I-02). Additionally, the service was still in a very fragile state considering its future in Digia, development efforts had happened within another delivery group, and in some way the change in the organisational structure was hoped to give certain protection for the development of the service (I-01). The main struggle with this less significant business model, when comparing to the rest if the firm, was that there wasn't quite enough of revenue or customers to keep the wheel on turning. Iiris was lacking the much needed "critical mass", in form of revenue streams and customer base, to create a stable foundation for more independent development (I-01, IP-02).

Things were about to change, as in 2018 a strategic customer got interested about the possibilities Iiris solution, and the phase of early-stage development was then followed by a period of strategic customer co-development, which fuelled the growth of Iiris business (I-01, I-02). The strategic customer had been a Digia's existing customer within the integration development domain, and in 2018, despite the certain flaws in the Iiris service operational model, this customer saw the possibilities of the solution for them, and they wanted to take Iiris into use (I-02). Iiris service was first utilised to complement the existing services around the integration development, but customer wanted to enable the utilisation of the service also for other areas of their systems, and later that year Iiris

service was expanded significantly within the customer, also outside the existing collaboration efforts (I-02).

The solution wasn't yet ready for all the capabilities customer was aiming for, but as there wasn't any similar products available in the market, the value proposition of Iiris seemed worth the investment of collaborative development efforts. As a part of the service, customer paid for certain custom development work Iiris teams did to develop the product to meet the requirements of the customer, but in turn they expected improvements to the product, which were carried out as Digia's internal product development (I-01). This mutual arrangement and partial sharing of the development costs lowered the investment risks for Digia significantly, but they also enabled the customer to purchase a customised and comprehensive monitoring solution with an affordable price. Digia still bore the most significant amount of costs related to the development (I-01), but without the strong need from the customer side, these product development efforts would have been less likely to happen, considering the current stance of Digia management towards these development investments (I-01). Co-development enabled gaining the critical mass needed to lift the service up from a danger of being killed, gave more resources for developing the service further.

The co-development phase was characterised by many organisational changes. First, the role of Digia's integration team was still very central during this co-development phase, as they had been working with the strategic customer for a long time already, and they had very good understanding of the customer needs (I-02). A separate delivery group was also founded, to which the Iiris service would be transferred (I-01), but the change was gradual, and many employees from the Iiris team continued to their work from the integration development team, before being officially changed to the new unit, to which already some new recruits were assigned (I-02). Despite the Iiris related development still was carried out by the Iiris team members, the role of integration team was important in giving ideas about the direction of development and insights from the customer needs (I-02). There were also many changes in personnel during this time in the Iiris team (I-02), and after the team was settled to the new delivery group, new recruiting mostly happened from outside the firm (I-01).

4.1.4 Scaling up after initial crisis

The growth of Iiris business helped to develop the service and enabled expanding customer base, but expansion required significant changes in the operational model to meet the expectations of new customers. The service received a second strategically important customer in 2020, as a customer from Digia's integration development services

showed interest towards the service, and a small proof of concept was built to the customer environment (I-02). Product seemed promising, and service delivery began in early 2020. However, after a few months of service customer communicated their dissatisfaction with the delivery model and costs associated to setting up the service, and announced that the Iiris would be terminated immediately, unless Digia is possible to change the way how Iiris is delivered (I-02). Despite Iiris was partially a SaaS -product regarding the way the product is hosted and delivered by Digia, Iiris still required significant amount of customisation and installation work in the setup phase (I-02). Unlike with the first strategic customer, this second one wasn't willing to tolerate the inefficiencies regarding the operational and delivery model, and thus they assumingly expected more of a ready solution for them. The importance of this second strategic opening was still extremely high, and Iiris service thus faced a crisis, during which it had to either change things rapidly, or give up this new possibility.

Iiris team consulted Digia's internal stakeholders regarding this second strategic customer, especially the integration development team and its managers, as the customer had already very well-established relationship with that team (I-02). Integration development team had been working with the customer already for quite some time, and they thus had a very good understanding about how operations should be carried out with them (I-02). Iiris team thus adopted agile working methods, improved the process of setting up the service, and utilised more effective tools and systems for enabling more systematic and faster working methods, and all of this was achieved practically as an overnight success, according to informants (I-02). Iiris was able to expand the service with this second strategic customer, and by reducing the inefficiencies related to the setup phase of the delivery, service became more attractive for wider audience.

After acquiring the second larger customer, Iiris had already gained a good momentum, and the further development has dealt with how to scale up the business. Despite the product development had been carried out independently by the Iiris team since the early days of the service concept, in 2020 Iiris product development team received support from central management functions to further improve its product development vision (IP-02). This included positioning the product with competitive offerings in the market, new perspectives for selecting the product features to match customer needs with higher feasibility and exploring the possibilities for improving the data utilisation and analytical capabilities of the product through a firm level data campaign, Value from Data (IP-02). During that time, Iiris was positioned in a delivery group with P&L (profit and loss) responsibility, and within that group in a Service Insight and Monitoring (SIM) focus area

(IP-02). The recent faster growth of the business insisted Iiris team to reorganise internally to allow scaling up the organisation.

Between late 2020 and early 2021, Iiris team and SIM delivery group reorganised internally to match its internal team structure to match the current operational model (I-02). Iiris team was organised with both dedicated functional teams, combined with separate virtual team structures. New team structures included separate R&D team for product development, DevOps team to handle the incidents within Iiris service and maintain service availability, customer specific micro teams for project deliveries, and a sales team to manage sales support and cases (I-02). The current team size is approximately 20 persons, and almost everyone has a dedicated team position, and only a few key persons work universally across all the functional teams (I-02). Although persons have their own dedicated team positions, borrowing people from one team to another is usual (I-02). This reorganisation supported scaling up the organisation, to match the structure with the growth expectations and increasing number of personnel.

The most recent developments with Iiris have been related to improving its sales and marketing and adapting to firm level changes inside Digia. In mid 2020, the current delivery group in which SIM focus lived was broken down and separated, and SIM area joined Secured and Scalable Solutions delivery group (I-02). Following the recent growth of Iiris, alongside the organisational changes there were joint development efforts with marketing to increase sales lead generation, e.g., in forms of search engine optimisation and marketing campaign design (IP-02). Also, synergies with other business areas were investigated, and Iiris was offered as an optional extra with offers delivered by other business units, which has compatible deliverables with Iiris (IP-01, IP-02). During 2021, Digia's business units were reorganised, and the SIM focus area moved from Intelligent Solutions (IS) business unit to a newly founded, Managed Digital Core (MDC) business unit, while similarly Iiris was moved to a Scalable Solutions focus are, to enable synergies with offerings sharing similar business model (IP-02). There were efforts to jointly improve e.g., the product development processes of these different solutions, but the benefits of keeping the solutions separate from each other were concluded to be greater, and Iiris returned to its own SIM delivery group in late 2021 (IP-02). Currently SIM delivery group offers third party monitoring solutions, which represent competing offerings regarding Iiris, but utilise the same system monitoring competences present within Iiris team (I-01). Iiris still remains the most dominant business within SIM delivery group (I-01).

4.1.5 Development roadmap
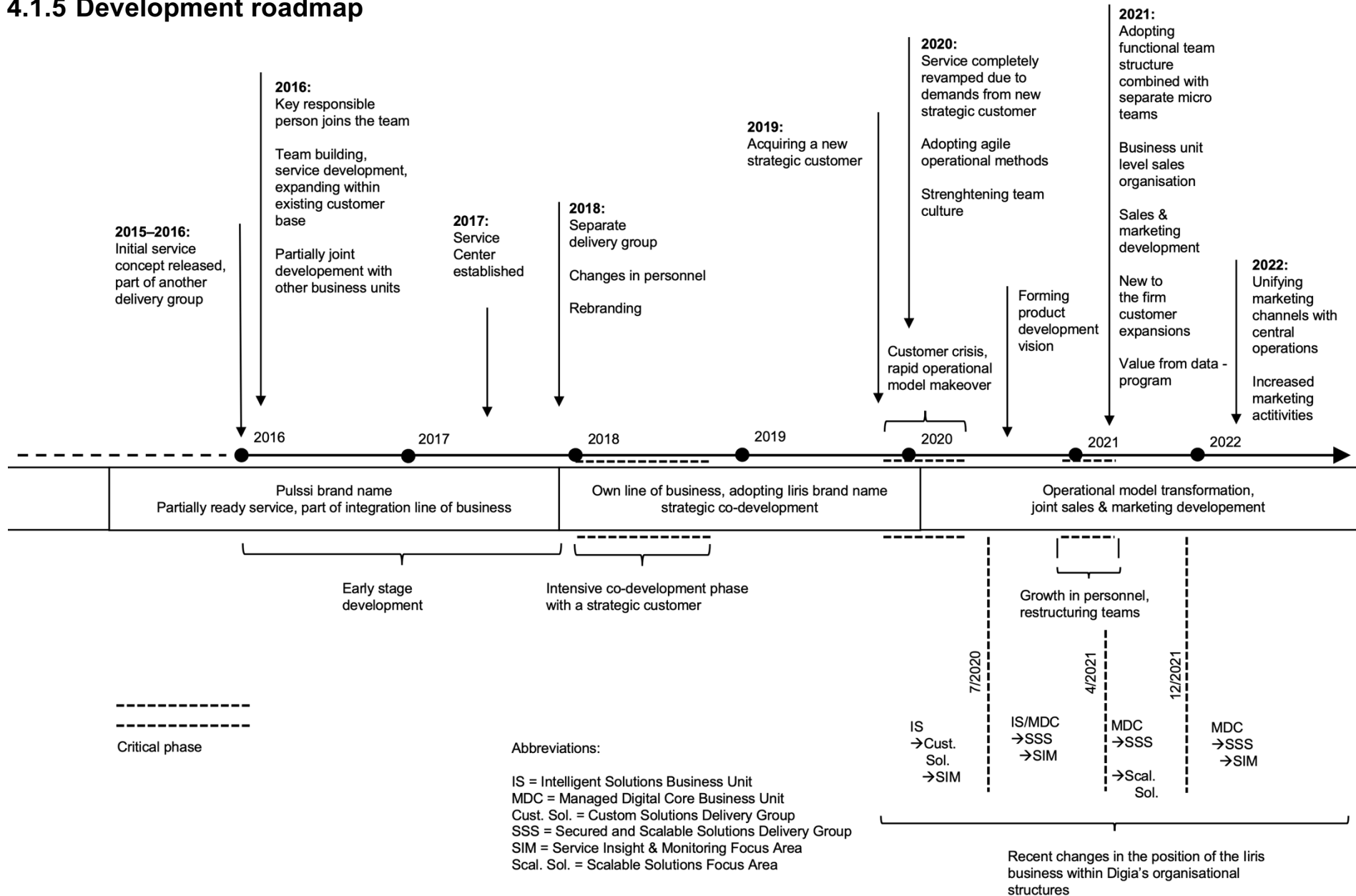
Figure 8. Developmental phases of Iiris business model.

4.2 Business model portfolio interactions

Even though Iiris business model was viewed largely as isolated from Digia's primary business, and capable of operating by itself with a dedicated resource base (I-01, I-02, IP-01, IP-02), results from the interviews revealed that there are several areas, or *effective domains,* of sharing occurring between Iiris business model and Digia's primary one. The types of shared items, their effectual domains, and evidence supporting them are presented in Appendix 1. Recognised sharing is analysed from both supply and demand side sharing perspectives, namely by recognising supply side elements of shared activities and shared resources, but also assessing customer sharing from the demand side. Finally, conflicts relating to the sharing is discussed.

4.2.1 Supply side sharing

Product development

The software product behind Iiris monitoring service has a very central role in the value proposition, and therefore product development is also at the very core of Iiris business operations (I-01). Technology, and intellectual property rights to technology, are important resources for Iiris business model:

> *"…Even though we use open-source components, our case is different as we combine them and in certain areas develop our own intellectual property."* (I-01).

Iiris is built from both proprietary and open-source technologies, and even though open-source software is accessible by any firm, the competences relating to that technology are still important resources, and this can be seen also from Iiris business model. As all proprietary technology within Digia is owned by the company itself, it had a certain freedom to make use of technologies in its possession. Iiris has been also beneficiary in this regard, as certain technologies acquired by Digia has been integrated to it:

> *"…when Digia originally bought [a company], they had this log message monitoring, and at some point, it was integrated to Iiris…The log message monitoring functionality of Iiris is implemented based on that, even though it has gone through a lot of development by now." (I-02).*

Besides from technology, also technological competences are important inputs for Iiris business model, and especially in the early days of the service their sharing has been more significant, or it can be even stated that Iiris product has emerged from these common competences:

> *"All our monitoring competences was in the beginning related to the work with [a strategic customer], which was exactly the same work, and we were able to utilise people and know-how." (I-01).*

Iiris has only a little formal sharing between it and Digia's primary business model relating to its product development, but the sharing allows to expand Iiris team's capabilities regarding user interface design and development:

> *"…regarding the product development, [Iiris] is more of a stand-alone unit, but some know-how is utilised from Digia's other units for the development. For example, some know-how has been used from UX team in the product development recently." (IP-01).*

This sharing can also be occurring to other direction, outside from the organizational unit of Iiris, to other business areas of Digia:

> *"…we have one developer…as a system architect for [Iiris team]… Or his main job is this, but he works also for other business areas if required. Other work, which has nothing to do with Iiris." (I-02).*

Using development resources from other business areas of Digia has been carried out occasionally also through firm level campaigns, such as Value from Data -campaign for recent example:

> *"…data and analytics area, in which artificial intelligence and machine learning functionalities has been tried to implement in Iiris by our data scientist / analyst competences…Digia had this Value from Data -campaign little over a year ago, to which Iiris participated as a system, or as a first system in it. A machine learning use case was developed in it, which was then implemented with the analytics team." (IP-01).*

This campaign is an example from a type of sharing in which both resources and activities merge, and it becomes difficult to separate whether it is resources, activities or both which are being shared. This merging is present with other effectual domains also, as we can see later from this example of cooperation, where support services providing Service Center also relates to the product development of Iiris:

> *"…Center has been the level 1 support, and the integration log monitoring implementor and operator…And now when we are developing new version of the log message monitoring...its role was increased even further." (I-02).*

Operations

Whereas most of the product development still occurred solely by the Iiris team, operational activities and resources are shared much more with other business areas of Digia. This sharing doesn't occur primarily through formal resource reallocations, as was the

case with the user interface development resource. Instead, sharing was described as common work between Iiris team and the other business areas:

> *"[monitoring] is a type of domain, in which we cannot do everything alone, as we don't have the competences of Digia's 50 other businesses in our team, nor it is feasible to obtain it, so we collaborate." (I-01).*

Common work therefore occurs, when the two business areas have a need to match their competences.

Practical examples were brought up from the collaboration between Iiris team and Digia's integration development teams, and the cooperation between the two distinct areas is seemingly tight also regarding the actual operations of Iiris service. For example:

> *"…the integration team was working with it in a close cooperation, because [a strategic customer] integration monitoring was important part of it, and with [a strategic customer] the systems relating to those integrations are part of it." (I-02).*

Two different operational teams seem to share a good understanding about what work belongs to who, but collaboration still enables important information sharing and competence matching for faster and easier completion of the job at hand, thus supplying important knowledge resources for Iiris business model and its operations. The required integrations can be also considered as an important part of the setup or configuration phase of the Iiris product, and therefore handing over the responsibility over that part of work to some other business area releases resources from the installation phase and can be argued to be also a resource for Iiris.

Collaboration is also not always just operational work or product development, as there was an example where Iiris and integration development teams collaborated to enable reorganizing Iiris operations:

> *"…and then we took quick consultation within Digia, and we received [help] from Digia's integration team, as they were working with [a strategic customer] and developing integrations for them…and then we were able to change to an agile operational model right away." (I-02).*

In this case, collaboration happened in a form of consultation or general support, for managing the Iiris team and its operations. Although a minor detail, but it also showcases how the informal part of sharing can occur.

Similarly, as with product development, it was difficult to differentiate between resource or activity sharing, and they seemed to go pretty much hand in hand. Although the information and knowledge sharing were the most evident and they also contribute to the

competence sharing in a sense, it seems that also time, monetary and personnel resources are exchanged in this informal resource sharing, or common work, through division of work. This is mostly related to those cases, where the operations included work with a shared customer, and especially present regarding the cooperation with the integration team. Shared operational activities, on the other hand, marked those areas, where these resource transactions took place.

Support services

The role of support services, especially regarding Service Center, was emphasized. Service Center plays a key role regarding Digia's operations in general, as its function is to offer support services to customers of Digia's all different business areas regarding continuous services and various support tasks. But with Iiris, the role of Service Center wasn't limited to that. Before, there was already mentions about Service Center's role regarding the product development of Iiris, and the reason is that Center is also a customer of Iiris, and they use it to support their own operations:

> *"Service Center has two roles with us, Center…monitors Iiris. We monitor Iiris with Iiris, and it's Center's job to recover Iiris, if there are problems with the service. But then we have Center also for customers, if customer has purchased service support from Digia's other business area, e.g., integration services, Iiris is used to monitor those integrations. Digia's integration team develops those integrations, and Center then recovers them or monitors them with Iiris." (I-02).*

Besides Service Center using Iiris product to support their customer serving activities, they also offer support for Iiris. In addition to these, Service Center can also be used to assist in the operations of Iiris:

> *"…we notice it, [Service] Center does it, and it is really close cooperation. To the other way, when we collaborate, Center utilises the dashboards of Iiris and takes action, checks up the logs, and what has happened. We on turn utilise Center, and Center authorises people to access Iiris to do certain configurations to there etc. So, the cooperation is very close." (I-01).*

Iiris and Service Center has therefore a specific and quite complex relationship, as it involves product development consultation towards Iiris, tight operational cooperation, customer relationship between Service Center and Iiris, but then also the standard support functions, that Service Center is supposed to offer to customers from different business areas of Digia, also from Iiris. It is therefore extremely crucial, that this cooperation is efficient, to avoid inefficiencies created by the complexity of the relationship.

Service Center clearly shares multiple different activities with Iiris, and from activity perspective the between complexity regarding these common activities is very high. Although, similarly as with sharing in the operational domain, Service Center seems to present a significant resource to Service Center, sharing in practice both knowledge and developers with Iiris, but also offering support to take care of incidents, and thus freeing time from Iiris team for other operational tasks. But due to the high complexity, it might be difficult to tell which party benefits from this relationship more. However, Service Center still has a crucial role with Iiris business and separating these two might have significant disruptions for the resource flows and activity system of Iiris business model.

Sales

Alongside the support functions of Service Center, marketing and sales functions are completely centralised in Digia, and these were the most recognizable formal central resource sharing occurring between Iiris business and Digia in general:

> *"…we have Account -based sales model, which has been used to deliver the [Iiris] offering for wider audience…and now after the solution sales came to the picture, [Iiris] has been taken to customers increasingly often with an offering first principle." (IP-01).*

The centralization comes from an Account -based selling philosophy, which includes arranging sales activities per customer, and approaching customer with Digia-level offering, instead of pushing a certain product or service. Solution sales on the other hand, has a different role in this, as their function is to focus more on a certain offering, and thus give more emphasis e.g., for Iiris as a product.

The centralization of sales functions dictates how the sales activities are mostly arranged, but it also has consequences regarding the division of sales work and effort between different business areas:

> *"Digia's model is that the sales function is primary centralised…In that area we compete from sales resources, and how much we can get sellers to sell our offering, whether it is Iiris or ProDiary." (IP-01).*

This competition stems from the prioritisation sellers make when working with customers, and what priorities customers on the other hand bring up, to which sales then responds. As the offerings are seen as competing in the eyes of sales, it suggests that sales resources can be possibly a critical resource between Digia's different business areas, or business models.

Marketing

Marketing function was still brought up often in the interviews when discussing shared activities and resources between Iiris and Digia's other business areas. Marketing includes activities carried out by the firm, and it also has limited resources for its own activities:

> "…it was considered what marketing could do with search engine optimisation, web sites and in lead generation area, so that kind of marketing activities." (IP-02).

Marketing activities of Iiris are also connected to the sales function through the lead generation, and therefore resources successfully allocated for marketing activities, can produce successful results regarding the sales. Similarly as with sales, marketing resources can also have limited availability:

> "Digia has very broad offering, and therefore is has to be considered what kind of message will be delivered outside…Regarding Iiris the situation is good, it has been brought out more, but then different marketing campaigns, lead generation, and other actions easily get prioritised lower, than campaigns of some larger business area." (IP-01).

Even though same competition setting wasn't brought up in similar regard with marketing functions as with sales function, scarcity is also present in marketing resources, which increases its criticality.

Besides from the functions of marketing relating directly for customer channels and relationships, Digia's marketing had a very active role with certain early-stage developments of Iiris, such as its rebranding:

> "…they announced that Digia cannot use the Pulssi -name, then we changed it. Marketing team was working with it intensively…Then we received the new name and branding, new logos and everything, it was very uplifting for the whole team." (I-02).

Iiris therefore has received occasional but important support regarding building its brand image from Digia's central marketing functions and has clearly a beneficial role for Iiris and the development of the business and can be therefore considered an important resource.

Whether marketing represents customer channels or value creation activities and resources for a business model is a good question. However, if marketing activities wouldn't be offered as centralised, they would need to be carried out by Iiris team. This speaks for including marketing in the supply side sharing elements, although marketing is connected to customers and customer channels. Maybe the important distinction here

is the input versus output; resource inputs to and from marketing are expected to bring up outcomes regarding customer channels and relationships, but the inputs by themselves do not guarantee the outcomes, and therefore marketing can similarly supply inputs for Iiris business model by their operations, but they do not directly create the outcomes.

Management and governance

The last effective domain which was recognised to have significant effects for running the Iiris business model were the centralised managerial functions, in relating to them, certain governance structures. Especially budgeting had important implication on Iiris business:

> *"…the starting point is that [Iiris] business is profitable…So the product development budget is depends on how much we can generate revenues from the business…product development budget isn't competing, as there aren't so much up-front investments made to Iiris anymore, its own business has to finance the product development..." (IP-01).*

Therefore, due to the shared governance, Iiris is imposed to same budgeting and similar metrics, as other business areas with a different business model. Therefore, the budgeting activities restrict resource flows to Iiris business, but also guide the prioritisation of product development projects.

Central managerial functions are not only related to business governance, but they include more active activities in addition. Although Iiris team and its own delivery group manager has a lot of freedom and responsibility for achieving the set business goals and objectives, centralised management function are used to give business development support for Iiris:

> *"…both [Iiris and ProDiary] are very small teams. This means that there isn't all the know-how, especially about business…Both areas have the potential to grow faster than what has been historically, and we have aimed to bring support for that more widely in our delivery group and business unit level, so that we could support and bring know-how, tools and resources for the business development." (IP-01).*

The development support is intended to offer resources and tools for decision making closer the actual business operations, and therefore guide reaching the business objectives and firm budget related metrics. Managerial functions and business governance are not directly related to the value creation activities in Iiris business, but because of their importance and relationship with e.g., activity prioritisation and resource allocations they should considered in the analysis. And similarly, as with marketing, there should be

probably more internal managerial resources and capabilities in Iiris team internally, if there wasn't external support offered in this regard.

4.2.2 Demand side sharing

Customer groups

Demand side sharing between Iiris business model and the primary business of Digia was related to two different areas: sharing of customer groups or individual customers of those groups and sharing of customer needs. Sharing of customer channels was not brought up in the interviews, and is thus not present in the results, but certain findings, e.g., regarding centralised sales and marketing functions, suggest that also customer channels are shared. Most of Iiris customers were shared with the other businesses of Digia, and especially strategic customers shared with the integration development team were highlighted:

> *"Most of the cases, I would say 80%, are those in which we work together with some other business area or Service Center, and this is where [customer work] has begun or how we got in." (I-01).*

The most important reason for this high level of sharing customers seems to be related to the value proposition of Iiris, which had high compatibility with the offerings of other business areas of Digia:

> *"[Iiris] basically fits better to the other offerings and other business and therefore goes better along the other offerings throughout the firm… [Iiris] is a type of solution, which supports the goals of other business areas as a monitoring solution. It makes them more complete and credible as offerings." (IP-02).*

This compatibility if witnessed as synergies between the offerings, and therefore the offerings together share a larger customer need, which can be fulfilled by not only the separate value propositions, but instead with the joint value proposition. This synergistic behaviour is named here as sharing the value proposition, because it is connecting the Iiris business model with the primary business model of Digia, and it was seen as important connecting factor by the interviewees.

The reason for merging the value propositions seems to be coming from the customer side, related to the way they see Iiris value proposition, and this is also reflected to the way the solution is offered to customers:

> *"…if assessing honestly, most of the customers should be Digia's existing customers. If we do only monitoring, it isn't profitable enough in the long run. Customers do batch the monitoring with the system or business we deliver, or alternatively with the operating or cloud service we provide." (I-01).*

This bundling is interesting considering the SaaS product nature of Iiris, compared with the nature of Digia's service and project work deliveries. Sharing a need customer need can be a bit confusing term, as it could also relate to sharing of competing offerings, when it would lead to direct sales cannibalisation. But then again, in the case of cannibalisation, there wouldn't be *sharing* of a customer need, but only competing about the customer need. This highlights that the sharing connection between different customer groups can be deeper, if the value propositions can share the customer need between them. Eventually somewhere down the line, the customer need presents itself in a form of a spending budget, and at least this will be shared between the two value propositions, despite their complementary nature, and therefore their ability to share this budget contributes to the demand side sharing of the business models.

4.2.3 Conflicts

Sales

Despite the complementary nature of Iiris with Digia's other offerings was largely seen as strength, the dependability of other offerings seemed to create conflicts between Iiris and other business areas, as Iiris was often not prioritised as a result:

> "…if [Iiris] is part of some of our other deliveries, the core is the system being delivered… this other model, where we would be selling with situational awareness or monitoring value proposition first, doesn't work well with that model. People who sell it, and the whole sales case is built around ERP, D365, or integrations, and it isn't very actively pursued the more larger use case." (IP-01).

The conflict occurs with individual sales cases in which Iiris is offered as a part of another delivery project, as Iiris might not be actively pursued by sellers, whose primary objective is to sell the primary system or project of interest. When looking at the sales function more generally, prioritising other sales cases with sales activities can be also happening due to the lower contract value related to Iiris deals:

> "From my opinion, the conflicts are specifically in sales and utilising sales resources. Digia's model is that the sales function is primary centralised…In that area we compete from sales resources, and how much we can get sellers to sell our offering, whether it is Iiris or ProDiary. The biggest problem is that these are relatively small deals... from sales perspective, it is more affordable for them in the short term to sell some larger delivery..." (IP-01).

Because of the lower value status, centralised sales functions can apparently begin to reject picking up these cases, which ultimately causes problems directly with growth of the business area.

Marketing

Overall, centralised functions of sales and marketing are considered to have similar issues regarding sharing, and this was a result of prioritisation occurring within marketing:

> *"…using certain centralised functions can be hard, and there is that prioritisation in the firm level about marketing and sales." (I-01).*

Marketing in Digia needs to be vary about the overall message it delivers to customers, and the rationale for prioritisation is related to being careful about not crowding the customer channels unnecessarily:

> *"Same challenge exists regarding marketing. Digia has very broad offering, and therefore it has to be considered what kind of message will be delivered outside… Regarding Iiris the situation is good, it has been brought out more..." (IP-01).*

Iiris might be more easily getting resources from marketing also because of the high compatibility it has with the other offerings. However, as marketing operates as centralised unit, their way of working can occasionally differ from the ideas and decision making happening within the business areas. This has evidently led to a conflicting situation, due which Iiris team had to terminate their newly established support website for Iiris:

> *"…with marketing we had this kind of challenge, that we came with an idea, and we made a WordPress site for Iiris, and then marketing tells us that you cannot create websites just like this, and the whole thing was stopped because of it." (I-02).*

Iiris team had to therefore rely more on marketing regarding the matter, even though marketing resources do not always seem sufficient.

Operations

Regarding the operational domain of sharing, a few less severe conflicts came up, which exist currently. First, the tight cooperation with Service Center seemed to have blended the boundaries of the two different functions, and these have led to certain confusions with the other business areas and customers. Especially incident handling seems to be a source of confusion:

> *"...if customer's system gives an alert, that has nothing to do with us. Iiris is just for informing about that incident…if customer has the 24/7 [services], we get mixed up the Service Center... You first have to explain this internally, and then to the customer, where the line is drawn." (I-02).*

Even though Iiris product monitors customer environments, it is not part of the services offered by Iiris team to react to those. This confusion has blurred the line not only in the customer side, but also within Digia, and additional work needs to be carried out to sort

out the details regarding the division of responsibilities between the stakeholders. Another area of conflicts within the operational domain of sharing were the internal costing between Service Center and Iiris, at least relating to the services Iiris uses from Service Center:

> *"We have argued about the costing forever with Service Center, about the internal costing… For internal costing reasons, we had to give up [customer wiki channel], we don't offer it anymore, it has been removed from Iiris… it was too expensive." (I-02).*

As a result, Iiris team had to settle for a sub-optimal solution by giving up a customer wiki from Iiris service. Also, Service Center uses Iiris services for their own operations, but it wasn't brought up in the interviews, whether the conflicts exist towards that direction. Lastly, regarding delivery operations involving sub-contractors, certain problems exist occasionally with the communication between sub-contracting parties and Iiris team:

> *"…they were working for Digia, but they were subcontractors… we thought that now we have a good conversation channel with them. We basically hit a wall; they weren't interested at all that we were from Digia..." (I-02).*

As it was brought up previously regarding the operational domain of sharing, it has been important part of Iiris team's operations usually to work in close cooperation with other business areas and especially the integration development team. As certain projects also involve sub-contractors, the collaborative work can become a bit more difficult, and this this can be seen as operation conflicts.

Management and governance

The most severe conflict regarding the sharing between business models seem to be related to the shared business governance mechanisms, which ultimately determine the possibilities to invest into the product development. With Iiris, there isn't official product development investments made anymore, and development budget of therefore determined by the revenue and profit targets set for Iiris, which determine the boundaries within which new development projects must occur. This has led into a conflicting situation, where the available budget is found to be insufficient for development objectives and achieving the growth possibilities:

> *"…we would have a lot of ideas and visions about the service, and a lot to develop, and then we have to put on the breaks, in order to also increase the income… it is a challenge to us, that there aren't enough R&D resources." (I-02).*

Practically, the lack of resources for development has had inferior effects for example regarding realising the development plans and ideas emerging from the firm level innovation campaign, Value from Data, to which also Iiris participated as a product:

> "We have good plans, but when we have the revenue target and profitability target, which guides our operations, we cannot invest in that level, which would have been optimal for achieving the goals of the firm level campaign…" (IP-02).

Shared governance therefore creates severe conflicts regarding the objectives of Iiris business, mostly affecting product development investments, but also affecting support functions. The governance related issues were most emphasised, and they came up very often in the interviews.

Customer groups and channels

The conflicts regarding the centralised sales functions and resources were also related to demand side sharing effects, through the complementary nature of the Iiris product in relation to Digia's other offerings. It seems, that even though that complementarity and therefore sharing the customer need enables Iiris to be offered more often, it is also the reason why it is often put away from the table, as it competes from the same spending budget:

> "…Iiris isn't expensive… but the additional expense isn't wanted there… it doesn't go there alongside everything else, and discussions begin depending on the need." (I-01).

Supplementary offerings can be seen also as disturbance regarding the customer's decision processes, and therefore sales tend to put them away to avoid disturbances in the customer channels:

> "…when they seek sales and growth in a business area…and closing a sales case is not wanted to be threatened, they don't want any complementing things… it becomes a phenomenon of the customer interface, that no disturbances are wanted, and also [Iiris] can be seen as disturbance..." (IP-02).

The complementarity has been crucial element in the value proposition of Iiris but merging the different value propositions together can also cause them to share the same customer need with other offerings, and this leads to competition setting from the customer's time and budget, creating difficulties regarding Iiris business development.

4.3 Dynamic capabilities

The portfolio interactions and sharing between Iiris and Digia's primary business model were regulated by dynamic capabilities of sensing, seizing and transforming through recognisable microfoundations. In the following, the capabilities are analysed and discussed independently, beginning from sensing capabilities and ending with transforming capabilities, while the recognised microfoundations and evidence suggesting their presence are displayed and discussed. The complete data coding with more comprehensive listing of evidence is presented in Appendix 3.

4.3.1 Sensing

Iiris product received significant developments in its early days during its co-development with a strategic customer, and the practise for tapping into customers knowledge and visions for the product was recognised a sensing dynamic capability, which continues to enable recognising growth opportunities and development directions for Iiris. Involving customers for the development, and benefiting from customer's visions and ideas contribute for this dynamic capability:

> "The [strategic customer]… was excited about this product and its possibilities, and they had future visions, which we have utilised in the development of Iiris." (I-02).

Even though Iiris had internal origin as a product innovation, sensing innovations from customer side enabled directing the development of the product, and enabled identifying potential growth directions, and features to be added to the product on a more practical level.

A constant scouting of external business environment was recognised to be present with Iiris business model, and this happened through both, firm level processes for technology mapping, and as repetitive practices on business team level. In Digia, Tech Radar is a technology mapping tool, updated and developed by the CTO office, and it represents the most recognisable process for scanning technological developments and scouting markets:

> "We have firm level processes for scouting markets e.g., a Tech Radar facilitated by CTO office." (IP-02).

Additionally, scouting external business environment occurred as business team level practices, which were both either carried out independently by the team as continuously repeating activities, or in collaboration with managerial support functions, e.g., regarding joint development projects (IP-02). The constant scanning activities by the business team was brought up in the interviews:

> *"We have to [continuously develop], the world, systems and technologies all change constantly about what can be monitored. We cannot offer our services without it." (I-01).*

Additionally, central management functions, or at least additional resources from them, was occasionally used for scouting, when they were related to certain firm level activities:

> *"…related to this firm level analytics campaign, it was considered what features is feasible to develop into the product. And also positions, we analysed how [Iiris] positions with third party products in the markets, the competitive setting, and what we should solve with Iiris, and what we should avoid investing into and solve with other products instead..." (IP-02).*

A signature development process formed the backbone of sensing capabilities related to Iiris business model, and this enabled agile R&D resource directing by a process, which was distinctive to Iiris team specifically:

> *"The way we produce our service and R&D, there isn't any ready model within Digia for it. We use de facto standards that exist in this development area. We've had to adjust and optimise them as our operations and customer base grow." (I-01),*

The development process constantly directs resource flows for building the Iiris product for matching the market needs, and it has been formed throughout the history of the team, to match the exact needs of Iiris development. An important note about the development process is, that process seemed to be optimised for utilising sources of innovation external to Iiris business team with it. Besides from the capability for tapping into customer innovations, also internal sources of innovation were used as important input for this development process:

> *"Center has been level one, developing and implementing customer's integration log message monitoring, and now when developing new version from it, they have been more important…" (I-02).*

Overall, the sensing capabilities of customer innovation, scouting the external business environment, and signature development process has enabled the development of Iiris product during its history, but they also represent the sensing capabilities of Digia as a firm. The sensing capabilities were especially important for Iiris business model during certain critical stages of its development, for example in the first phase of intensive development, as the sensing capabilities were actively used to spot the opportunity, and then to redirect the internal development resources for shaping it (I-01, I-02). But sensing hasn't only been related to the critical development stages, it has been also supporting the constant development, and a key for successfully guiding the R&D investments despite the restricted resources (IP-01, IP-02).

4.3.2 Seizing

The organisational structure of Digia at a firm level enables important structural separation for Iiris business model, which enables much of the ability to seize opportunities. Digia utilises a hybrid organisational structure, which is formed of both, functionally structured central organisation, and divisionally structured delivery organisation, which is formed from business units:

> *"Digia's organisation is formed from business units…every business unit is divided into delivery groups (DG)…in our SSS (Secured and Scalable Solutions) DG, to which Iiris and ProDiary belong, we have a focus area separation. Focus area is a P&L responsible unit inside a DG, a business team basically." (IP-01).*

This nested hierarchy separates Iiris as a solution from the business unit level metrics with the delivery group structure, but then further separates the delivery group to different focus areas, which all can have separate governance mechanisms. This structural separation enabled by Digia's organisational structure, enables creating important resource and activity separations, which serves as s fertile ground for seizing opportunities.

Selecting the business model is one of the key objectives of seizing capabilities, and Iiris business model has been formed as a hybridisation of a SaaS model, based on software product, and as a service delivery model, based on the billable work carried out for the customer (I-01, IP-01). This capability to create business model hybrids represent a very interesting and significant dynamic capability for Iiris business, as it differs from the dominant business model employed by Digia, which is based mostly on software project deliveries (I-01). The hybridisation is evident from the cost sharing occurred between Digia and its strategic customer, during the early days of the service:

> *"…within that project…we decided with the customer that they would participate for covering the costs, we would participate for covering the costs, and thus the first productization about a certain part of the system was made." (I-01).*

Although this cost sharing was deliberate in the early phases and accounted for redirecting the profits for product development, the business model also currently includes both revenue components, the service/platform fee (a SaaS component), and at least some amount of billable work (a service component) (I-01, I-02). Business model hybridisation capability has enabled benefiting from the presented opportunity, despite the required business model has either fought against the dominant model or might have seemed too risky when the opportunity has presented itself. Therefore, the capability of business model hybridisation has been an important variation of the business model selection microfoundation.

Iiris product has never gone through especially intensive development, but instead it the incremental development occurring throughout its history accounts for most of the development (I-01, I-02), and this has shaped also its value proposition, and currently it is also considered that how these different value propositions relate to each other (IP-01). Therefore, the value proposition of the product has evolved, which has been enabled by a capability of evolutionary solution development, serving as a seizing capability. Opportunistic behaviour of harvesting solutions and building the product in a step-by-step manner is at the core if this capability:

> *"We had a customer, though which we saw the potential and similar needs with other customers, and then we have slowly productised the solution we have made for one customer also for others." (IP-01).*

Evolutionary solution development is different from merely sensing the needs for new features, it is tightly related to the way the initial value proposition is delineated for the customer, as it also gradually changes the value proposition of the product for the customer. With Iiris product, this is evident from two distinct factors, from i) the overall value proposition has changed from a system delivery add-on for producing a more comprehensive situational awareness (IP-01), and ii) the occurred changes in required revenue and cost structures, as the initially the service has required significant customer inputs (I-01), but more recently the setup phase has become more lightweight (I-01). Both changes imply, that the overall value proposition has gone through gradual changes throughout the development of the product, and this change has been initiated by the specific seizing capability of evolutionary solution development.

In addition to incrementally building the value proposition, the boundaries for the value proposition had to be re-established, and this is also related to this capability of evolutionary solution development:

> *"…monitoring is sort of in every interface, and it is a little difficult to understand where the boundaries are. We have to be the ones to place those boundaries…" (I-02).*

The opportunistic solution harvesting has enabled building up the solution and its value proposition, but through this process, it seems to have become more difficult for both customers and internal stakeholders to understand the service boundaries (I-02). Reiterations to the value proposition through solution harvesting and constant boundary re-establishment balance the build-up process and form the seizing capability of evolutionary solution development.

As discussed in previous chapter about the sharing related conflicts of Iiris business model, the shared governance activities and structures imposed strict investment controls over the Iiris solution, and a specific dynamic capability has been formed to overcome this challenge. As the product development investments are viewed as an expense based on the business unit level profitability metrics, the investment 'budget' for Iiris is related to its costs, and profitability goals. Product development had been still carried out with the support from the management, by utilising the small leeway offered by expendable profit margin and strong investment prioritisations:

> "…inside the unit we can do certain prioritisations, and that's what we have done, we have certain areas, in which we invest, and in those the profitability objective can be smaller…" (IP-01).

This represents a seizing capability of microinvestments, carried out by the business team responsible for Iiris solution, to enable the necessary product development investments. These investments are small in amount, their timing needs to selected well, and a strong prioritisation is constantly going on for enabling the gradual growth of the service despite the strict financial controls imposed at firm level:

> "We have a given budget…a certain amount is invested for product development continuously to bring certain features." (I-01).

The dynamic capability of microinvesting represents therefore a set of different activities for prioritisation and selection occurring at individual, business team and organisational level, enabling just-in-time investments to be made from scarce available financial resources, allowing opportunity seizing for growth.

A strong and distinctive culture of trust and commitment has been associated with Iiris team, which has overall had very significant role as a seizing capability, and it can be witnessed from the working practices of the team. This culture has been formed throughout the history of the team:

> "What really helps us is that we have our own work that we do. Our own team, and own culture." (I-01).

Iiris specific culture form a part of the identity of the team, and it is denoted by a collaborative spirit, highly motivated individuals, volunteering, and active participation to team related activities:

> "We have described often that we are kind of a start-up within Digia. We have worked pretty much like start-ups, in very agile way, and with little hierarchy…titles won't help when we spar together and think what we do and how we do it, and all the team members participate actively..." (I-02).

The committed team culture was brought up in all the interviews, and it was generally accounted to have positive impact on Iiris team performance. However, trust, as an important component of the Iiris team's culture, has evidently offered protection for the Iiris business model very early in the development, but its importance is still significant for allowing forward looking decisions to be made:

> "…there has been need to create a kind of 'safe haven' inside the business unit for this kind of thinking, about how we can grow this, and how we can make clever investments, considering the market potential of the solution…" (IP-02).

The culture has been effective the most difficult and vulnerable situations of the development, in which there has been external pressures to either back off or halt development (I-01, I-02), but it has offered the team energy to perform and make progress also otherwise. The specific culture of trust and commitment within the Iiris business team has offered important protection, and thus created suitable conditions inside the team for seizing opportunities.

Additional characteristics present in Iiris team is related to specific entrepreneurial culture and decision-making characteristics, which forms the seizing capability if intrapreneurship. The capability is partially related to certain cultural components but is still separate from the organisational culture of the team and is instead more related to the decision-making characteristics and the way new opportunities are pursued. The role of individual talents has become very emphasized in the Iiris team, and these *Intrapreneurs* have been accounted for most of the credit regarding the ability to foster the development of Iiris business model successfully:

> "…to me this is practically [key person's] product. He envisioned it and built the foundation, and then it has been developed very firmly to that direction what he has wished for…there were other important people in the beginning, but [a key person], who was able to push it through the difficult stages, in order for it to become a real packaged service." (I-02).

The abilities and effort of individuals, the role of their work in the development, and the team embracing them shows how important these individuals have been for the success of the business model. This intrapreneurship characterises the way Iiris team sees themselves within the larger firm, and encourages for intuitive decision making, though which they often end up pioneering new things within the firm:

> "We in Iiris are often first ones at Digia to do things. Against my own suggestions, we have just done things without asking, and then we crash." (I-02).

The seizing capability of intrapreneurship is therefore not only an individual characteristic, although entrepreneurial individuals have important role for this capability to present

itself in an organisation. Intrapreneurship has accounted for making consecutive developmental decisions rapidly with Iiris, but it also establishes the foundational principles of ownership, based on which the responsibility over the solution is carried. This is especially important for Iiris, as it doesn't operate as an external venture, and it can be run over by the other strategic priorities within the same business unit. The seizing capability of intrapreneurship enabled responsive and effective decision making and execution of Iiris strategy, and therefore enables opportunity seizing.

4.3.3 Transforming

Building cospecialised assets

Iiris business model requires various specialised technological capabilities and combining different technologies for its value proposition. Technologically, Iiris is formed from third party (I-02), open-source and proprietary technological components (I-01, IP-01) and especially sourcing and managing open-source technologies and acquiring and building proprietary software requires certain organisational capabilities. Digia has been relatively active with mergers and acquisitions, and this has been reflected in the development of Iiris:

> *"When Digia bought [a company], they had this log message monitoring, and at some point it was integrated to Iiris…the log message monitoring in Iiris is based on that, even though it has been developed a lot." (I-02).*

Through the acquisitions, Digia's available technological repertoire and asset base of intellectual property has grown, but utilising these for growing single solutions within the firm requires reconfiguring the assets and transferring them for the use of eligible units. Building up intellectual property, and negotiating IPR with customers has been important step in this process, especially as the hybrid business model has in certain cases caused issues in this regard:

> *"…a customer claimed the IPR to be theirs…we ended up rebranding the service concept…" (I-01).*

In addition to technologies, there has been also a need to combine specialised technological competences and capabilities with Iiris. Iiris requires understanding of open-source technologies, but also from a wide variety of different target systems. These technological capabilities must be present with additional problem-solving capabilities from the personnel for a person to be suitable for working with customer cases:

> *"I see people having very important role…there is technologies, and a long list of components can be made, from which Iiris is created. But still it is the*

people, who put together from those components the thing we call Iiris, which appears as unified service." (I-02).

The technological capabilities in this area are not readily available, and as was already discussed before, Iiris team supplements this shortage partially by utilising technological capabilities e.g., from integration delivery team regarding specialised matters. To meet the demand for new personnel as the business grows, Iiris has begun to train less experienced developers for their specific needs through a productised introductory training:

"We have an introductory academy, in which all areas are gone through, and there are mentors, who train people about things work. It takes about 1–1,5 months to complete that, and then we start to take people aboard for actual work in our micro teams and customer work. In the teams their competence development is watched, and after that they are given more independent responsibilities about the work." (I-01).

All these capabilities account for a transforming capability of building cospecialised assets, through which Iiris business team has been able to build up the technological asset underlying Iiris product, but also building the capabilities of its team. Cospecialisation has happened partially in firm level, through harvesting technology from acquisitions and building up the intellectual property of the firm by negotiating the access rights from delivery projects, but cospecialising has also existed in the firm level, as building, and combining technological capabilities. Together, this capability has enabled creating the required assets from ground up within few years of operation, with relatively limited, but carefully selected, available resources.

Adaptation capability

The Iiris team and its operational models and practices have also been a target of reconfiguration and transformation in two different time periods, and similar patterns have been present during both, with Iiris team showing signs of high adaptivity. Both occasions are related to the second period of rapid transformation, during which Iiris team's operational model was first transformed, and soon the team structure was also renewed completely:

"Then fast consultations from within Digia…we got [help] from Digia's integration team…and in a blink of an eye we had moved to an agile model." (I-02).

These both situations point out, that transforming capability can also be an attribute of internal origin, as with Iiris team in this case, which displays a capability of high adaptivity to allow transformation to take place.

Decentralisation

Overall, Iiris business team operates very independently from the other business areas of Digia, and as an independent system, it is thus characterised with high decentralisation. Decentralisation has effects on various area of Iiris business, and its importance has been strong even from the early phases of its development:

> *"When we were developing the first version with few persons in the larger DG, it was important that the work was carried out in hidden, and if the model would have been something else, we wouldn't be here today. Right in the beginning it was important, that we were able to work in hidden, in peace. When we had the first customers and certain volume, I think it didn't matter in which DG we were." (I-01).*

In the early phases, the original unit in which Iiris was being developed, enjoyed high levels of decentralisation, offering just enough elbow room to enable its development alongside the other business activities. Digia has been aiming for allowing this decentralisation to take place, to let the business teams redeem the market potential available for teams with their specific experience, customer knowledge and motivation:

> *"…teams have the option and freedom to make decisions about the business…teams have the experience, they know the customer, and they have the passion to develop it further. We have wanted to support by giving authorisation to make decisions, within the given boundaries and objectives...decisions and suggestions should emerge from the team..." (IP-01).*

The business teams seem to use the space offered to them to create a protective environment for new endeavours, which was characterised as specific 'safe haven', as mentioned regarding the early development of Iiris solution, but also present in the same business unit more widely:

> *"..there has been need to create a kind of 'safe haven' inside the business unit for this kind of thinking, about how we can grow this, and how we can make clever investments, considering the market potential of the solution…" (IP-02).*

Decentralisation has therefore offered decision making protection for Iiris business team, especially important during the early stages of the development, but still relevant for the business team during the more recent developments. It is also interesting, that as the business model has matured and is no longer in danger of suffering a cot death, decision making protection and decentralised decision-making authority has reduced the relevancy of the structural position in the organisation:

> *"…these [structures] have been organised and reorganised for many many times, and we have been moved back and forth. But Iiris operations has always been more or less as its own entity… I haven't felt it important in which*

organisational structures we are. It brings certain side effects, both good and bad." (I-01).

Therefore both, the structural changes and decentralisation of decision making seem to contribute for increased separation of Iiris business team, thus serving partially the same purpose and leaving more room for independent operation.

Central resource coordination

Because of the organisational structure of Digia, many of the business-critical resources, especially considering marketing and sales were separated to central organisation, as was discussed in the previous section. Due to this, and due to more fine-grained separation of resources within business units, central resource coordination mechanisms are needed to guide the internal resource allocation between Digia's different business areas and organisational units. The value proposition of Iiris has been viewed as potentially offering high compatibility with the offerings of Digia's other business areas, and therefore the ability to create and benefit from this fit was seen as an important mechanism help guiding the sales and marketing resources towards Iiris business:

> *"…connecting Iiris with the other offerings is important here…we have done a lot of cooperation and utilised sales resources, offering and customer relationships from other business units. Iiris goes along with many other offers as an option." (IP-01).*

The offering fit has been created by unifying the value propositions and overarching story, but also more actively by promoting this compatibility with the relevant internal stakeholders. Creating the offering fit was viewed as important mechanisms, which helped the sales and marketing functions to allocate more resources for Iiris through combining Iiris offering with their other ongoing activities, and thus guiding the central resource flow towards Iiris.

Central resource coordination has been attempted to achieve also with several managerial positions, to whose responsibilities the resource coordination was considered to belong. The way this managerial responsibility has been practically implemented in the organisation has changed multiple times, but the responsibility has remained internal to the business unit:

> *"…ultimate coordination happens by the focus area manager. In that domain it is the manager's responsibility to know, that we are going to the right direction based on the metrics, and guide the allocation of product development, sales and marketing resources." (IP-02).*

The issues with shared central resource pools have been recognised, but it has been aimed, that these managerial functions can reconfigure the resource flows into and within

a business unit, to enable performing according to given metrics, financial objectives, and business goals. In addition, specific resource allocation enhancements have been occasionally arranged in a form of firm level development campaigns, such as the Value from data campaign:

> *"Digia had this value from data program about a year ago, in which Iiris was…as a first system…we created a machine learning use case, which was then developed with the data & analytics unit…" (IP-01),*

These campaign activities have been able to coordinate the resource pool activity on a firm level, and thus guide resources for accomplishing joint development goals according to firm strategy.

Firm level integration mechanisms

Firm level integration mechanisms had an important role for Iiris business model for unifying separated activities within the firm. Much like the coordination of centralised resources, integration mechanisms were needed to merge activities of different functions or business areas, which were separated intentionally. The offering fit was again emphasised as serving as an important integration mechanism, when connecting sales and marketing related activities:

> *"…one clear factor is that how we can build an overarching story or offering to our customers, that how these things are connected, especially regarding Iiris. That what it adds to the Digia offering, how it supports the story. This offering development is one mechanism, though which we have attempted to bring Iiris to the larger picture. The objective is, that it would be clearly a part of Digia's offering. Everybody knows, what its role is, what value it offers, and that this would be clear for customers." (IP-01).*

Developing an offering fit was seen as a key mechanism, through which the synergies of a complementary solution could be achieved, and separated sales and marketing activities to be integrated to Iiris business model. This has many similarities with the previously discussed resource coordination mechanism, but from a different perspective. With Iiris, the sales and marketing activities have much in common with corresponding resources, and therefore successfully sharing common activities between different organisational units, tends to predict also positive resource flows between those units, as the most notable resources discussed here are especially available human resources, and their technological competences.

Another need to integrate business activities between Iiris and intentionally separated business areas of Digia were related to collaboration with common customer projects, which were relatively common with Iiris, as it was aimed to be offered as a complementary solution. The collaboration was closest with the integration development team, with

which Iiris often exchanged ideas, insights, and occasionally also shared common work items in customer cases. However, these resources were not considered common, and thus the integration of these activities occurred through informal means, displayed by a certain collaboration practice, characterised as 'common work' within Digia's different internal stakeholders:

> "…integration team, worked with us really closely about how integrations [and related environments] should be monitored…" (I-02).

These specific collaborative working practices between the operational teams of different business areas seemed to be the most notable mechanism binding the activities of different business models together, although different business areas were highly separated from their organisation structures. These collaborative working and problem-solving practices were present especially when working with teams from different delivery areas, not necessarily with centralised functions, with one exception regarding Service Center, which is a centralised support function sharing operational activities with all business areas of Digia.

Service Center had a specific relationship with Iiris business team, as their role was bi-directional regarding resources and activities sharing, which had led to certain confusions between the units, as was discussed earlier. In addition to these similar collaborative work practices as with other delivery areas, the process alignment and common operational processes served as important integration mechanisms, enabling complex activity sharing:

> "…managing [Service Center collaboration] happens through how the process goes, but we are in a very close collaboration… [Service Center] is our primary internal partner, and our processes have been aligned to better fit together." (I-01).

The operational processes of Service Center were aligned to fit the ones of Iiris, to enable acting in both roles of internal customer and central service provider. Reaching alignment in operational activities was also an integration mechanism regarding certain firm level delivery project, and regarding the operations of central sales functions:

> "…[with a customer] we made a proper annual service calendar, which determines who will have meetings with who, when, and what business areas are involved… now our different business areas communicate with each other..." (I-02).

Managerial roles were not emphasized with the integration of shared activities, although they had otherwise active role regarding the management of different business units and business teams. The high managerial and decision-making decentralisation seems to

force different organisational units to reach more informal practices for enabling integration, while additionally the role of formal defined processes was crucial for enabling cooperation and integration of separated organisational units and functions.

Supportive business governance

Iiris business model had shared governance mechanisms with other business units of Digia, which caused issues especially regarding the financial metrics, and the possibilities to invest in product development within those boundaries. These struggles were accompanied from the managerial functions by a supportive role in the business governance, and therefore reaching the strategic alignment wasn't based only for financial objectives. Active governance mechanisms included business development support activities:

> *"...we have aimed to bring support for that more widely in our delivery group and business unit level, so that we could support and bring know-how, tools and resources for the business development. Starting point is, that team would the ownership from their business, and because of that they make decisions, which improve development and growth." (IP-01).*

Strategic congruence was also ensured by active steering, which served also as an important indicator for engaging with central resource coordination activities, if metrics required this:

> *"…business developments are followed up and guided constantly… larger investment and growth areas are gone through, especially if they have effects on business metrics, that can we make e.g. more forward looking investments… From business control perspective we have monthly coordination and steering inside our DG…a monthly performance review…" (IP-01).*

Together, these managerial support activities both ensured strategic alignment, but also enabled fine tuning regarding activities and resource flows with Iiris business, and thus they did act as a transforming capability of supportive business governance.

Knowledge sharing

Knowledge sharing has occurred between Iiris and other Digia's business areas and organisational units also as a part of the common activities, operations, and resource sharing, but Iiris team also represents much team specific knowledge sharing and learning practices, which all account for building the organisational knowledge assets of Iiris team. The common working practices include meetings with active knowledge sharing, and communication systems are heavily used within the team:

> *"…Teams channels are heavily used. We have product development, monitoring development, micro teams, feedback and off topic channels…people*

> *can use them with low expectations, and best ideas are implemented." (I-02).*

In addition to active knowledge sharing practices, Iiris team has practices and system for codifying their knowledge about the service, and processes related to it. An internal wiki database is built and updated on a continuous manner, which serves as a backbone of operations and consolidates the procedures within the team:

> *"Service works with ITIL processes, and we have certain additional guidelines. We have also a huge wiki-documentation. There is a lot of stuff, basically all our processes are described in there." (I-02).*

In addition, for showcasing the gradual formation of team specific processes and practices, wiki development is an example of a team level knowledge sharing, which contributes for a firm level transforming capability through the ability of the teams to share and build common knowledge throughout the time.

Knowledge sharing is also extremely important with the recruiting process, and a specific system and process has been built to enable efficient introductory training. Iiris academy, as mentioned earlier regarding cospecialised asset building, is a productised system for education the new recruits, and therefore the most necessary knowledge for operating in Iiris team has been codified and shared through that introductory training program:

> *"We have Iiris -academy for our team. It's a productised orientation path named Iiris -academy, which everyone completes…for experienced team members we have own learning paths…which we have designed together, in order to solve how to maintain learning and how to introduce new concepts." (I-02).*

Knowledge sharing has therefore become an important means for overcoming critical recourse dependencies and shortages, through an ability of the team to support firm level recruitment process by its own training practices. Because of the effective sharing of the knowledge of more experienced staff members, it is possible for Iiris to grow its team size without having to rely on resource availability from other business areas of Digia. Overall, the knowledge sharing practices within Iiris business team showcased both more rapid and continuously active sharing practices, combined with infrequently active sharing characterised by codified knowledge transfer.

Overall, dynamic capabilities of seizing and transforming were especially strong regarding Iiris business model. Sensing capabilities were additionally present, they offered important means of tapping into customer innovation and adapting the development for external requirements, but their presence was less dominant compared to seizing or transforming. Seizing capabilities affected Iiris business model through microfoundations of business model hybridisation, culture of trust and commitment, evolutionary solution

development, intrapreneurship, microinvestments and structural separation. Together they allowed the birth and development of Iiris business model by creating conditions under which it was possible to make the necessary decisions and investments for its creation. Transforming capabilities were present with Iiris case through the microfoundations of adaptation, cospecialised asset building, high decentralisation combined, firm level integration mechanisms, central resource coordination, knowledge sharing and supportive business governance. Overall, they balanced the resource flows and maintained separation of different business models.

5. CASE 2: PRODIARY

5.1 History and phases of development

5.1.1 Characteristics of the business model

ProDiary is a digital shift work diary for industrial use, designed to improve the information flow between workers in different shifts, thus improving safety and operational efficiency within the user organisation (Digia 2022c). ProDiary product is built on top of Domino development platform, and currently Digia offers it to customer as a cloud hosted SaaS -product, alongside Digia's support services (IP-01, P-01-1). ProDiary customers pay monthly fee for the access to the service, and additionally Digia charges for the possible customisation work. The costs for the customer are generated mainly from this monthly service fee, but the setup phase of the product includes a very minor setup project, depending on the level of customisation required (P-01-1). As the service is mostly based on the use of the product, customers also expect high availability of the project in the first place, and the role of support services is much smaller with ProDiary (P-01-1).

ProDiary has a very long history with its first customer, to whom it was originally built for, and this has dictated much of the strategic choices regarding its development, but also enabled building the technological competences and know-how behind the product (IP-01, P-01-1). Domino platform, forming the backbone of ProDiary, hasn't been very popular in the markets anymore, but it has proven to be very flexible, secure, and cost-effective solution for the needs of ProDiary (P-01-1). For long, it was considered a significant risk that the platform's original owner, IBM, would abandon it, but Domino eventually ended up with a new owner, HCL, which has picked up the torch again, and currently the technological risks are much smaller (P-01-1). Also due to its long history, the whole ProDiary business has been viewed as declining within Digia every now and then, and management has been clearly prepared to abandon it in many moments (P-01-1). Despite these risks and unpopularity, the service enjoys above average EBIT within Digia (P-01-1) and has proven to be very successful endeavour after all.

A key enabler for the above average returns from ProDiary is the scalability of the business model, which allows the service to be run on much smaller resources and to be expanded with smaller efforts (IP-02). The team behind ProDiary is currently extremely small, with the team being formed of two long time employees, who have been working with product a long ago before it was turned into a SaaS product (SaaS). Even within

Digia, only a very limited number of people acknowledge its existence, and from those there are only handful of people being able to participate to its development (P-01-1). Therefore, in addition to the fact that ProDiary represents a clear minority of cases within Digia regarding its business model in general (IP-02), it has usually attracted a very distinctive group of customers (P-01-1). The history of ProDiary business and the most significant events during its development have been depicted in the end of this chapter 5.1., in Figure 9.

5.1.2 Dying customer project

ProDiary has a long history as a product developed for its original customer, and its initial release dates to somewhere between 1998–1999, when the project concept was picked up by a smaller software firm in Jyväskylä region (P-01-1). Concept of a digital shift diary was researched by post graduate students in Jyväskylä University for an industrial company, which then sought a supplier willing to take on the development (P-01-1). ProDiary software was born, and the industrial firm purchased licences for its use, while the supplier firm continued of maintenance (P-01-1). Later in 2004, the supplier for was acquired by Digia, and Digia therefore picked up its maintenance services (P-01-1). ProDiary was theoretically a licensable software product, but its sales weren't skyrocketing, and the maintenance and development work carried out for the initial industrial customer remained as the main revenue sources from ProDiary to Digia (P-01-1).

ProDiary has utilised Domino development platform in its design, and during these days, the maintenance work was carried out within Digia's then existing Domino and Java development team (P-01-1). Team had also many other large customer projects ongoing, in which Domino had a central role in solution development within customer organisations (P-01-1). However, Domino development platform was losing its popularity slowly, as it seemed clear that its current owner IBM wasn't very actively developing the platform, and other technology providers, such as Microsoft, were aggressively gaining market share (P-01-1, P-01-2). In 2012, Domino team had been already losing many of its customers due to this change in demand, as many companies decided to abandon the platform and look for more future proof alternatives fearing the Domino platform becoming obsolete for their needs (P-01-1).

During 2011–2012 Digia was going through a major internal turmoil, as its then largest customer, Nokia, was terminating their operating system development collaboration with Digia (P-01-1). This followed significant lay-offs within Digia, and employees within Domino development team were mostly either laid-off or transferred to other business areas. Digia explored product development possibilities during 2010 and 2014 more actively

with many smaller solution ideas, but these attempts mostly didn't make commercial success (P-01-1). Among these was also a ProDiary resembling product, which was supposed to be more generalised solution for information sharing within organisations, but the project didn't become successful, and it was quietly buried with many other failing concepts (P-01-1). With the threat of becoming obsolete, development team breaking up, and other smaller product concepts failing in the market, ProDiary's future didn't look very bright, and the atmosphere around the project started to resemble a sunsetting stage (P-01-1).

5.1.3 SaaS -transition

The long development history, customer understanding, and experience gained with the Domino technology behind ProDiary gave the remaining Domino team members still a very firm foundation to continue supporting the initial customer in the development of ProDiary. However, customer was also having doubts about the future of the platform, and they had begun to plan the future of the solution (P-01-1). ProDiary was still extremely valuable solution to the customer company, as it had become very integral part of their operations and the experiences about using the product were very positive (P-01-1). It was therefore clear that the solution couldn't be abandoned, but still the required investment to rewrite the program to a new technological platform seemed too heavy, and customer wasn't willing to take of such a project (P-01-1). Although Digia already owned the IPR relating to the product, the product wasn't actively sold anymore in practise, and therefore the outlooks of future income streams from it weren't promising, and they didn't support heavy investments to the product (P-01-1). Neither Digia nor the industrial customer were sure about what could be the optimal solution.

It was 2014 and cloud technologies were on the rise, which were feeding the idea of offering ProDiary as a service to the current customer. Domino team had gained experience of hosting applications also in their own servers for certain smaller customers, e.g., relating to digital services built around local events or happenings, and Digia had already been building its cloud capabilities (P-01-1). It seemed clear, that the most viable solution to this problem would be to offer ProDiary as a SaaS -service to the original industrial customer, and discussions were initiated about this transfer, even though details weren't yet clear of how to implement this (P-01-1). Despite having tinkered with product concepts, Digia wasn't a SaaS house, and the possible existing successful products didn't have organisationally anything to do with Domino team and ProDiary (P-01-1). Until now, all the development efforts regarding ProDiary had been carried out as a normal billable

customer delivery work and projects for years, and there weren't plans to invest for ProDiary product beside this collaboration (P-01-1).

The SaaS transition took more speed in the beginning of 2014 with a potential new customer, right after the negotiations about the SaaS transition were initiated with the original industrial customer company (P-01-1). The contact person of the new customer had been recruited from Digia's current ProDiary customer company, and he was already familiar with the product (P-01-1). New customer wanted to take ProDiary into use as fast as possible, but the current old licencing model was too expensive for this new customer (P-01-1). A meeting to sort out the details was arranged, despite it still wasn't clear how the service should be priced and how the transition should be carried out within Digia (P-01-1). Eventually the pricing model was pulled out the hat during the meeting based on the hunch of a Digia's manager leading the development team, and the project plan to carry out the transition was drafted in a form of quick to-do list sketch together with the main responsible person of ProDiary service, while driving back from the meeting (P-01-1). The decision making related to the initiation of the SaaS transition occurred eventually very fast and with strong intuitive decision making of a limited number of persons, and suddenly overnight ProDiary had adopted a SaaS strategy for the future of the service and preparing the contracts for the first new ProDiary SaaS customer had begun.

The actual transition project required combining knowledge and competences within Digia. Remaining employees from previous Domino team already had experiences of hosting Domino applications from servers, and therefore there was some ideas with those employees about what it would mean to transfer the application to a SaaS service (P-01-1). Additionally, Digia already had ongoing partnership with a local data centre service provider, and therefore there wasn't need to find a new supplier, and the cooperation could be started quickly (P-01-1). In addition, there were certain persons within Digia, who were known to possess more advanced understanding of cloud technologies and hosting in general, and these people were relied on during the transition (P-01-1). Eventually the first SaaS diary was released to this new customer during 2014, and within the same year also the existing industrial customer was willing to make the transition to a SaaS model, which secured income streams for ProDiary service (P-01-1).

The transition to a SaaS model had significant effects of the business model especially considering the revenue and cost structure, but it also required improvements in the service operations. The monthly fee for ProDiary product wasn't large per diary, but it still generated significant revenues, considering the size of the current development team working mainly with ProDiary, which was practically two persons (P-01-1). The change towards a SaaS model was made locally in Digia's organisation around the ProDiary

service, and despite the responsibility to maintain and offer the service customer had now moved from customer to Digia, there wasn't an official permission to invest in product development of ProDiary (P-01-1). In practise, ProDiary team still carried out product development as unbillable work, and thus the development costs were materialised as increased costs within ProDiary service (P-01-1). The original industrial customer still had the need to improve the product for their needs, and they took part in the product development costs in a form of customisation work, and selected development projects (P-01-1). Therefore, after the transition to the SaaS model, ProDiary product development has still been marked by product co-development efforts by both Digia and the original industrial customer of the product (P-01-1). Customers were extremely happy with the product, and despite the original customer still participated to the development costs partially, the SaaS transition enabled them to avoid significant investments required to migrate the application to a new platform (P-01-1)

5.1.4 Stagnation and revival of development

ProDiary received many significant functional upgrades and operational improvements of the service soon after the transition to a SaaS model, but later the development stagnated. In 2015, ProDiary project was audited as part of an ISO audition going on within Digia, and although ProDiary made it through the audition, it was clear to the team that their operation required significant improvements to meet the required standard also in the future (P-01-2). As ProDiary was utilising many technologies with a legacy system status, the version control in use wasn't very up to date and alongside improving the version control, several other aspects regarding the documentation of the service, project management practices and incident handling within ProDiary team was improved as a result. In 2016, the user interface of the product was made responsive for mobile users by, as the ProDiary team had a hunch that their end users could be soon requiring mobile access to the service. These improvements were carried out as internal costs within Digia, but other customisations and development were also made here and there as partially internal and partially billable work. (P-01-1) There had been many calls to halt the internal development efforts completely, which were basically carried out by the two persons in ProDiary team, but the eventually in 2017 this was prevented by reallocating the main developer resource of the team to a larger customer project. The project required substantial resources from Digia in general, and it was viewed more beneficial to utilise experienced developers with this new delivery project, than to keep them only in partially billable work, e.g., it was the case with ProDiary. (P-01-1) This initiated a period of stagnation regarding the product development of ProDiary, during which many organisational changes had to be carried to out to continue offering the service to customers.

Central support functions played a key role during this phase of stagnation. In 2017, a firm level decision was made to move away from the service of the current data center provider to larger suppliers, and a decision was made to move ProDiary to AWS cloud, as there was already some experience within Digia about AWS cloud development (P-01-1). Digia's cloud competences were then organised in a cloud technology team, which supported the transition to cloud, but also the very same persons who were supporting the initial SaaS transition during 2014 had more active role during this migration from the cloud team (P-01-1). Digia also established its Service Center in 2017, which then took the responsibility of handling the incident management regarding ProDiary service, which had been carried out by the ProDiary core team until now (P-01-1). Also, a separate central support team took the responsibility of certain monitoring tasks involving e.g., increasing the required disk space, if necessary (P-01-1). ProDiary development team was attempted to replace with two agile development teams also during this time, but eventually the model didn't perform as attempted. The agile teams were supposed to take over ProDiary and many other smaller delivery projects by combining different capabilities inside these teams, and then giving smaller development projects and tasks, which would require varying technological competences (P-01-1). Agile teams had a few experienced coders in them, and the rest of the team was usually more junior level recruits, as the team was supposed to serve as an entry point to Digia (P-01-1). However, especially the new recruits within the team couldn't pick up ProDiary that easily, and the team got eventually broken up (P-01-1).

Changing customer demands forced to revoke the ProDiary product development, and the slowly growing customer base has encouraged central functions within Digia for occasional development efforts (P-01-1, P-01-2). In 2018, Digia lost an almost certain sales regarding ProDiary with a customer belonging to a strategic segment, and the main reason for not opting for ProDiary was stated to be the outdated user interface, which later that year motivated the core ProDiary team to start initial planning of user interface update (P-01-1). Later in 2019, the main developer resource was released from the larger customer project, and he had again time to invest for ProDiary development (P-01-1). As the user interface seemed to become outdated, team knew that investments should be made to also retain the existing customers in longer run, and team applied a permission to invest 20 days of work prototyping the new user interface (P-01-2). The product development was initiated slowly, and it was carried out mainly by the same main developer in the following years beside the other project work. Eventually the development required investing significantly over 100 days of internal non-billable development work, but this development was still carried out quietly within the team to avoid additional nuisance (P-

01-2). The investments made to the user interface update turned out to be key to ProDiary's survival, as in late 2020 the key industrial customer revealed their investment plans to replace ProDiary product, in which the customer had already planned to allocate significant amount of money (P-01-1). Digia was able to turn the customer's mind and cancel their investment project, by revealing the already built but not released user interface updates, and eventually customer ended up taking more active role in guiding the development and participating to the development costs for the customisation it allowed them (P-01-2).

Currently, the new user interface has been released, but its development is still ongoing with the key customer leading the project (P-01-1). After the SaaS transition, ProDiary has been expanding to a selected to new customers, mostly through workforce migration between the key customer and other industrial companies, when the people familiar with the product want to introduce the product also in their current company (P-01-1). Despite the central sales and marketing functions haven't been eager to take ProDiary as their priority (P-01-1), a certain firm level innovation campaigns, such as Value from Data - campaign initiated in 2020, has offered joint central support regarding the product development, marketing, and sales of ProDiary (IP-02). Value from Data was intended to innovate new solutions utilising data and analytics for customers, and then boost the sales of proof of concept -projects, thus possible leading to wider cooperation (IP-1). Regarding ProDiary, the campaign resulted in an idea to implement machine learning to ProDiary for recognising machinery identifier plates within the factories and facilities for speeding up the use of the diary, and a proof of viability was carried out as a part of the project (IP-01, P-01-2). Campaign was successful, and cooperation with the customer has been initiated, with possible marketing actions to be carried out about it in the future (P-01-2). The product development efforts of ProDiary have been picked up again after the stagnation between 2017–2019, the technological risks seem lower as Domino platform was sold to a new owner in 2019, which also took more active role in its development, and ProDiary business has been gaining new customers slowly (P-01-1). These recent developments give a promise of continuation of the service, although the position of ProDiary's business model within Digia haven't changed much during the SaaS era.

5.1.5 Development roadmap

1998/1999:
Small local software firm picks up the ProDiary concept and offers

2004:
ProDiary project to Digia though an acquisition of a smaller software firm

2014:
Domino team breaks up

Markets abandoning the Domino development platform

Rapid SaaS transition, launching with a new customer

Old customer makes the transition

New customer acquititions

2015:
ProDiary project being ISO audited

Developing product development process

Formalising operational procedures

2016:
Responsive web layout released

2017:
Digia establishes Service Center

Cloud development team, and central support functions utilised

UI becoming outdated

Key developer resource fully allocated to other customer project

2019:
ProDiary product development revoked

Key developer rejoins the team

2020:
New UI under develop-ment

Strategic customer planning

2021:
Early access to new UI released

Value from data -program

2022:
New customer expansions

Image recognition feature development

Building Domino –platform competences within Domino /Java development team

Early building of cloud competences

Local data centre partner as Digia's hosting supplier

Hosting services from AWS cloud

1999   2004   2012   2014   2016   2018   2020   2022

ProDiary developed with the normal service model with single customer

ProDiary product offered to a larger market by Digia with SaaS business model accompanied with support services

2011–2012

2014

2017–2019

7/2020

4/2021

12/2021

4/2022

Turmoil within Digia, Nokia partnership ends

Large lay-offs as response to declining revenues

SaaS model transition

Further product development efforts of ProDiary frozen by Digia temporarily

No information

IS/MDC →SSS →Sec. Sol.

MDC →SSS →Scal. Sol.

MDC →SSS →Sec. Sol.

MDC →SSS →SDO

Abbreviations:

IS = Intelligent Solutions Business Unit
MDC = Managed Digital Core Business Unit
Cust. Sol. = Custom Solutions Delivery Group
SSS = Secured and Scalable Solutions Delivery Group
SIM = Service Insight & Monitoring Focus Area
Scal. Sol. = Scalable Solutions Focus Area

Recent changes in the position of the Iiris business within Digia's organisational structures
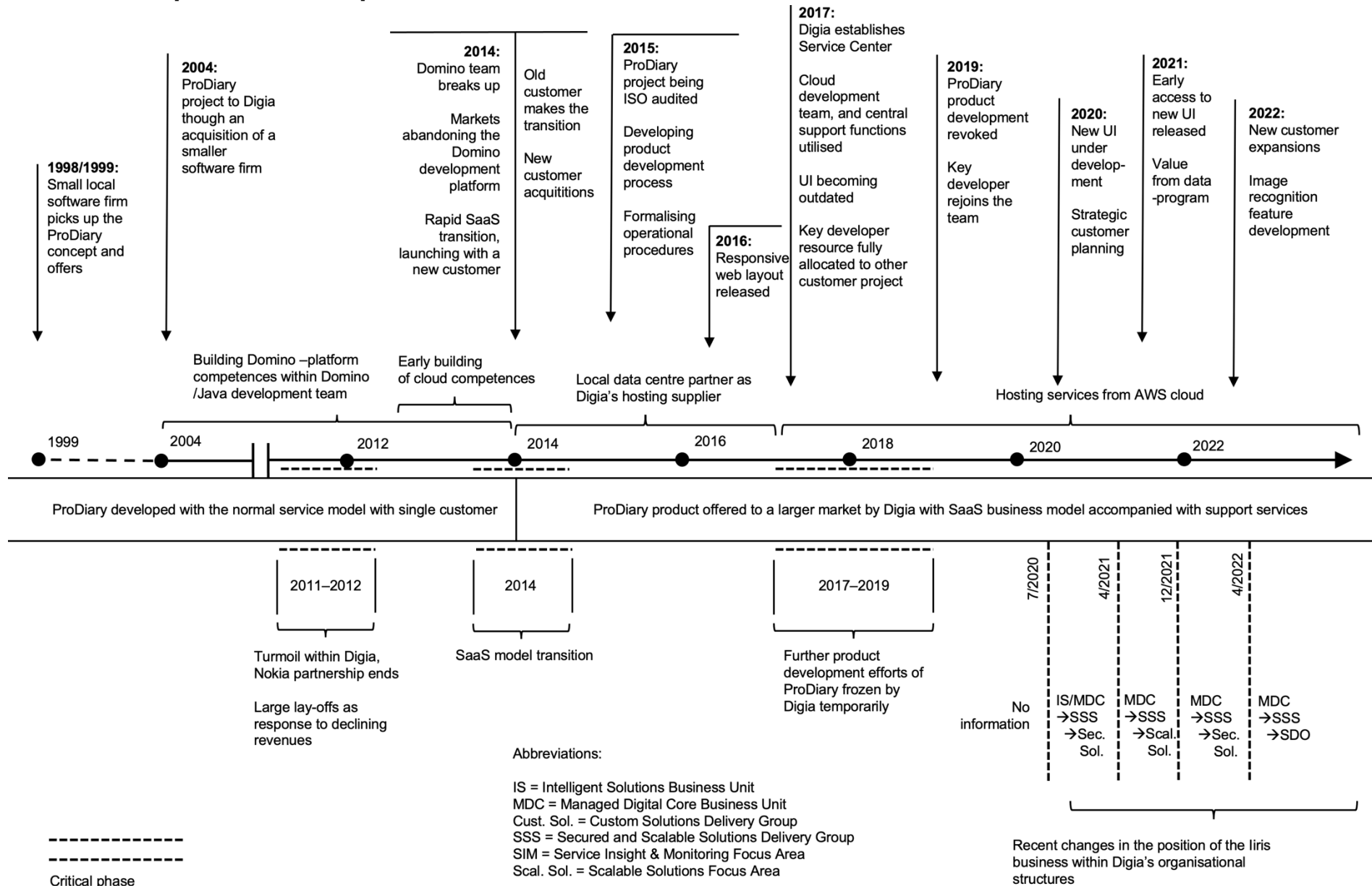
Critical phase

Figure 9. Developmental phases of ProDiary business model.

5.2 Business model portfolio dynamics

Despite having origins as tightly integrated to Digia's primary business, ProDiary seems to have lived its own life as a business model after the transition into a SaaS product, but during the years it has begun to utilise the access to shared resources in certain areas of the business model (P-01-1, P-01-2). The shared items have been analysed based on similar effectual domains than with the Iiris business model in the previous chapter, and ProDiary also shares activities and resources on many of these domains, but the connections are not as strong. Appendix 2 presents the data about shared items, their effectual domains, and the evidence from the interviews supporting the findings. The results are analysed with the similar distinction between supply side and demand side sharing, but as the sharing in the demand side appeared to be practically non-existent, that part of the analysis is much narrower. This section concludes by also presenting the findings about conflicts related to sharing and connecting them with each effectual domain.

5.2.1 Supply side sharing

Product development

Technology and technological competences form the key resources which have enabled building ProDiary business model and developing the product. Technological competences regarding the Domino development platform, which forms the core of the ProDiary product, has been built during the 15 years old history of the service already before establishing ProDiary SaaS product, and as the intellectual property rights did belong to Digia, the productization was possible:

> "We have had the IPR all the time, that is why it was even possible to make it a SaaS service." (P-01-1).

The technology built up along the way was therefore a key resource for establishing ProDiary service, and this is something shared between the whole Digia entity as a firm, although having direct connection with ProDiary service before the SaaS transition. In addition to technological resources, the know-how about hosting services, and later the cloud capabilities, played a key role in ProDiary's product development:

> "[cloud team is used] for maintaining the service platform, I didn't have any expertise about AWS, or using cloud services or resources in general when ProDiary was taken to [data center provider]. It was completely new, that we bought disk space somewhere and start installing to the services offered by someone else..." (P-01-1).

The role of Digia's technological competences were highlighted in the interview also generally aside from the competences directly utilised by ProDiary, and these competences seemed important, although they were not directly connected to ProDiary's product development and operations:

> "In that sense it has been our salvation and really, really good thing, that we have been within Digia, as there are really versatile competencies inside the firm after all, when you just put in the effort of finding them. There hasn't been a need to learn everything by ourselves." (P-01-2).

Overall, the product development of ProDiary has had only occasional sharing happening with Digia's other business areas. Only during the firm level Value from Data -campaign, significant joint development project occurred:

> "The Value from Data -campaign in the recent years came from outside our team… Some specification activities were arranged with the analytics team, and we started to go through the diary data, and they made some demos about it, word clouds etc. about the data of one customer. It was really good; it was clear pretty fast what analytical capabilities could be implemented to the diary..." (P-01-2),

The campaign was carried out with several areas of business within Digia, and it systematically combined competences and resources from different areas of the firm to an innovative development project, and ProDiary's product development benefitted from this in a form of new product features and technology. All the additional resources were outside the ProDiary team, and activities were arranged to facilitate the development. Besides from this campaign, ProDiary's product development and building features has been carried out by the team itself.

During the SaaS transition, and especially later during the cloud transition, Digia's cloud team played a larger role in ProDiary's product development. Cloud transition was enabled by the cloud competences within Digia, and they took more responsibility also otherwise in the transition project:

> "…when we moved from the [data centre supplier] to AWS, [co-worker] specified the environment we needed and the platform to the point in which I had the platform where to install the Domino servers. Building the infrastructure was the responsibility of the cloud team..." (P-01-1).

Despite the actual development team of ProDiary being very separate and viewed as merely sharing resources with other business areas of Digia (IP-02), the cloud team seems to have had a crucial role the most critical stages of ProDiary's product development. ProDiary's product development therefore had certain connections to resources

and activities of Digia's other businesses, despite being mostly independent activity carried out by designated resource base. The option for relying on central resources has allowed higher risk taking, and thus enabled product development efforts under challenging conditions.

Support services

ProDiary's operations have been carried out mostly by the core team, but in certain areas support service functions carry out more operational tasks. Also, through the SaaS transition, the requirement for daily operational tasks have decreased (P-01-1), and therefore also sharing in the effectual domain of operations isn't similarly present with ProDiary, and instead it relies more on the support services. From the operational support services, the cloud team and Service Center are the most notable shared items between ProDiary and other business areas of Digia, and important part of the operational activities with ProDiary:

> *"…the cloud team competences from the common things are what we use, and of course the support team from Rauma. We use Service Center…The network has grown from the early days, when there were just me and [co-worker]." (P-01-1).*

Whereas cloud team seems to have had more active role in the development side, Service Center and IT support team have also more continuous support activities occurring with ProDiary:

> *"…[Service Center] have been instructed to carry out basic maintenance operations and if the service fails or becomes unresponsive during the holiday time, I don't have to immediately react to it, but instead the AWS alerts go to Center and they have checklists of actions...only after the checklist of actions has been carried out and things don't still work out, they contact me." (P-01-1).*

The support activities are mostly related to the availability of the service, and not so much with the operational activities occurring in the customer interface, e.g., with configuration projects and service management. Support services were also recognised as important resources for the ProDiary team:

> *"...the cloud team has been built along the way, and it has become a distinct resource." (P-01-1)*

From sharing perspective, there resources won't appear to be critical, and this is probably something which is an asset for a smaller business area like ProDiary. The larger support organisation won't mind the small capacity requirement of increased need for support, if it becomes necessary.

Sales

Sales resources and activities are important for establishing revenue streams in business models. According to the firm level model at Digia, also ProDiary utilises both centralised marketing and sales functions. The central sales activities occur on either account-based or solution-based models, but they both include still certain presales activities from business teams:

> "…we don't have sales in Digia at this level, so the sales is centralised. It is either Digia's centralised [Account] sales, or MDC level solution sales, which sells it. And then, marketing is also centralised. Therefore presales, offering development, product development and technical competences is within the teams, and sales, marketing are centralised at Digia level." (IP-01),

The central sales function therefore picks up ProDiary cases if they are suitable for their agenda, or if the customers they are working with happen to belong to the customer segment of ProDiary. However, as we will discuss soon, this doesn't seem to be the case that often, new sales for ProDiary tends to be rather slow, and therefore the focus has been more in managing the current customers (P-01-2).

Central marketing and sales activities are carried out occasionally through separate campaigns, which combine different activities and resources from the firm together. Besides from marketing, the Value from Data campaign was noted to also include sales activities as part of it:

> "Also, regarding product development, the data and analytics area is the most used area of Digia's business areas… Value from data program, ProDiary took part in it, and there were developed use cases the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..." (IP-01).

This innovation campaign concept has been therefore able to combine not only developmental resources, but also sales resources for ProDiary's business development.

Firm reputation was recognised as important resource supporting the client work in sales by offering some backing for the credibility of the product and service:

> "…it has been very good, that there has been large enough backing there. Digia is from its size the kind firm, that you can go and talk to other firms. It offers the backing, so that if we were a two-person firm with [co-worker]...it would be practically impossible to sell diaries... expertise is always available." (P-01-2).

Without this backing, the reliability of the service could be possible difficult to offer, and on the other hand the team's capability to develop features, react to customer needs and customise the product could be much more questionable.

Marketing

Despite ProDiary's value proposition and business model is quite different from the rest of Digia, the marketing regarding ProDiary happens solely by the central functions, and business team doesn't carry out these activities independently:

> *"So [Marketing] is also considering ProDiary, we use centralised function."* (IP-02).

However, with ProDiary, both marketing and sales seems to experience internal competition over these resources, and although marketing actions have been taken, it has been of very limited scope:

> *"…marketing is just like sales; it has been active occasionally. We have marketing campaigns, and some webinars have been arranged…some news articles and Case -descriptions from customers have been written. But is has been very minimal, what has been spent on marketing."* (P-01-1).

Marketing has to consider the allocation decisions about its own resources, and ProDiary therefore has to share these resources with the other business areas of the firm.

Management and governance

Despite the sharing of resources and activities has been very minimal regarding ProDiary's operations, sales, and marketing from the supply side, there is apparently more effective sharing with the common managerial and governance activities with Digia's other business areas. The managerial control is supposed to create only certain boundary conditions for operations, and otherwise to give a lot of leeway for the local teams:

> *"…these business goals what we have to the SSS delivery group and SDO focus area give the boundary conditions within we need to operate, but in a sense [ProDiary team] is independent, that nobody is coming outside the ProDiary to give solutions, about for example what features to implement next..."* (IP-02).

One type of boundary conditions are limits regarding decision making authority, but due to the characteristics of ProDiary business, this doesn't have many effects on the business model:

> *"…individual cases go so much under the Digia average, and it doesn't exceed the limit which requires central decision making. A certain amount of decision still goes through [DG head] for gaining permission, but mostly the decisions has been done by [service manager], or by [business manager]."* (P-01-2).

The apparent lack of strict governance is therefore related to the financial control metrics, because of which ProDiary business goes pretty much under-the-radar. The most critical

governance activity shared with the Digia's primary business is the budgeting, determining firm level revenue and profitability budgets, as highlighted in the interviews:

"Business area's primary metric is revenue target, and secondary is profitability, and that includes costs. Therefore, the ProDiary as a solution, and how much product development investments are made, competes from the same cost budget, as the other solutions in the business area." (IP-02),

The budgeting therefore has significant control over the product development spending, but it also determines the priorities of business goals. Product development investments depend on the cost structure, which encourages for efficiency, but also reduces the available states of freedom teams have for developing the product.

The shared managerial activities are not solely restricted to activities around governance mechanisms, but they also include active managerial support and development activities, which stem from the business planning closer to the delivery units themselves:

"There are two main things, there is firm level business planning, which initiates during autumn, and which guides the operations of business units, and for which we have the profitable growth expectations. But at the same time, we have also had planning closer to these kind of business models, Iiris and ProDiary, in which we have been more ambitious and built the path for an order of magnitude bigger revenues." (IP-02).

These support and development activities include offering more resources and tools for developing the business within the posed boundary conditions, and they are intended to guide offering resources for business activities:

"…both [Iiris and ProDiary] are very small teams. This means that there isn't all the know-how, especially about business…Both areas have the potential to grow faster than what has been historically, and we have aimed to bring support for that more widely in our delivery group and business unit level, so that we could support and bring know-how, tools and resources for the business development." (IP-01).

On the practical level, the managerial support has aimed to create internal collaboration and resource reallocations depending on the objective at hand. For example, ProDiary's business development activities has combined different skills and knowledge to the table, in order to create new direction for the development:

"…we expanded the value proposition, that could it be something else than a solution serving the process manufacturing… this value proposition update was done in autumn 2020, and we exactly aimed to expand it beyond process manufacturing solution." (IP-02).

The most pragmatic result has been probably the results from the firm level Value from Data -campaign, which was commented to happen exclusively due to the guidance and

support from outside the delivery units (P-01-2). Other tools and resources include establishing new types of collaboration between different operational units, but also guiding the sales and product development through working with teams with the value proposition of their products and services.

5.2.2 Demand side sharing

ProDiary was viewed basically as totally separated from the other business areas regarding its demand side elements, despite the original history of Domino development as a part of Digia's primary business model (P-01-1). The reasons for this separation of the customer groups were mostly related to the disappearing interest in the markets regarding expertise with that specific technology, but also the fact that ProDiary had origins with an induvial customer, which didn't have common work with Digia in substantial amounts (P-01-1). Also now recently, the latest customer expansions of ProDiary have been done in segments which are not related to Digia's other businesses (P-01-2), and therefore even the expansions have not yet created demand side sharing activities.

Interestingly, an individual more minor item of sharing, or at least a suspected item of sharing, was found between ProDiary and some other unrecognised product relating to Digia or some of Digia's subsidiaries. ProDiary, as a versatile and adaptable tool, seems to share certain individual functionalities with another product of Digia:

> "Basically [ProDiary] is completely different. But it has some overlapping features, such as a workers' shift management. We have a product, which is an actual shift management product, and there is some overlapping with some of our systems." (P-01-1).

This wasn't significant, however, and the interviewee wasn't able to name the product in question. Yet the finding show, that ProDiary could possibly be competing certain functional aspects with other offerings, therefore sharing partially a customer need with other customers of Digia. This multifunctionality of ProDiary was attempted to be utilised regarding the value proposition update, discussed in the management and governance section (IP-02). To conclude, ProDiary doesn't seem to have any significant demand side sharing with Digia's primary business areas, not regarding the customer segments, nor the customer needs.

5.2.3 Conflicts

Sales

Overall, there was only few conflicts recognisable regarding ProDiary, and they were mostly related to central sales and marketing functions and resources. Sales tend to

prioritise other sales cases over ProDiary, as the pricing of the product seems low, and this encourages sales to pursue and prioritise other cases over ProDiary. The situation leads to lower available sales resources for ProDiary business model, with the risk of losing potential revenue streams:

> *"From my opinion, the conflicts are specifically in sales and utilising sales resources. Digia's model is that the sales function is primary centralised…In that area we compete from sales resources, and how much we can get sellers to sell our offering, whether it is Iiris or ProDiary. The biggest problem is that these are relatively small deals... from sales perspective, it is more affordable for them in the short term to sell some larger delivery..." (IP-01).*

In addition to the prioritisation and the availability of sales resources, the conflicts seem to be related to the sales activities themselves, and how they support SaaS product sales:

> *"ProDiary's role in Digia's sales has been always difficult, as the product is just too cheap for our sales and provision model. We have never had ideology related to selling a SaaS product, about how it should be sold, because our sales are that we sell large projects. It has always been sort of an interloper." (P-01-1).*

Because Digia's primary business model has been built around project and service deliveries, the salespersons are not oriented for carrying out sales activities from a product perspective. Communicating the value proposition would require emphasizing different value creating attributes of ProDiary product, instead of highlighting the attributes which make Digia successful in delivering projects and services. Overall, ProDiary has ended up becoming an awkward 'middle child' of Digia for sales function, causing significant conflicts regarding sales resource needs and allocation within the firm.

Marketing

The marketing related conflicts have the same roots as with the shared sales functions, as marketing tends to prioritise actions based on the expected revenues from activities. ProDiary tends to be prioritised lower due to lower potential total revenues, which is important metric for measuring effectiveness of marketing activities:

> *"…same as with sales, that if you go asking from marketing unit that what we could do with ProDiary, they first ask that how much money it is going to bring, and then they say that ok, let's take a look at later… Digia just isn't oriented for doing this as a firm." (P-01-1),*

ProDiary, with lower priority status, tends to stay in the bottom of the list, as business areas with higher expected revenues fill the capacity of marketing function. The market-

ing actions required by ProDiary could be also somewhat different to what the other business areas' needs are, and the question can also be not so much about the absolute size of the resource pool, but also the orientation to produce results with the considerations to ProDiary's specific needs. Marketing also needs to consider the overall suitability of its message to the audience and Digia's markets:

> *"Same challenge exists regarding marketing. Digia has very broad offering, and therefore it has to be considered what kind of message will be delivered outside… different marketing campaigns, lead generation, and other actions easily get prioritised lower, than campaigns of some larger business area... especially with ProDiary, as it is a very niche product, which doesn't have much synergy with the rest of Digia's offering." (IP-01).*

Again, as ProDiary's value proposition and target market segments are different from Digia's other business areas with different business model, sharing the resources with centralised marketing is difficult, as they would need to approach different audience with completely different message. Marketing actions supporting two synergistic business areas are more likely to feed each other's growth, instead of blocking out each other.

Management & governance

ProDiary is also touched by the firm level budgeting, and the focus area it belongs to has its own profitability goals and revenue targets. The profitability induces ProDiary to be assessed by its costs, and as there are no product development budgets, the budgeting encourages for minimising product development, and thus risks pursuing growth opportunities:

> *"The challenge is, that [growth] would require investments, which drops out in this firm level planning…because profitable growth is sought… Now in this model where we compete from resources, it restricts growth." (IP-02)*

Lower product development budget can have inferior effects for ProDiary's growth. Until now, ProDiary has been profitable and having higher than Digia's EBIT margins (P-01-2), and therefore the shared governance mechanisms and budgeting have had less direct effects for ProDiary, and there has been more leeway with the cost budget than what the other business areas have. However, ProDiary doesn't have its own P&L responsible unit, and instead it is part of the SDO focus area, which has P&L responsibility. It is possible, that the pressure from the focus area's profit targets push past the product development objectives, and the higher EBIT will not be turned into a product development for ProDiary, but instead it can used to cover costs from the other businesses of the same focus area.

Product Development and Support Services

ProDiary didn't have any conflicts related to its product development operations or support services utilised. Product development was carried out mostly independently by ProDiary team, and therefore sharing was very minimal, limiting to only occasional projects, which have been carried out without conflicts in sharing. Additionally, the collaboration with support service functions was found efficient, and no signs of conflicts were found either from there.

5.3 Dynamic capabilities

The sharing of activities and resources between ProDiary and Digia's primary business model were connected to microfoundations of dynamic capabilities, which played role moderating the portfolio interactions. The interview data about these dynamic capabilities and their microfoundations are presented in Appendix 4. In the following, the presented capabilities are analysed and discussed by beginning with sensing capability, then moving to seizing capability and finally ending with transforming capability. The analysis includes specifying the corresponding microfoundations of that capability and discussing its relationship with the business model.

5.3.1 Sensing

ProDiary business model displayed strong sensing capabilities of customer innovation, scouting external business environment, and signature development processes. Customer innovations have been utilised for developing the service, and the whole service is based on a strong relationship with a strategic customer, due to which the customer has still constantly very active role in guiding the development:

> *"Customer need [was the key for success], clearly and plainly. There wouldn't be ProDiary service, if there weren't [a strategic customer], and they wouldn't have the need." (P-01-2),*

Scouting external business environment represented an important sensing capability, although with ProDiary, most of this scouting happened through building a strong customer understanding and relationship, while similarly learning form market interactions:

> *"…you have to understand how the customer processes work, and overall, their world…understanding what the customers do, and why they want things, is important." (P-01-2).*

The firm level scouting processes, such as Tech Radar facilitated by Digia's CTO office, is present and accessible to ProDiary team also, but its role isn't that important, as the solution represents technologically more of a legacy system (IP-01, P-01-2). The value

proposition of ProDiary is more based on its functional capabilities with selected techno-logical base, and therefore scouting technological developments doesn't account so much for ProDiary's business model, and their capabilities are not so directly present with ProDiary. Central technological scouting activities can still have indirect effects for technological capability building in firm level, as this in turn can be still reflected with ProDiary business. Scouting capability was also enhanced by a business unit level pro-cess development, which considered also market scouting practices alongside develop-ment process formalisation:

> "…a strong guidance came from this model that we developed, that we need to sharpen the value proposition, conduct market research, what works, what competences we have, what resources we have, what we should acquire, what to recruit, where to invest, so we don't do everything." (IP-02).

ProDiary has a specific product development, and despite the business unit level process formalisation, the process is very team specific. In fact, as the core team is formed form two person, the signature 'process' is mostly about the coworking practices about those two:

> "Practically the two of us form the core [team]. We have been doing it for long, I have been working with [co-worker] since 2008… Somehow the way of working has become distinctive. The most essential in it is the way we communicate with customers, and work with very agile methods, and with very, very light concept." (P-01-2).

Their coworking is characterised with agile working methods, and only with a minimal amount of any formal processes. The firm level processes are followed only with minimal possible requirements, and instead e.g., the utilised development platform dictates how the development processes work regarding the version control (P-01-2). Therefore, with ProDiary, all the sensing capabilities of customer innovation, scouting external business environment, and signature development processes are present, and they have certain elements inherited from firm level processes. However, they can be witnessed mostly at individual level, as the solution specific organisation is so small.

5.3.2 Seizing

ProDiary shares similar hybrid organisational structure with Digia's other business areas, and it is therefore characterised naturally with a strong structural separation, as the divi-sional structure keeps the different business areas separate from each other, and central functions have been separated from the delivery organisation:

> *"Digia's organisation is formed from business units…every business unit is divided into delivery groups (DG)…in our SSS (Secured and Scalable Solutions) DG, to which Iiris and ProDiary belong, we have a focus area separation. Focus area is a P&L responsible unit inside a DG, a business team basically." (IP-01).*

ProDiary is placed to focus area of Secured Development as Operations (IP-02) and as it represents a minority solution within that structure, it is not fully separated entity within Digia's organisation, nor does it have to directly share same resources at a business unit level. The structural separation still forms a backbone of seizing capabilities within Digia, and ProDiary also benefits partially from this, despite having to share the room with the other businesses with different business models in its own focus area (IP-02).

From its business model, also ProDiary represents interesting hybrid of a SaaS business model (IP-01), combined with a service delivery business model (P-01-1). Due to this, ProDiary's revenue structure is combined of both, a direct SaaS component, but also from billable work carried out for customers (P-01-1, P-01-2). The revenues from billable customer work are financing the product development of ProDiary:

> *"…the model with [a strategic customer] is very peculiar, as they pay for our development continuously… Officially we don't do product development, without charging our customer at least a bit." (P-01-1).*

The service component of ProDiary's business has been traditionally the most dominant, as the product has over a decade long history as a customer delivery project with pre-purchased platform licenses, and therefore the SaaS transition changed the model only partially regarding the addition of SaaS pricing component and certain changes in the hosting costs and responsibilities (P-01-1). As the development resources have been scarce, with the development budget formed based on the cost structure of the service, the capability for business model hybridisation has been very crucial for seizing this opportunity initially, but also for running it in the long term within the firm.

The solution development practices have been very much bound to the key personnel of ProDiary team, and the original value proposition and solution didn't receive significant updates during the SaaS transition, but the changes in the business model also required changes in the product and its capabilities to match the new expectations from its value proposition in relation to the cost structure. With limited development resources, ProDiary team developed a capability to harvest and reapply solutions developed for different customers, and update the value proposition of the product through this process:

> *"We use the kind of model...we try not to create customised solutions, but instead implement the wished feature for all the customers." (P-01-2).*

As a part of this process, ProDiary team has developed a specific way to optimise the internal investments regarding required internal product development by limiting the amount of internal development work:

> "We created an initial prototype of the new version, and now the development is made by [a strategic customer], that we finalize the new version." (P-01-1).

Together, these capabilities and practices form a seizing capability of evolutionary solution development, denoted by incremental solution harvesting, reapplication, and internal investment optimisation, similar to microinvesting capability related to Iiris. However, with ProDiary, these investments are not made with similar frequency, the product development isn't systematic, and its mostly related to implementing new features based on customer needs, instead of formal product development vision driving the development. With ProDiary, similar microinvesting capability wasn't present as with Iiris, and instead the guiding the product development investments was more reactive than systematic.

Even though the team being small, also ProDiary team was greatly affected by the organisation culture of Digia. ProDiary team presented high levels of commitments, and establishing trust within the organisation and towards the team additionally served as important motivator:

> "[Key to the success] is that we have been given free hands, that we are not being instructed too much, and it is trusted, that we can take care of it." (P-01-2).

The culture of trust and commitment has been crucial for enabling the team to seize the opportunities, and thus it forms an important dynamic capability. Despite the effects of working culture are smaller and harder to witness with a very small team, its relative importance is amplified. With two persons, hypothetically a single person performing sub-optimally due to toxic team culture, accounts already 50% of the team, and it can state that cooperation would be impossible in those situations without a working culture.

A single most important seizing capability with ProDiary was intrapreneurship, characterised by the team displaying a strong ownership over the solution, the role of individuals regarding the successful opportunity seizing within the team, and intrinsic motivation forming the most significant component of motivation of the team. The feeling of ownership, and the intrinsic motivation it enabled building within the team members served as a strong incentive for high operational performance:

> "The main incentive in individual level is that one wants to do his job well, and is committed to the solution... The main guidance comes from that they

> *feel that it is their own solution, own product, little bit like an own child. I think that's where the main motivation stems from." (IP-02).*

These two motivating components represent entrepreneurial traits, which have helped to build strong incentives for individuals and the ProDiary team to seize opportunities. Additionally, the success of ProDiary business has been accounted for the work of very few talented and motivated individuals, and even key strategic decisions and choices have been mostly their handwriting:

> *"…the cloud team manager, he had the understanding and vision that this could be a good thing… It was the key [for ProDiary's success] that he was along back then." (P-01-1).*

The individuals working with ProDiary have had a clear sense of its business potential, and they have had the capability to make rapid successful decision about seizing the opportunity laid in front of them. Given the small size of the team, the few individuals working with this kind of projects need to have those qualities in order to succeed in this kind of endeavours, and without these intrapreneurial capabilities, it wouldn't be possible to seize such opportunities, as the weight of the rest of the firm on people's shoulders would become too heavy. Whether these intrapreneurial capabilities are solely bound to individuals in comparison to the organisation, isn't necessarily clear, but as it was seen in the previous chapter about Iiris and Intrapreneurial capabilities at the organisational level, the few individuals seem to also amplify the intrapreneurship at the team level. With ProDiary, the effect can be witnessed only within these few team members and key personnel, due to small team size.

5.3.3 Transforming

Overall ProDiary business model was managed with strong transforming capabilities, from which especially decentralisation had the most significant role, characterising the independent existence of ProDiary as a business model within Digia's organisational structure. ProDiary team is very small entity, with only two persons forming the core team, therefore it has been kept as a part of other focus area, but still giving it a lot of independence regarding its management:

> *"ProDiary, as a small team…has been operating as an individual unit. There are only few persons, and it is too small for a separate focus area, and it has been part of something larger. Currently it belongs to Secure Development and Operations -focus area, but operates still very independently, managing their own sales cases, offering development and operations." (IP-01).*

ProDiary team has been given authority for decision making, regarding most of the management decision, even though it still needs to operate under the same boundaries, as other business areas:

> "…decisions are made mostly within ProDiary team…business goals...give the boundary conditions within we need to operate, but in a sense [ProDiary team] is independent, that nobody is coming outside the ProDiary to give solutions, about for example what features to implement next, the responsibility is in ProDiary team and the service manager about the development and roadmap..." (IP-02).

Given the small size and large authority for decision making, ProDiary business has become very detached from the rest of the firm, despite having some structural connections with other businesses in the same focus area. The structural position has been changed from time to time, and the team hasn't been quite sure, whether their business has been understood by the upper management:

> "…managers have been changing rapidly, and we have been thrown from one unit to another inside the firm, that there hasn't been probably a good idea about what ProDiary is higher in the organisation." (P-01-1).

Therefore, the decentralisation of ProDiary is one the most extreme ends, it barely has any managerial or decision-making related connections with the rest of the firm.

Given this strong independence and high level of decentralisation, ProDiary team doesn't have much control over central resource coordination, and regarding this it has been relying mostly on business unit level managerial coordination activities. There have been different managerial positions in place for improving the central resource coordination within ProDiary's business unit, but the primary resource coordination still happens by the focus area manager:

> "…ultimate coordination happens by the focus area manager. In that domain it is the manager's responsibility to know, that we are going to the right direction based on the metrics, and guide the allocation of product development, sales and marketing resources." (IP-02).

Regarding the current situation of ProDiary, there is a slight agency issue regarding this when compared to the situation with Iiris, which had its own focus area in the current organisational structure. Instead, ProDiary needs to live under the roof of another focus area, and therefore its manager has the responsibility over resource coordination towards ProDiary, but still, it might not prefer to coordinate resources towards this solution, as it might seem to eat up resources from the dominant business model of that focus area. Occasionally, centralised resources have been coordinated towards ProDiary through firm level development campaigns, such as Value from Data:

> *"...Value from data program, ProDiary took part in it, and there were developed use cases around the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..." (IP-01).*

This campaign served as coordination mechanisms, by guiding the resource flows between ProDiary and other business areas of Digia.

Despite the strong independency, ProDiary has been establishing more shared activities with certain central functions, namely Service Center and IT support team, and additionally the cloud team has been an important partner with ProDiary team. The operations of these different functional areas have related to both formal and informal integration mechanisms. The collaboration with Service Center is very close, and it forms a significant part of continuous operational activities. Thus, the integration mechanisms are also stronger, and ProDiary's operations have been integrated to Service Center by detailed service processes:

> *"…those who we work with inside the firm, such as Service Center, they have very accurately specified operational models. It is really easy to work with them, as they just tell us what to do. E.g., when ProDiary was taken to their services for the first time, I just had to answer their questions, which they proposed...Service Center's collaboration is moderated by their own needs and processes..." (P-01-2).*

Other functions share more light weight integration mechanisms with ProDiary, and their operations are integrated to ProDiary mostly with active and freeform use of internal communication systems, and informal meetings in the office:

> *"…with everybody else, the collaboration is much more freeform: with IT support team we chat in Teams and the cloud team sits right next to me in the office, and collaboration with them is mostly talking over a cup of coffee. Covid of course changed everything, and last time I've physically seen the co-worker of my team was in 2019." (P-01-2).*

The integration mechanisms have become important with these functions especially, and not so much with central resources, which instead shared coordination mechanisms and activities with ProDiary. A common factor with Service Center, cloud team, and IT support team was, that from the resource perspective they were all seen as bottomless wells – the additional loading from ProDiary's operations didn't have any practical effect on the continuity of their operations (P-01-2). Shared resources, namely sales and marketing resources, required coordination between the separated organisational units, but activity sharing required integration mechanisms, to keep the separated systems together.

ProDiary's SaaS transition increased the requirements for technological capabilities, in addition to specialised expertise of the original team members, and thus the SaaS transition required building cospecialised assets within Digia. The ProDiary product maintenance and development capabilities were based on specialised expertise about the Domino development platform the product was built on:

> "My expertise is quite specific and deep, and the understanding of the service has been mostly with me. And [the co-worker]'s coding expertise, it requires the understanding of Domino Designer environment…it would be difficult to replace either of us quickly..." (P-01-2).

During the SaaS transition, the cloud team provided support for ProDiary team for moving the application to data centre, but later their role was increased even further, as ProDiary moved for using AWS cloud services. This required more advanced cloud capabilities, not readily available within the team. During this time, Digia's cloud team gained a more permanent support role regarding cloud related internal competence needs, and they assisted ProDiary with the cloud transition:

> "…it was really, really important, that we had people, who have been developing also larger environments for AWS. …I didn't have that kind of expertise." (P-01-1).

This combination of central cloud capabilities and team level product expertise allowed the SaaS transition of ProDiary and displays the transforming capabilities of building cospecialised assets within Digia. This capability has also had role during the firm level innovation campaign, Value from Data, in which Digia's data and analytics competences were used in combination with ProDiary product, to innovate new use cases and product features:

> "...Value from data program, ProDiary took part in it, and there were developed use cases around the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..." (IP-01).

The cospecialised asset building capabilities had a central role in this campaign, as its objective was to systematically search for opportunities to combine technological expertise and competences within Digia for innovation new solutions.

ProDiary team has presented high levels of adaptive capability, allowing it to undergo rapid transformations. The capability has been present especially during the initial SaaS transition, which eventually unfolded throughout a series of unplanned events, forcing the team and relevant stakeholders for creating viable solutions rapidly utilising e.g., ad hoc planning:

> *"…process was the same with what the whole has been set up, that we had an external forcing need to do something, and we began to plan a list of things that had to be done…" (P-01-2).*

Additionally, team was later forced to review its operations, after its first ISO audition served as a good reminder, that there were multiple areas in need of improvement. Despite the team successfully passed the audition, this led to a rapid operational transformation within ProDiary team:

> *"The first ISO audition was a wakeup call…in the last audition I was much more confident, as I knew that we had documentation existing in our wiki, we had proper version control, external ticketing systems, we had Jira, and everything was tip-top by all means." (P-01-2).*

The shared business governance especially in the form of firm level budgets has challenged the product development of ProDiary, as it enables only scarce investments to be made for product development. This has been probably one of the motivating factors behind the adopted hybrid business model, as discussed above. The strict financial governance mechanisms have been balanced with closer to teams happening business development support:

> *"...we have aimed to bring support for that more widely in our delivery group and business unit level, so that we could support and bring know-how, tools and resources for the business development. Starting point is, that team would the ownership from their business, and because of that they make decisions, which improve development and growth." (IP-01).*

The function of these more supportive governance mechanisms is to offer business teams help for reaching the business goals within the available budget and within the given boundaries. In addition, ProDiary has received certain adaptations to the financial metrics imposed for it and for its focus area:

> *"ProDiary has been always part of another organisational unit. We are used to distribute the profit responsibility per solution. Currently we have an expectation and forecast for ProDiary solution, although it is part of Secured Development and Operations focus area, which is part of SSS revenue target. ...ProDiary still doesn't directly have the P&L responsibility of a business unit." (IP-02).*

These adaptations separate its metrics from directly having the same with the rest of the focus area, although, the adaptation doesn't directly mean that it will be positive for ProDiary. Again, theoretically the focus area level profitability goal distributions can be established in a way, that they drain the available product development resources from the cost budget. Lastly, active steering of the business teams is also part of the business governance:

> *"…business developments are followed up and guided constantly… larger investment and growth areas are gone through, especially if they have effects on business metrics, that can we make e.g., more forward-looking investments… From business control perspective we have monthly coordination and steering inside our DG…a monthly performance review…" (IP-01).*

These managerial functions form a transforming capability of supportive business governance, also present with ProDiary team.

ProDiary differs from other business areas and Iiris solution regarding the personnel turnover and growth, and in combination with the small team composition, the knowledge sharing occurs in smaller scale. The service has been run successfully since its early days in 2014 with same core team composition, and thus there hasn't been historically a need to recruit anyone, and even the attempts to recruit new staff members have been failed, as the new recruits have proven themselves as very useful, and other business areas have appropriated them soon for their own operations (P-01-2). Additionally, the previous attempts to establish firm level developer resource pools within Digia have also failed (P-01-1). ProDiary team's internal knowledge has been still actively codified into an internal knowledge base, a wiki document, which offers sufficient information for operating the service:

> *"The wiki is for describing the service from the technical side and also otherwise, and there is all kinds of things. That's how we have documented the service, and our know-how." (P-01-2).*

Active knowledge sharing was also present in the form of internal communication systems and freeform meetings in the office, as was previously noted regarding the firm level integration mechanisms.

The dynamic capabilities of sensing, seizing, and transforming were all present for managing ProDiary business model. Sensing occurred through team level scouting activities, tapping into customer innovation, and specific development practices. Together these allowed guiding the direction of ProDiary's development. Regarding seizing capability, microfoundations of business model hybridisation and intrapreneurship were especially important during the initial stages of ProDiary's development. Furthermore, a culture of trust and commitment, evolutionary solution development and structural separation enabled seizing the opportunities in longer term. Transforming capability was presented through microfoundations of cospecialise asset building and highly decentralised business team, combined with firm level integration mechanisms, central resources coordination and supportive business governance. Furthermore, ProDiary team presented qualities of high adaptivity, and it possessed its own knowledge sharing practices, allowing transforming to take place.

6. DISCUSSION

6.1 Comparing business model portfolio interactions

Sharing of activities, resources, and customers creates interdependencies between different business models of Digia. Both Iiris and ProDiary business models had notable dependencies with Digia's dominant service business model, which has caused sharing related conflicts emerging especially from internal resource competition. The primary source of conflicts was traced to the sharing of critical central resources, namely sales and marketing resources. Due to the hybrid organisational structure of Digia combining divisional and functional organisation units, the centralised sales and marketing functions tend to prioritise the needs of larger business areas and therefore also the primary business model over Iiris and ProDiary, which both represent a less significant domains of business for Digia. Sales and marketing have both limited time and resources for their own operations, and this naturally leads to choosing activities and business areas which produce the highest immediate returns, and therefore business models with lower immediate revenue potential are neglected, unless there are sufficient resources available. In this regard, Iiris business model was in a slightly better position than ProDiary, due to its larger revenues, and the complementary nature of its value proposition. Both Iiris and ProDiary still suffered from scarce marketing and sales resources when compared to Digia's other business areas, even though they still had to rely on them regarding sales and marketing activities. The effectual domains of sharing and related business model portfolio interactions with Digia's primary business model are compared in Figure 10.

Sales and marketing functions are also directly related to the customer interface, and together they form the internal customer channels, providing access to customers. Instead of sharing critical resources or customers segments, sharing of customer channels was an additional source of conflicts. From systemic perspective on business models, the efficiency of sales and marketing operations are not only dependent from the capacity to carry out supply side sales and marketing activities, and the availability of internal resources to produce them. Instead, their efficiency also depends on the customer interface, and the efficiency and capacity of the customer channels to allow reaching the targeted market segments. With Iiris and ProDiary, customer channels seemed to be bottlenecks regarding the ability of both business models to reach their potential markets and sharing the customer channels with different business models was a source of conflicts. The previous research on demand side conflicts in parallel business models has focused more on the cannibalisation effects within the targeted market segments (e.g.,

Casadesus-Masanell & Tarziján 2012, Velu & Stiles 2012), but with Iiris and ProDiary, the dominant customer side conflict was related to the sharing of customer channels instead. Even though Iiris was tightly connected to the shared customer groups as a complementary solution and therefore had to fight over the customer channels, the similar issues did exist with ProDiary, although its offering and customer segments were almost completely detached from Digia's primary business. Because of this detachment, ProDiary team had to take more responsibility over its customer relationship management. Team was able to surpass this bottleneck partially, and after all ProDiary business model wasn't as reliant for shared customer channels as Iiris.

The activity sharing increased the between complexity with both business models, Iiris and ProDiary, even though the sharing enabled business models to utilise common non-critical assets and resources. Sharing therefore ultimately lead to some sharing conflicts. This was especially evident with Iiris, as its relationship with Service Center was complex with the different common activities of internal purchases, product development, system maintenance support and common customer project work. The conflicts were not present as direct incidents, but instead as an overall feeling of inefficiency with interviewees related to common activities and operations. ProDiary didn't have as much activity sharing outside the sales and marketing activities, rather than the support related activities, but the similar phenomenon was present also between ProDiary and Service Center, as their cooperation reduced operational agility, although offering much needed support resources for product maintenance.

Budgeting and financial governance activities presented a major source of conflicts, as they restricted the resource allocation for product development with both Iiris and ProDiary. Both business models were able to cope with this by delivering certain development and customisation projects as billable customer work, and thus adjusting their business model to match the financial requirements. Yet, the scarce product development resources available only from their own profit margins were viewed as reducing the potential growth. The governance mechanisms were designed for the primary business and for that they enabled sufficient risk tolerance. However, for Iiris and ProDiary business models, the optimal risk tolerance would have been different, and governance mechanisms seemed to them as risk avoidance (I-01, IP-02). ProDiary was in a slightly better position in this regard, because it required much fewer development resources, the product presented higher scalability with lower initial setup costs for the customer, and its

EBIT was higher, enabling accordingly higher relative amount of resources to be allocated for internal product development.
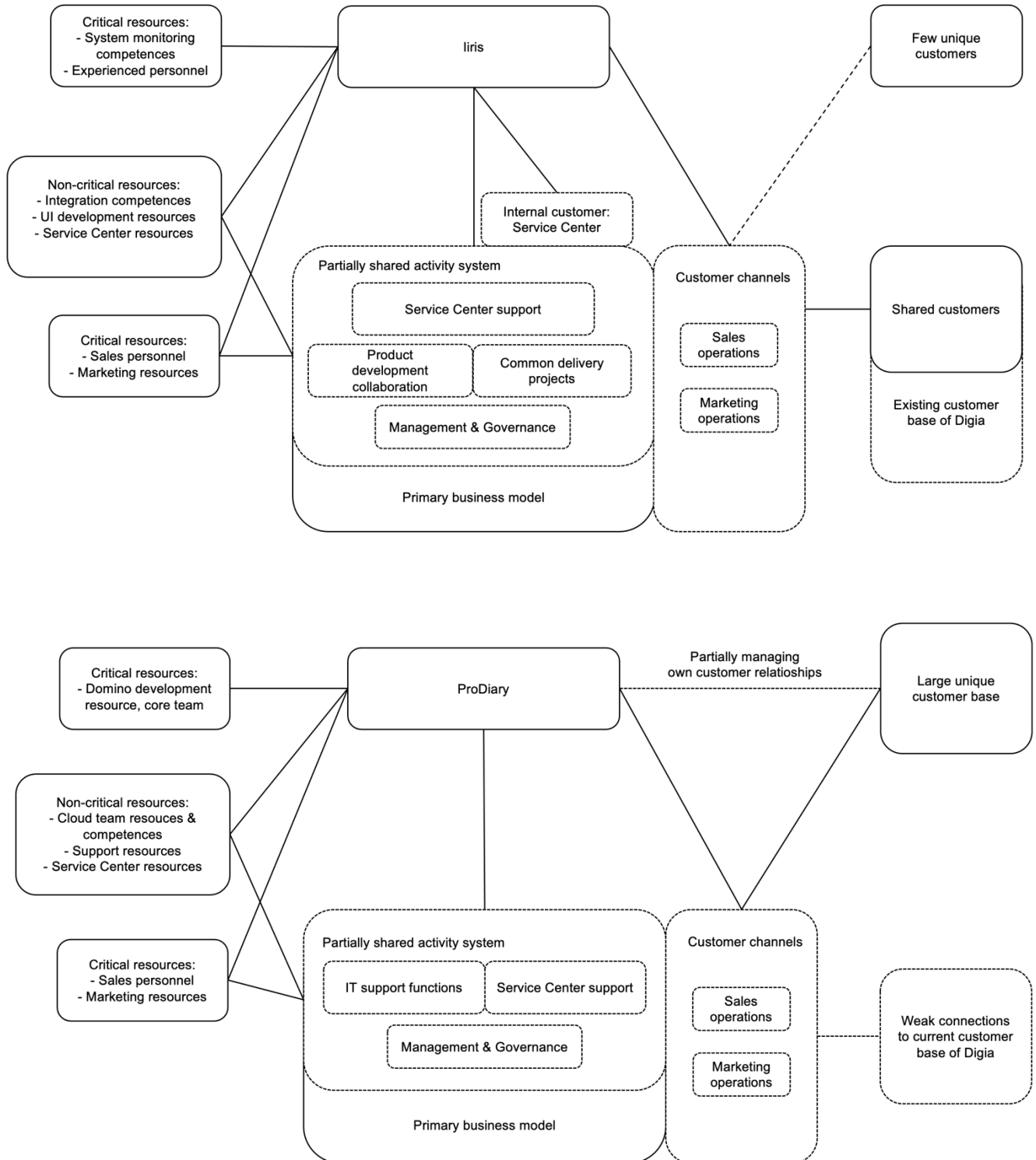

Figure 10. Effectual domains of sharing and portfolio interactions with the cases.

6.2 Managing portfolio interactions with dynamic capabilities

Enabling and moderating portfolio interactions with dynamic capabilities

Dynamic capabilities presented within the context of the research have various enabling and moderating effects on the interactions between the studied business models and the primary business model of the case company. The recognised microfoundations of dynamic capabilities have also many similarities between the cases, and their moderating effects for sharing and conflicts between business models can be recognised when analysing the cases together. Overall, the seizing and transforming capabilities had the strongest effects on the interactions between business models, when comparing the connections of dynamic capability microfoundations in the areas of activity, resource, and customer side interactions. The similarities between microfoundations and their effects is logical, as dynamic capabilities are firm specific and their adoption cycles long (Teece 2007), and therefore dynamic capabilities present in Digia can be assumed to have firm level effects, and their distribution within Digia already homogenous due to the long development. A detailed summary of the moderating effects of recognised dynamic capabilities and their microfoundations are presented in Table 4.

Iiris and ProDiary business models had to overcome internal barriers for making product development investment to seize the opportunities for scalable product business models, and the microfoundations of the seizing capabilities reflect that need. With both business models, a hybridisation of product and service business models was achieved, and in both cases business teams' management did present a strong ability to design and establish this business model hybrid around an emergent customer need, which was arguably the key for subsequent critical development resource access enabling the growth of the businesses. Despite both business models had to live in the shadow of the primary service and project business model, this hybridisation also strengthened their strategic alignment with the primary one, as in both cases the service component of the business model improved their performance against the financial metrics and general management expectations. Business model hybridisation microfoundation was also accompanied by evolutionary solution development and microinvestment capabilities, which enabled designing the product development roadmap to support incremental product development pace in the presence of scarce resources. Incremental solution development e.g., allowed opportunistic solution harvesting for minimising the need for internal development, and whereas microinvestments were presented as negotiating wider access for development resources through budget exemptions.

The cultural environment present within Digia, combined with intrapreneurial decision making capabilities of Iiris and ProDiary business teams, built important resiliency towards conflict management and enabled overcoming adversities for reaching the current success of both business models. The overall committed team culture was important enabler, but especially the component of trust was essential during the difficult early stages of development, as the uncertainties were high, and the commercial success wasn't guaranteed. Often, the risk would have been unbearable against the traditional metrics and official means of decision making, and therefore both business teams had to make certain decisions and development 'in hidden', to avoid managerial conflicts, and enable seizing the presented opportunities. The structural separation created with nested organisational structures and the resilient organisational culture were partial enablers for this. However, additionally driven individuals with strong intrinsic motivation had very emphasised role enabling opportunity seizing. Characterised as intrapreneurial capability, this ability of individuals to drive the performance of their team, and to enable achieving above normal results with the given resources, was also crucial component of the seizing capability of Digia present in the management of Iiris and ProDiary business models.

Despite the business teams of ProDiary and Iiris had both connections and dependencies with the central functions of Digia and partially shared resource pools with the other business teams within the larger organisational units, both business teams enjoyed a great level of independency, for which Digia had been aiming through intentional decentralisation of decision-making authority. High decentralisation increased authority in business teams and offered also partial decision-making protection by creating a 'safe haven', within which business decision and operations could be carried out, offering a non-structural mechanism for separation. Coordination mechanisms between decentralised parts of the organisation were mostly related to the coordination of central resources, but these had also effects for the usage of customer channels, and therefore coordination mechanisms presented very strong moderation effects directly towards the sharing conflicts and allowed a balance to be created between different business models and their shared resource spending. The coordination happened either by the various managerial positions within a business unit, or directly by the business teams' managers, who took responsibility over coordinating resource sharing within their own unit, by using their own decision-making authority. On the other hand, connecting the activity systems between different business models occurred through firm level integration mechanisms, which were practically either detailed formal service processes, or informal means of collaboration and active communication between business teams and key individual personnel.

The integration mechanisms allowed higher resource compatibility between different separated parts of the organisation, and thus allowed increased resource flows towards the minority business models. This reduced the friction between integrated activities, and moderated the demand side conflicts through alleviating the strain on shared customer channels.

Transforming capabilities of cospecialised asset building, adaptation and knowledge sharing allowed building, managing, and reconfiguring the asset and resource base for the benefit of minority business models. An important part of the asset building was a firm level technology and intellectual property build-up, which allowed the technological basis of both Iiris and ProDiary product to be formed. Cospecialised asset building was displayed by firm level competence building and recombination activities, but also through business team level building of technological capabilities and personnel training, increasing the critical resource base and thus allowing moderating the conflicts. The transforming capability of adaptation allowed a rapid restructuring and transformation of business teams, which occurred multiple times with both business models, and was also present on a firm level through the active changes on organisational structures. The knowledge sharing occurred through formalised knowledge codification practices of business team specific internal wiki building, but also through active communisation practices. Knowledge sharing practices were utilised for training new personnel, but also for enhancing the collaboration performance with internal stakeholders, working as a key enabler for activity sharing.

A transforming capability of supportive business governance had important role for fostering the independent growth of Iiris and ProDiary business models. Despite the business teams of Iiris and ProDiary enjoyed high levels of independence and also strong decentralisation and seizing capabilities overall, their development direction was actively guided through specific governance mechanisms, denoted by active managerial participation for supporting the growth of the business models, but also for ensuring strategic congruence. In addition to financial governance mechanisms, such as firm level budgeting and performance reviews, the management support was utilised for coping better with the given resource constraints, and for increasing the competences of the business teams for developing the business model independently. In addition to the resource control, the role of governance mechanisms was important also for enabling resource base extensions for Iiris and ProDiary, in the form of adjustments for financial metrics and budgets, when these adjustments were required in reaching for higher growth objectives.

Table 4. Summary of recognized moderating effects of dynamic capabilities for business model portfolio interactions.

Dynamic capability	Microfoundation	Areas of interaction		
		Shared activities	Shared resources	Customer side sharing
Sensing	Customer innovation		• Sourcing ideas and innovations for reuse within the firm	• Establishing customer connections • Enabling joint product development
Sensing	Scouting external business environment			• Building deeper customer understanding
Sensing	Signature development process	• Involving internal stakeholders for development process	• Pacing development sprints according to internal resource availability	
Seizing	Business model hybridisation	• Aligning business practices with dominant business model	• Establishing new sources for critical development resources	• Enabling cocreating value with customers
Seizing	Evolutionary solution development	• Mitigating offering incompatibility risks with shared functions through iterative development	• Conserving development budget spend with solution harvesting	• Enabling learning from shared customer base
Seizing	Structural separation	• Reducing between complexity • Protecting from shared governance mechanisms	• Protecting critical resource pools	
Seizing	Microinvestments	• Negotiating exemptions from governance • Pacing development sprints according to development activities with other business areas	• Prioritising scare development budget usage	
Seizing	Culture of trust and commitment	• Building resiliency for solving activity system complexities • Motivating teams under non-incentivising shared governance mechanisms	• Building resiliency towards resource conflicts	• Mitigating customer conflicts Increasing customer resiliency towards conflicts emerging from inside a firm
Seizing	Intrapreneurship	• Overriding shared governance and creating strategic congruence with strong feeling of ownership	• Creating a resourceful mindset for overcoming resource scarcity	• Reducing reliance on shared customer channels with independent customer

Dynamic capability	Microfoundation	Areas of interaction		
		Shared activities	Shared resources	Customer side sharing
		• Overcoming frictions in activity sharing over different organisational structures	and sharing conflicts	acquisition and relationship management
Transforming	Adaptation capability	• Remaining fluid in order to undergo changes despite dependencies with shared external activity system		
Transforming	Building cospecialised assets	• Enabling synergistic value creation through shared development activities	• Building specialised and critical assets from non-critical assets and resources • Reducing resource scarcity	
Transforming	Central resource coordination	• Orchestrating optimal activity sharing • Sustaining activity system balance	• Active resource allocation control • Balancing resource usage between business models • Enabling access to scarce resources • Enabling just-in-time resource spending based on market demands and business goals	• Establishing access for customer channels • Pacing the usage of customer channels • Ensuring offering fit
Transforming	Decentralisation	• Giving authorisation for establishing activity system connections • Giving authorisation for utilising shared activities • Creating non-structural separation of activities	• Enabling independent resource spending decisions Enabling efficient use of scarce resources • Enabling non-structural separation of resources	• Giving freedom to override bottlenecks in customer channels
Transforming	Firm level integration mechanisms	• Reducing between complexity • Enabling efficient activity sharing • Reducing lead time of shared activity execution	• Increasing resource compatibility	• Reducing the strain on customer channels • Creating offering fit • Reducing customer conflicts

Dynamic capability	Microfoundation	Areas of interaction		
		Shared activities	Shared resources	Customer side sharing
Transforming	Knowledge sharing	• Establishing connections between activity systems • Controlling and guiding shared activities	• Offering access to shared resources • Enabling critical resource building	• Increasing awareness of customer group and channel statuses
Transforming	Supportive business governance	• Offering tools and resources for managing activity sharing closer to operations	• Controlling resource spending • Enabling resource base extensions	• Enabling access to customer channels • Reducing reliance on shared customers

Transforming versus sustaining effects of dynamic capabilities

Overall, dynamic capabilities present in the cases had very strong connection with change and transformation. This was related to the way new needs for change were sensed, opportunities for change seized, and transformation initiated. Sensing capabilities and their effects discussed above, offered important signals and insights about change especially, highlighting the transformational effects of dynamic capabilities. Also, many of the seizing and transforming capabilities and their microfoundations accounted for transformational effects of dynamic capabilities. The seizing capabilities of microinvestments, intrapreneurship and evolutionary solution development were all related to the transformational effects of Iiris and ProDiary business models, and accordingly adaptivity and cospecialised asset building had mostly transformational effects on them. Also, the stronger the change, more present these capabilities were throughout the development.

However, certain microfoundations accounted for sustaining effects on business models. The seizing capabilities of structural separation and culture of trust and commitment had very strong sustaining effects on Iiris and ProDiary. Especially the organisational culture was constantly present, and its effects were often not related to initiating a change, but instead to sustaining the present situation, or sustaining the achieved change. Also, the transforming capabilities of firm level integration mechanisms served a similar purpose, for them being present as a sustaining force maintaining an activity system connections and resource flows between separated parts of the organisation. Many of the seizing and transforming capabilities presented both transformational and sustaining interactions with business models. For example, central resource coordination was related to the changes in resource flows, but also to maintaining a balance between flows after they

were established. The culture of trust and commitment microfoundation also enabled the business teams to carry out significant transformations and initiate decisions about significant changes, in addition to the effects as a sustaining factor.

Iiris and ProDiary cases display evidence of both transformational and sustaining interactions between business models and dynamic capabilities, confirming the ideas discussed in the theory chapter about their interactions. This is also the case with transforming capabilities, with which the sustaining interactions are related to in sustaining an achieved change. The exact analysis and separation of the capabilities on this basis wasn't still possible based on the analysis carried out in this research, and therefore it is difficult to say, whether the transforming and sustaining interactions have stronger presence e.g., with seizing or transforming capabilities, and whether sensing capabilities can be also utilised for sustaining interactions.

Dynamic or ordinary?

Lastly, it is a good and important to discuss to which degree the recognised capabilities present in this research are dynamic, or merely ordinary organisational capabilities. Ordinary capabilities, formed from operational, administrational, and governing activities, are typically widely diffused in the markets, they provide efficiency and technical fitness, and they are typically related to cost control, whereas dynamic capabilities are more difficult to imitate by competitors, and they provide evolutionary fitness through orchestrating and innovating with firm's assets, than focusing plainly on achieving cost efficiencies (Teece 2014). Certain elements of the microfoundations of the recognised dynamic capabilities do remind ordinary efficiency-oriented capabilities, such as product development processes, operational processes and practices, and business management activities. The ordinary components of these capabilities are indeed present and highly related to all of these, but there are still many factors that differentiate them as being dynamic instead.

With the sensing capabilities, the microfoundation of signature development process was related partially to firm level product development processes, but also partially to a business team specific ways of carrying out R&D, which was recognised to entail elements of industry standard practices, but it was still optimised to match the specific needs of Iiris and ProDiary business teams (I-01, P-01-1). Also, the rationale for developing these practices were not so much related to the direct R&D efficiency, and instead it was about how the business teams continuously planned the R&D roadmap, and renewed the roadmap based on customer needs (IP-01, IP-02). The signature development process

therefore characterises a capability specific to Digia and not adopted widely in the markets, while also simultaneously improving the evolutionary fitness of Digia, instead of aiming for cost efficient product development function within its business teams.

Regarding the seizing capabilities, the organisational structure, committed team culture and the employed business model in both cases combining service and product pricing components are not necessarily evolutionary fitness enabling dynamic capabilities. But then again, attempting to apply a similar organisational structure with the specific responsibility distribution, roles of different units, and with right sized nested units can be very difficult, and probably wouldn't lead to similar results. Nor is the aim of such managerial solution based on direct efficiency benefits, and instead its intention is more to provide higher evolutionary fitness. The organisational culture is something very difficult to mimic and to imitate, although textbook definitions and theoretical knowledge about it is widely abundant and well diffused in the markets. The culture is also something that is very much related to individual characteristics of managers and all the individuals of the organisation, and affected by the incentive structures and other context specific elements, feeding certain type of behaviour. Culture is something, that is very difficult to place under a specific title or name: you can describe it with various adjectives and attributes, but really capturing its true essence is much harder, and therefore by its nature it is more dynamic than ordinary. Business model on the other hand, is something easily described and conceptualised, but what is special in this case about the business model hybridisation capability, is the ability of an organisation to adapt the business model based on the opportunity at hand, and then respond to the need with corresponding internal changes, in order to facilitate the new model within a firm. This is not something easily imitated, as firms are different, and so are the needs of specific customers.

Transformation capability microfoundations are another area, within which there are a lot of ordinary components present in the capabilities. Budgeting and casual managerial governance mechanisms and activities are not quite enough to account for the evolutionary fitness of a firm, and theoretically decentralisation can be easily adopted by just abandoning certain parts of the organisation. But to create transforming outcomes with these capabilities, there needs to be a more specific component in them, which is also highly context dependent and thus not readily adoptable. E.g., although decentralisation would be relatively simple to adopt in theory, finding the optimal amount of decentralisation with considerations on the firm specific factors is much harder, but probably the most important factor in enabling the benefits to be achieved from it. Similarly, adopting modern communication software and systems in a firm isn't necessarily a sign of a dynamic capability, but the combination of individual and organisational abilities and means of

knowledge sharing can create a complex and difficult to imitate system of systems, responsible for orchestration and high utilisation of internal knowledge assets contributing to the evolutionary fitness of the firm, and thus accounting as a dynamic capability.

Overall, researcher argues that the dynamic capabilities and their microfoundations present strong characteristics of leadership, evolutionary fitness building and entrepreneurial orchestration of assets, as described by Teece (2014), and therefore the results confirm actual dynamic capabilities to be in place for enabling and moderating the business model portfolio interactions. It is acknowledged, that not all the recognised dynamic capabilities are equal, and some of them have a weaker form than others, and this creates differences within the results. There are also many ordinary components present in all of the capabilities, which is natural and expected, as dynamic capabilities are formed partially in combination of these lower-level ordinary capabilities.

6.3 Patterns in development and portfolio alignment

Evolution of sharing

The sharing of activities, resources and common customers has changed and developed throughout the history of Iiris and ProDiary business models, and thus affected the overall business model portfolio characteristics. The developmental phases of sharing in Iiris and ProDiary, in relation to the primary business model of Digia, are characterised in Figure 11. Iiris business model was established as a part of another business area, and for long their customers were practically the same as with the rest of the firm. In 2017, Digia established Service Center, and thus the shared non-critical resource usage with Iiris increased even further, thus strengthening the sharing of assets with the rest of the firm. In 2018, Iiris was separated to a different delivery group, and thus the personnel were also moved away from the previous organisational unit, separating the activities of the two units and the different business models. Throughout the history, Iiris business team had been growing steadily, increasing the amount of internal non-shared resources of Iiris. From the customer side perspective, Iiris has been only recently expanding to new, non-shared customer groups, and thus the customer side sharing has decreased during the recent developments.

Regarding ProDiary, the pre-history of the business model was similarly as an integrated part of Digia's offering, through the Domino development team behind the original solution. However, during the SaaS transition the demand of Domino development business was petered out after the customers began to leave the platform one by one, and thus

ProDiary became suddenly almost completely separated from the other resources, activities, and customers of Digia. Slowly, the utilisation of shared resources and activities has increased with ProDiary, despite still there are almost no connections within the customers of ProDiary and the customer groups of Digia's other businesses. The new connections established between ProDiary and Digia's other business models have been mostly related to non-critical assets, namely support services of Service Center and IT support team, and the technological competences of cloud team. The developments in the sharing, and corresponding changes in the portfolio position of the business models are depicted in Figure 11.
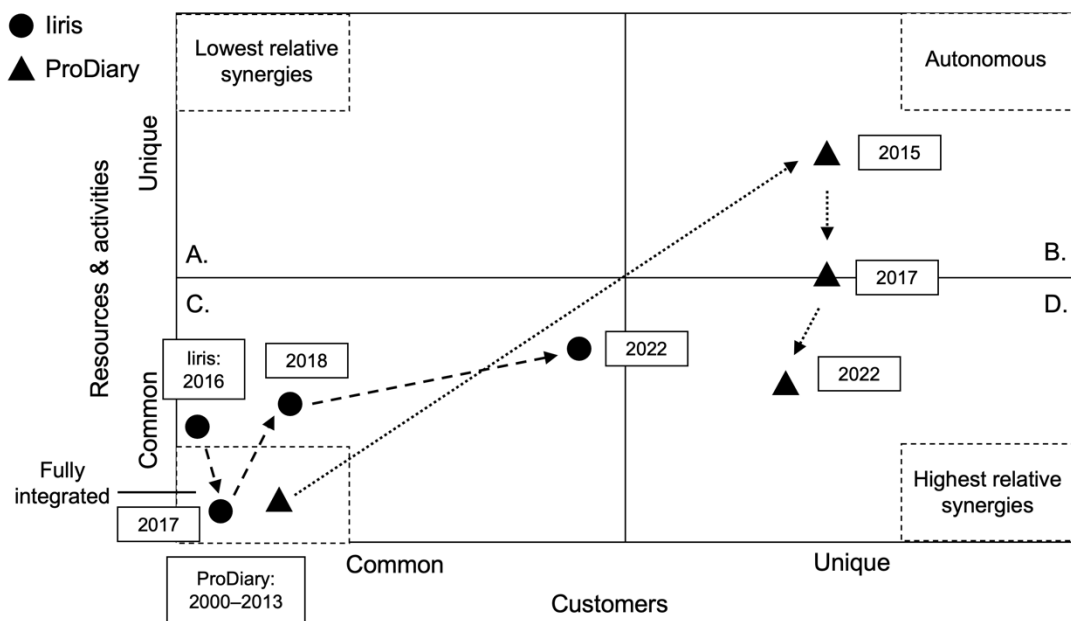
Figure 11. Development of sharing in Iiris and ProDiary business models, and relative positions within portfolio matrix.

The developments depicted in Figure 11 are only interpretive but based on the developments described previously in chapters 4 and 5 about the developmental roadmaps of both business models. The developmental patterns show gradual development trends towards more synergistic position in the portfolio matrix, but with completely different development routes. Both business models do have origins as an integrated business model (C), but from there their paths differ. During the SaaS transition, ProDiary has been separated from the other business areas of Digia, and thus gained a status of separated business model, having no significant connections with Digia's customers, but still having slight connections in the resource and activity sharing. From there onwards, ProDiary's developments have increased the resource and activity sharing, and thus moved its position lower in the matrix, towards being a complementary business model (D).

Iiris, on the other hand, has a more mixed developmental trajectory especially regarding the early phases of the development. Because the offering and the business was very integrated part of integration development and those customers, Iiris had a high sharing of resources and activities with other business areas and Digia's primary business model. This connection was further strengthened due to addition of Service Center in 2017, but then again, the separation to a distinctive delivery group also separated the primary resources and operational activities. In more recent development history, Iiris still has maintained significant sharing of resources and activities with Digia's other business areas, but it has been also growing its own separate resource base, thus leading to a slightly increased separation. Iiris is still positioned as an integrated business model in Digia's portfolio, although it has begun building unique customer base during the last years. This recent customer side separation has initiated movement towards more complementary business model direction.

Developing portfolio alignment

Both business models present development trends towards higher relative synergies with the primary business areas. With ProDiary, these synergistic developments can be traced to the increased sharing in non-critical assets, witnessed through the sharing of common resources and activities. Increased sharing denotes for increased asset utilisation, therefore enabling the synergies to be present, despite the business model is otherwise mostly separated from Digia. However, with Iiris the asset utilisation related synergies have been constantly present, or at most they have slightly begun to decrease, and instead the development towards for more synergistic position in the portfolio stems from the customer base extension. Iiris has slightly grown Digia's customer base, moving the business model to a higher synergy position in the portfolio. The movements towards synergistic positions in the portfolio is assumed to be evidence from developing business model portfolio alignment, similar to strategic alignment of businesses in a portfolio. Business models present alignment towards each other when their complexity decreases (Foss & Saebi 2018), which also leads for creation of higher relative synergies. A portfolio position with higher synergy therefore predicts this alignment, and if the business models of a firm display high relative synergies, the portfolio is well aligned. With Iiris and ProDiary, the alignment has been increasing relatively slowly, although lateral changes towards another portfolio positions with similar synergies, as with ProDiary, have been much faster.

As discussed above regarding the enabling and moderating effects of dynamic capabilities on business model portfolio interactions, the role of dynamic capabilities was mostly

related to dealing with the sharing conflicts and complexity mostly as supply-side phe-nomena. This emphasis on supply side effects means, that regarding the portfolio posi-tion, dynamic capabilities can mostly increase the sharing of resources and activities, and therefore customer expansions cannot be directly explained through that. Certain dynamic capabilities had still important effects for customer opportunity sensing and seiz-ing, and transformational capabilities enabled e.g., the utilisation of internal customer channels for reaching them, but still the plain customer group or market expansions can be also achieved directly through ordinary sales and marketing capabilities, although dynamic capabilities can have indirect role for enabling their efficient deployment. The alignment achieved with ProDiary has been therefore characterised more by the efficient utilisation of dynamic capabilities, whereas dynamic capabilities can be argued to have had only indirect effects for the increase in alignment achieved with Iiris business model through sustaining the conditions of high supply-side sharing.

Evolution patterns of dynamic capabilities during developmental stages

Overall, the dynamic capabilities present in Digia affecting the business models of Iiris and ProDiary were relatively static throughout the developmental history of the models. The capabilities only took a different form and effect depending on the context, such as the seizing capability formed of committed culture. The firm level culture was effective already in the early development phases, as it enabled overcoming the initial challenges in the development. Still, it has developed to its current form through the long history of the business teams, and nowadays especially Iiris was characterised by a stronger team level culture, due to its growing internal team size and relatively independent operational team. Also, the transformational capabilities, such as supportive business governance and achieved decentralisation have been more of a firm level characteristic, which have existed within Digia longer than Iiris or ProDiary SaaS service, and probably developed inside the firm through its own developmental history. In the interviews, there was no signs that significant changes would have occurred regarding these capabilities during the development phases of Iiris and ProDiary.

However, certain adaptations or alterations have occurred to dynamic capabilities during the different developmental stages. Especially the intrapreneurial capability had interest-ing development trends, as it was mostly displayed by strong individuals in the early critical moments of business model development, but with Iiris, it became present also as a team level capability, and it affected decision making more widely than through the few key personnel, as in the early phases. Similar developments were not present with ProDiary because no significant changes have occurred with its team composition, and instead within the limited team ProDiary still possesses similar and practically unchanged

intrapreneurial capabilities. Intrapreneurial capability is interesting in this regard by itself, as its roots are indeed in individual abilities and qualities, but overall and as a firm level capability it is related to how these individuals are enabled and empowered, which isn't bound plainly for individual capabilities.

The phases of turmoil in the development of business models forced the dynamic capabilities to be used for survival and coping through the change. During the changes, multiple different dynamic capabilities were used in combination or consecutively, in order to react for the changing environment. With Iiris, the biggest turmoil was related to customer crises, during which customer needs had to be recognised through sensing, internal structures, and assets changes rapidly through transforming, and new opportunities seized by fast and timely business decisions regarding business models and investments. Also, the way ProDiary business model was rapidly changed to a SaaS model included utilisation of all, the sensing, seizing, and transforming capabilities, for Digia and ProDiary team to undergo that transition. Therefore, the evolution of dynamic capabilities during these developmental stages hasn't been drastic, but instead they have developed incrementally with only subtle changes witnessed on a firm level. The changing nature during the development is tracked to the way the capabilities present themselves during the development.

7. SUMMARY AND CONCLUSIONS

7.1 Summary of the key findings

Firms can employ business models in parallel to each other, and thus engage in building portfolios of multiple business models. Business models within a firm's portfolio create synergies if they share non-critical tangible or intangible assets with each other and thus enhance the utilisation rate of those assets for increased financial performance. Sharing can lead to value destroying interactions, if it creates conflicts, it is targeted for critical resources, or if it leads to cannibalisation of sales. In this research, a parallel business model management was studied by analysing the moderating effects of dynamic capabilities on the interactions between business models. This phenomenon was studied by attempting to answer to a research question of **how incumbent firms utilise dynamic capabilities for managing multiple business models in parallel to each other during their evolution.**

The primary recognised portfolio interactions within the case context were related to sharing of activities and resources from firm's centralised functions, but also to the sharing of customer channels and groups. Scarcity in sales and marketing resources increased their criticality and caused conflicts between firm's primary business model in both cases. In addition, shared customer channels were recognised to be significant source of conflicts. Results of the research confirmed the connection between firm's dynamic capabilities and parallel business model management, and further elaborated the dynamism of this relationship.

Firm's dynamic sensing capabilities are utilised for pacing the resource usage, and for involving internal and customer stakeholders for development through identification of relevant sources for innovation. Seizing capabilities manage and reduce the complexity of activity sharing, while allowing more efficient usage of shared resources through harvesting, usage prioritisation and resiliency building. Seizing capabilities are key for overcoming challenges with shared customer channels, and they enable engaging in value cocreation with customers. Transforming capabilities allow balancing the shared activity systems and the usage of resources and separating a business model's activities and resources within a firm. Transforming capabilities have important role in gaining the access for activities, critical resources, and shared customer channels. A summary of the key findings is presented in table 5.

Table 5. Enabling and moderating effects of dynamic capabilities in parallel business model management.

Dynamic capability	Area of portfolio interactions		
	Activity sharing	Resource sharing	Sharing of customers
Sensing	• Internal stakeholder involvement	• Pacing development according to resource availability	• Involving customers to development
Seizing	• Managing and reducing between complexity in activity systems • Aligning business practices between business models • Creating activity system connections	• Resource harvesting • Prioritising resource usage and protecting resource pools • Building resiliency towards scarcity	• Enabling value cocreation • Mitigating conflicts • Reducing reliance on shared customer channels
Transforming	• Creating, controlling, and guiding activity system connections • Sustaining balance and increasing efficiency in sharing • Separating activities	• Building new resources and offering access to scarce resources • Sustaining balance in resource sharing and controlling spending • Separating resources	• Enabling access to customer channels and customers • Balancing the usage of customer channels • Enabling overriding bottleneck channels

7.2 Theoretical contribution

Firms have begun to employ multiple business models in parallel to each other to gain competitive advantage and increase their performance (Markides & Oyon 2010, Sosna et al. 2010, Casadesus-Masanell & Tarziján 2012, Aversa et al. 2015, Höök et al. 2015, Kim & Min 2015, Aversa et al. 2021). By establishing parallel business models, firms build business model portfolios which display varying characteristics of synergistic benefits (Sabatier et al. 2010, Aversa et al. 2017, Bosbach et al. 2020). Establishing multiple business models can arise increased complexity, managerial conflicts, and cannibalisation effects within an organisation (Velu & Stiles 2013), due to which firms tend to separate the business models, while simultaneously diminishing the possibilities for allowing

synergies to emerge (Markides & Charitou 2004, Aversa et al. 2017). The current research on this topic doesn't cover the dynamics of business model portfolios nor managing the complexities in parallel business model firms in adequate detail to explain the phenomenon (Snihur & Tarziján 2018, Bosbach et al. 2020) and e.g., as recognised by Foss & Saebi (2017), literature is still missing knowledge about antecedents and moderating factors of developing business model innovations.

Theoretical contributions of this research are threefold. First, the research advances the existing literature on parallel business models and dynamic capabilities by analysing the connection between the two theories. Dynamic capability literature has significant research gaps regarding the mechanisms of their effects and integration to other research fields (Schilke et al. 2018), and therefore this research expands the current knowledge of their more detailed connection. Under the light of the existing literature, the connection with business model research has been understood primarily at a theoretical level (Teece 2018), and therefore more detailed image has been missing. The explorative embedded case study strategy selected in this research allowed confirming this connection, which was revealed by analysing qualitatively the development of parallel business models and dynamic capabilities of the firm within selected empirical cases. According to the early findings by Markides & Charitou (2004), the research shows that the primary strategies for managing parallel business models exist in the continuum between separation and integration, and that dynamic capabilities are key enabler for achieving the right balance for this within an organisation.

Second, this research offers a more detailed empirical study of parallel business models and firms building business model portfolios in the empirical context of incumbent firm within information technology industry. A systems and complexity theory perspective were adopted for explaining the interactions between parallel business models, as suggested by previous authors researching the domain (Velu 2017, Snihur & Tarziján 2018). The sharing of assets was present in the cases as both, shared activities and shared resources, and the conflicts arising from them were often tightly connected. Results revealed that the sharing of activities, resources and customers increase the total complexity of the portfolio significantly, and that the resource and activity sharing are often inseparable from each other. This expands the view of Snihur & Tarziján (2018) who identified the sharing of activities and partners to be the primary sources of between complexity when analysing the complexity management of parallel business models. In this research, there was no partner complexity present, but conflicts and thus complexity arose also from demand side sharing.

This research shows that the complementary nature of a value proposition was a key enabler for allowing the customer sharing to take place, although the complementarity seemed to be also restricting the growth of a business model according to the managerial views. These findings supplement those of Velu & Stiles (2013), who suggested that sharing of customer groups between business models would require both synergy enablement and differentiation to be successful. Although Casadesus-Masanell & Tarziján (2012) emphasized the role of sharing physical, or tangible, assets for achieving synergies between business models, this research confirms the view of Aversa et al. (2017), that the synergistic effects are also present when the business models share non-critical intangible assets, such has specialised human resources or intellectual property. Overall, the research supports the narrow literature stream on business model portfolios (Aversa et al. 2021) by suggesting that the portfolio interactions, including sharing conflicts and synergy enablement in the areas of activity, resource, and customer side sharing, account for developing firm level portfolio alignment.

Third, this research offers practical insights on dynamic capabilities theory by elaborating relevant microfoundations in the selected empirical context, and thus building theoretical understanding about the mechanisms through which dynamic capabilities take effect. Dynamic capabilities theory has been repeatedly criticised for the lack of empirical knowledge about the construct (Schilke et al. 2018), and therefore a significant contribution of this research is to build wider understanding of their presence within organisations. Dynamic capabilities presented a very pivotal role in enabling the initial establishment of additional business models in parallel to the existing one, but their role was also important in enabling and moderating the portfolio interactions between business models, confirming the premises of this research. Dynamic capability theory explains the nature and types of the capabilities in general (Teece et al. 1997, Eisenhardt & Martin 2000, Teece 2007), but often the details have been intentionally left unexplored in previous studies (Teece 2018), as the capabilities are firm specific by nature (Teece 2007). Therefore, the resulting capabilities and their microfoundations from this research are not directly comparable or applicable to other contexts. Yet, the recognised microfoundations in this research have similarities with other empirical works which have analysed them in incumbent firm context (e.g. Warner & Wäger 2019), thus validating their relevance.

Results of this research show, that dynamic capabilities are important enablers for achieving the alignment of business model portfolios, which is important not only in multi-business model context (Snihur & Tarziján 2018), but also in managing the alignment of elements within a single business model (Teece 2018). Furthermore, the incumbent firm context had effects on how the dynamic capabilities were displayed, and especially the

seizing and transforming capabilities were highly adapted for managing parallel business models. Within the case company, the adaptation had occurred through developing microfoundations of business model hybridisation and microinvestment capabilities for seizing, and supportive governance skills for transforming. Against the dominant views which encourage the early separation of a new business model to its own organisational structure (Teece 2018), this research showed that the emergence of new business models was in both cases internal to an existing organisational structure, and that the firm was able to foster and develop the additional business models within the same organisational structure by utilising its dynamic capabilities.

7.3 Managerial implications

Firm have possibilities for increased value creation with their existing asset base through establishing parallel business models. This causes firms to build portfolios of business models, and additional managerial considerations are required in order to bring out the synergies between parallel business models. The value creating positive synergistic effects stem from a higher utilisation rate of non-critical tangible or intangible assets, which can be reached by allowing sharing of firm's activities and resources to take place between different business models. Business models can have demand side sharing regarding the similar customer groups, but only when the value propositions of the business models are not overlapping, and thus they do not share the same customer need. Sharing of the customer needs with firm's other business models can only occur with complementary value propositions, which requires creating offering fit between them. Sharing can be value destroying, if it targets critical assets or resources, or if the increased between complexity of the portfolio, induced by increased sharing, is not managed. Dynamic capabilities of a firm have important role in enabling the sharing and moderating the portfolio interactions between business models.

Firm's sensing, seizing, and transforming capabilities control, balance, and moderate the portfolio interactions between business models, and allow synergistic sharing to occur. Sensing firm's external and internal changes is required for identifying relevant opportunities and innovations and connecting them with relevant internal and customer stakeholders. Seizing the opportunity for a new business model can include its hybridisation with the firm's primary model and seizing capabilities build resiliency and decision-making capacity for allowing a firm to manage resource and customer sharing conflicts. Firms and business teams responsible for new established parallel business models need to remain structurally fluid and adaptive for being able to undergo changes by initiated by strong transforming capabilities, which allow guiding and controlling the sharing, and thus

play a key role in achieving business model portfolio alignment. Fostering the development and utilisation of dynamic capabilities within firms is therefore a key for creating the conditions under which pursuing parallel business models is possible.

A well aligned business model portfolio presents qualities of high synergistic benefits in relation to low total complexity of the portfolio, formed from the components of within and between complexity of its business models. Complementary business models display the highest form of synergistic benefits, and they are characterised by high sharing of non-critical assets with other business models, combined with target market segments outside of firm's current customer, thus increasing the asset utilisation rate and allowing the firm to expand in new markets. Conflicting business models, denoted with high customer sharing and low asset sharing, shouldn't be kept inside the same portfolio, as they require building and maintaining a separate asset base with a presence of high sales cannibalisation risks, thus leading to lowest relative synergies and destruction of value. These business models can still be viably pursued within their own corporate structures. For incumbent firms, opportunities for new business models exist often as integrated to firm's current offering and markets, and the portfolio can be developed for higher relative synergies with time.

7.4 Limitations of the study and proposals for further research

Research has several limitations regarding its scope and context which narrow the applicability of the results and addressing them would require analysing the phenomenon from other points of view. First, the research was carried out within a single firm and with intentions to compare the results and draw more detailed conclusions about them within the case company, but this also restricts the applicability of the results in wider context. The empirical context in this research was carried out within information technology industry, and therefore the recognised dynamic capabilities and business model portfolio interactions can different, if analysing different industries. The research context was also narrowed down for two distinctive business areas within the case company, and the overall contextual factors weren't considered in detail. Additionally, due to the narrowed scope and the characteristics of the empirical context, the empirical data collection was restricted for few interviews, as the required information was only held by few numbers of people within the case company, and the scope of the research didn't allow a more in-depth data collection to be carried out viably.

Given the exploratory nature of this research and the context specificity of the dynamic capability theory, the results from this research are not readily transferrable for another empirical context. As this study attempted to address a research gap identified in both

the parallel business model and dynamic capabilities literature streams, there also wasn't many readily available frameworks for conducting the analysis and explaining the results, and therefore the findings from this research should be considered as explorative by nature. Additionally, it is difficult to confirm the existence of a more universal connection between the two theories based on the findings from individual research. Yet, the existing literature provided a solid foundation for researching this connection, and high standards of quality were pursued in the research setting to retrieve relevant findings regarding the topic.

Validity and reliability of the research are often referred as the scientific canons of inquiry, highlighting their crucial role in ensuring the quality of research (Saunders et al. 2015 p.202). The main threats to reliability of a research stem from different biases and errors regarding the participants and the researcher (Saunders et al. 2015 p.203). The familiarity of the researcher with the participants, and the predefined schedules for interviews ought to reduce participant errors. Certain informants were hesitant about their usage of time, but during the interview they were able to offer their uninterrupted attention to interview questions and they were happy to stay for the allocated time. Participant biases were attempted to be reduced by maintaining adequate sample sizes, and despite the challenges to retrieve sufficient data, three persons were interviewed regarding ProDiary case, and four regarding Iiris case. Researcher attempted to reduce its own error through preparing for the interviews ahead of time, and to improve the quality on analyses through detailed data cleaning for capturing missed nuances from the interview recordings. All in all, scientific rigour has been maintained throughout the research, and thus any researcher bias has been attempted to be minimised.

Validity of the research is related to internal – or measurement – validity, and external validity, stemming from the ability of the research to demonstrate causal relationships and to produce generalisable results (Saunders et al. 2015 pp.202–204,396–401). The chosen deductive approach to theory development increases the internal validity of the research, as it enabled utilising findings from existing research to increase the credibility of the research setting and the approaches used in data analysis. A long observation period, preliminary to data collection and analysis, assisted in developing trust between the informants, and therefore allowed the researcher to access relevant information about the phenomenon. The interviews were conducted without preparing the informants beforehand, and therefore their responses during the interviews can be considered unbiased. During the interviews, researcher actively used probing, repeating questions, and related techniques to confirm the responses of the informants. The systematic analytical process enabled clear causal connections to be recognised between the studied

concepts. The quality in the research design and process ensures high quality of the results, and they can be used to inform decision-making and guide additional research in various contexts.

There is a significant need for further research in this domain, and researcher gives several recommendations based on the findings of this study, and the previously recognised research gaps in the business model and dynamic capability literatures. First, there is a need for building a more robust theoretical foundation for researching parallel business models in firms. Especially the concept of business model portfolios is currently based on findings of only few authors, and its definition and theoretical exploration from portfolio management perspective is highly recommended, as also suggested by Bosbach et al. (2020). Second, as the dynamic capabilities theory and business model research do have certain connections between them, and therefore these theories would benefit greatly from their proper connection, such as discussed by Teece (2018). Third, there is a need in both theoretical domains for further empirical studies. Dynamic capabilities theory would benefit from empirical studies in different industry contexts to draw wider implications about the applicability of the framework and the mechanisms through which dynamic capabilities are utilised. Business model research field needs empirical studies on the topic of parallel business models, especially considering the demand side sharing effects and complementarity of value propositions (e.g., Aversa et al. 2021), but also about the effects of different contextual factors for their management, besides from the dynamic capability framework applied in this research. For example, strategic corporate venturing and entrepreneurship offers potential further avenues for explaining firms establishing parallel business models (e.g. Andries et al. 2013). Further studies are also welcomed for studying the effects of dynamic capabilities on parallel business model management but as well on business model innovation and development, such as carried out by Velu (2017).

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APPENDIX 1: DATA CODING OF PORTFOLIO INTERACTIONS, IIRIS

Sharing of activities, resources, and customers between Iiris and Digia's primary business model.

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Governance	Firm level budgets	"…the starting point is that [Iiris] business is profitable…So the product development budget is depends on how much we can generate revenues from the business…product development budget isn't competing, as there aren't so much up-front investments made to Iiris anymore, its own business has to finance the product development..."	IP-01
Activity	Governance	Firm level budgets	"We have always a budget given from above which we have tried to make last. So a certain amount of money has been dedicated to product development constantly to get certain features. We don't develop anything unnecessary, when something comes up in cases, we productise it."	I-01
Activity	Governance	Firm level budgets	"We could do product development even more, but exactly receive the given budget. Even though it is said, that a certain EBIT level or zero level is enough, there are always expectations about positive results. This guides us, and we have to prioritise and choose what we do. This has effects especially for product development and support side."	I-01
Activity	Governance	Firm level budgets	"But our business model is, that we have to make profitable growth. Then this kind of solution [Iiris] which has potential, when it is predisposed to similar profitability and utilisation rate assessments, it isn't most optimal for redeeming that potential which the solution has."	IP-02
Activity	Governance	Firm level budgets	"We have good plans, but when we have the revenue target and profitability target, which guides our operations, we cannot invest in that level, which would have been optimal for achieving the goals of the firm level campaign…"	IP-02

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Governance, Management	Business development support, Firm level budget, Business goals	"There is two main things, there is firm level business planning, which initiates during autumn and which guides the operations of business units, and for which we have the profitable growth expectations. But at the same time we have also had planning closer to these kind of business models, Iiris and ProDiary, in which we have been more ambitious and built the path for an order of magnitude bigger revenues."	IP-02
Activity	Governance, Management	Firm level budgets, business goals	"…higher level budgets, headcounts and business goals etc. come from central management."	I-01
Activity	Governance, Management	Management support, governance functions	"All the governance is common with Digia: project management, finance, service center etc."	I-01
Activity	Marketing	Marketing functions	"Regarding marketing, Digia's central services are used"	IP-01
Activity	Marketing	Marketing functions	"…it was considered what marketing could do with search engine optimisation, web sites and in lead generation area, so that kind of marketing activities."	IP-02
Activity	Marketing, Sales	Sales functions, marketing functions	"…sales and marketing in centralised at Digia level."	IP-01
Activity	Operations	Collaborative work	"…if someone has to do integrations and changes to them, it comes of course from integration team. But monitoring is carried out by us."	I-01
Activity	Operations	Collaborative work	"… we work in a firm level, and we try to collaborate with all other business areas."	I-01
Activity	Operations	Collaborative work	"…the integration team was working with it in a close cooperation, because [a strategic customer] integration monitoring was important part of it, and with [a strategic customer] the systems relating to those integrations are part of it."	I-02
Activity	Operations	Collaborative work	"We share in a way, that with certain customers e.g. the service manager of integration services takes care of the service management meeting, and they also discuss possible Iiris matters, and if something comes up, they send us invitation to a separate meeting for that."	I-02
Activity	Operations	Collaborative work, Support operations	"They are these kind of multi-vendor environments, but Center is our main partner and our processes are therefore aligned."	I-01

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Operations, Support Services	Collaborative work	"…we notice it , Center does it, and it is really close cooperation. To the other way, when we collaborate, Center utilises the dashboards of Iiris and takes action, checks up the logs, and what has happened. We on turn utilise Center, and Center authorises people to access Iiris to do certain configurations to there etc. So the cooperation is very close."	I-01
Activity	Operations, Support Services	Collaborative work, Support operations	"Service center has two roles with us, Center…monitors Iiris. We monitor Iiris with Iiris, and it's Center's job to recover Iiris, if there is problems with the service. But then we have center also for customers, if customer has purchased service support from Digia's other business area, e.g. integration services, Iiris is used to monitor those integrations. Digia's integration team develops those integrations, and Center then recovers them or monitors them with Iiris."	I-02
Activity	Product Development	Using shared developer resources from other units	"…part of the same campaign has been certain development, and it has been considered…what analytical capabilities could be brought to Iiris solution."	IP-02
Activity	Product Development, Support Services	Support and consultation from other business areas	"…Center has been the level 1 support, and the integration log monitoring implementor and operator…And now when we are developing new version of the log message monitoring…its role was increased even further."	I-02
Activity	Sales	Sales functions	"…we have Account -based sales model, which has been used to deliver the [Iiris] offering for wider audience…and now after the solution sales came to the picture, [Iiris] has been taken to customers increasingly often with an offering first principle."	IP-01
Activity	Sales	Sales functions	"…the case in which customer's multiple systems could be aggregated under the same monitoring, it takes different kind of sales, even to different people within the customer."	IP-01
Activity	Support Services	Collaborative work	"…from the activity side Digia has the Service Center, and we collaborate with them…maybe for division of work, according to our roles."	I-01
Activity	Support Services	Support functions	"If customer receives alerts, that there is an incident in customer environment, then it goes to Service Center…there are many contract models, but Center is very important here."	IP-02

Primary type	Effective domain	Item	Quotes from interviews	Source
Resource	Governance, Management, Sales	Sales operations, administration	"Only common Digia resource is sales and administration etc., but in the actual operations we do not use common resources."	I-01
Resource	Management	Business development support	"…both [Iiris and ProDiary] are very small teams. This means that there isn't all the know-how, especially about business…Both areas have the potential to grow faster than what has been historically, andce	IP-01
Resource	Marketing	Marketing functions, Marketing resources	"Digia has very broad offering, and therefore is has to be considered what kind of message will be delivered outside…Regarding Iiris the situation is good, it has been brought out more, but then different marketing campaigns, lead generation, and other actions easily get prioritised lower, than campaigns of some larger business area."	IP-01
Resource	Marketing	Marketing functions, Marketing resources	"…if our centralised support function, marketing, states that only for example either search engine optimisation or lead generation actitivy can be carried out, it is the focus area lead which decides what will be done."	IP-02
Resource	Marketing	Rebranding lead by marketing	"…they announced that Digia cannot use the Pulssi -name, then we changed it. Marketing team was working with it intensively…Then we received the new name and branding, new logos and everything, it was very uplifting for the whole team."	I-02
Resource	Marketing, Sales	Marketing resources, Sales Resources	"[Iiris] is more well known and more often along the marketing campaigns and offers by other business areas, and in sales in general…"	IP-02
Resource	Marketing, Sales, Support Services	Sales functions, marketing functions, support functions	"…centralised sales functions, marketing, IT support, and solution sales are utilised as applicable."	IP-02
Resource	Operations	Collaborative work	"From our perspective [shared resources] are common work, as we understand the monitoring and someone else understands the business and what should be monitored. It is common work, resources from the target system for monitoring and our monitoring know-how. In a sense not shared resources. We have the monitoring, and we take care of it, but of course through other stakeholders there is."	I-01

Primary type	Effective domain	Item	Quotes from interviews	Source
Resource	Operations	Collaborative work, Development support	"[monitoring] is a type of domain, in which we cannot do everything alone, as we don't have the competences of Digia's 50 other businesses in our team, nor it is feasible to obtain it, so we collaborate."	I-01
Resource	Operations	Support and consultation from other business areas	"…and then we took quick consultation within Digia, and we received [help] from Digia's integration team, as they were working with [a strategic customer] and developing integrations for them…and then we were able to change to an agile operational model right away."	I-02
Resource	Operations	Support and consultation from other business areas	"...there were so many of us already so we had to reorganise…we took example from Digia integration team with [a strategic customer], as their team was similar in size compared to us, and then we changed ideas with [integration team member] about how to reorganise in the best way, and we ended up with this."	I-02
Resource	Operations	Support and consultation from other business areas	"No, [Integration team didn't help] with the actual development, not in the implementation. But in specifying how the integrations can be monitored…integration team had a strong role in defining how the integrations need to be monitored..."	I-02
Resource	Operations, Product Development	Sharing own developer resources with other units	"…we have one developer…as a system architect for [Iiris team]…Or his main job is this, but he works also for other business areas if required. Other work, which has nothing to do with Iiris."	I-02
Resource	Operations, Product Development	Support and consultation from other business areas	"We have had very close cooperation with Service Center. We challenge each others ideas and we have received a lot of help from Center in what it means to provide service, ITIL practices etc. It has been a really good sparring partner, and we have been able to develop Iiris a lot because of that. They ask questions like 'how this works like this, and why there is this thing in here?'."	I-02
Resource	Product Development	Shared competences	"All our monitoring competences was in the beginning related to the work with [a strategic customer], which was exactly the same work, and we were able to utilise people and know-how."	I-01
Resource	Product Development	Technology	"…Even though we use open source components, our case is different as we combine them and in certain areas develop our own intellectual property."	I-01
Resource	Product Development	Technology	"…when Digia originally bought [a company], they had this log message monitoring, and at some point it was integrated to Iiris…The log message monitoring functionality of Iiris is implemented based on that, even though it has gone through a lot of development by now."	I-02

Primary type	Effective domain	Item	Quotes from interviews	Source
Resource	Product Development	Using shared developer resources from other units	"…our front-end developer…we have been able to use him, and he can do even 100% if there is nothing else. But [he] does specifically the front-end…he works with other cases occasionally, and then he works less with us, and we have prioritised our R&D development tasks in a way, that he manages to do them...he works for us quite a lot, and we consider him practically as a team member..."	I-02
Resource	Product Development	Using shared developer resources from other units	"…regarding the product development, [Iiris] is more of a stand alone unit, but some know-how is utilised from Digia's other units for the development. For example, some know-how has been used from UX team in the product development recently."	IP-01
Resource	Product Development	Using shared developer resources from other units; Collaborative work	"…data and analytics area, in which artificial intelligence and machine learning functionalities has been tried to implement in Iiris by our data scientist / analyst competences…Digia had this Value from Data -campaign little over a year ago, to which Iiris participated as a system, or as a first system in it. A machine learning use case was developed in it, which was then implemented with the analytics team."	IP-01
Resource	Sales	Sales resources	"Digia's model is that the sales function is primary centralised…In that area we compete from sales resources, and how much we can get sellers to sell our offering, whether it is Iiris or ProDiary."	IP-01
Customer	Customer Channels	Contact Persons	"Our main contact person is the one, who gives all the main guidelines…he is still in the same [unit of a strategic customer], with which all these negotiations are held.	I-02
Customer	Customer Groups	Shared customers	"Most of the cases, I would say 80%, are those in which we work together with some other business area or service center, and this is where [customer work] has begun or how we got in."	I-01
Customer	Customer Groups	Shared customers	"[A strategic customer] and Digia has had…a long common history with integration development, and they have a common [unit] for the cooperation. Iiris contract was done for this [unit]…in 2018, it started to expand also outside this [unit]."	I-02
Customer	Customer Groups, Customer Need	Shared customers	"…the largest share [of customer cases] are those, in which there are Digia's other business areas already…with some customers our services are included in the contract made with business areas, and we don't therefore have our own contract."	I-02

Primary type	Effective domain	Item	Quotes from interviews	Source
Customer	Customer Groups, Customer Need	Shared customers, shared customer need	"…if assessing honestly, the most of the customers should be Digia's existing customers. If we do only monitoring, it isn't profitable enough in the long run. Customers do batch the monitoring with the system or business we deliver, or alternatively with the operating or cloud service we provide."	I-01
Customer	Customer Need	Shared customer need	"…if we offer a system to customer…we can sell not only the system, but customer has also the possibiity to monitor and form situational awareness about the system and processes work…it becomes part of the entity around that system…"	IP-01
Customer	Customer Need	Shared customer need	"…as a part of a customer delivery, if the delivered system is the primary object if interest…and if [Iiris] is an option it gets purchased if the system is purchased…"	IP-01
Customer	Customer Need	Shared customer need	"[Iiris] basically fits better to the other offerings and other business and therefore goes better along the other offerings throughout the firm…[Iiris] is a type of solution, which supports the goals of other business areas as a monitoring solution. It makes them more complete and credible as offerings."	IP-02
Customer	Customer Need	Shared customers	"Iiris has been traditionally sold as part of the offering from other business areas. For example, it can be sold as a monitoring solution for our ERP or D365 deliveries, or as a part of our integration services and Managed Services -offering. Iiris is very connected to what Digia sells also otherwise and it complements the Digia offering well."	IP-01

APPENDIX 2: DATA CODING OF PORTFOLIO INTERACTIONS, PRODIARY

Sharing of activities, resources, and customers between ProDiary and Digia's primary business model.

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Governance	Business goals	"…these business goals what we have to the SSS delivery group and SDO focus area give the boundary conditions within we need to operate, but in a sense [ProDiary team] is independent, that nobody is coming outside the ProDiary to give solutions, about for example what features to implement next..."	IP-02
Activity	Governance	Decision making	"…individual cases go so much under the Digia average, and it doens't exceed the limit which requires central decision making. A certain amount of decision still go through [DG head] for gaining permission, but mostly the decisions has been done by [service manager], or by [business manager]."	P-01-2
Activity	Governance	Decision making	"Of course Digia's models and processes bring certain things which require to go through acceptance procedures to [DG head] or [BU head]…"	IP-01
Activity	Governance	Firm level budgets	"Profit had to be made always, and that we have made, so we propably have never been unprofitable."	P-01-2

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Governance	Firm level budgets	"...business area's primary metric is revenue target, secondary is profitability, and that includes costs. Therefore the ProDiary as a solution, and how much product development investments are made, competes from the same cost budget, than other solutions in the business area."	IP-02
Activity	Governance	Firm level budgets	"…we don't have separate product development budget, instead we craft a revenue budget alonside the business area or unit planning. It is our target about how much we need sales, and then we take a look on how it reacts to the expenses, what these dedicated resources have."	IP-02
Activity	Management	Business development support	"There is two main things, there is firm level business planning, which initiates during autumn and which guides the operations of business units, and for which we have the profitable growth expectations. But at the same time we have also had planning closer to these kind of business models, Iiris and ProDiary, in which we have been more ambitious and built the path for an order of magnitude bigger revenues."	IP-02
Activity	Management	Business development support, internal collaboration	"…we expanded the value proposition, that could it be something else than a solution serving the process manufacturing… this value propotition update was done in autumn 2020, and we exactly aimed to expand it beoynd process manufacturing solution."	IP-02
Activity	Management	Internal collaboration	"Product offerings, which were ProDiary and Iiris and… there was about 6-7 things that were considered as products, or product concepts, which were attempted to keep together. We had weekly meetings or bi-weekly meetings."	P-01-2
Activity	Marketing	Marketing functions	"…marketing is just like sales, it has been active occationally. We have marketing campaigns, and some webinars have been arranged…some news articles and Case -descriptions from customers have been written. But is has been very minimal, what has been spent on marketing."	P-01-1

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Marketing	Marketing functions	"Marketing is used also, maybe as a well targeted marketing for that customer segment."	IP-01
Activity	Marketing	Marketing functions	"So [Marketing] is also considering ProDiary, we use centralised function."	IP-02
Activity	Marketing, Sales	Marketing functions, Sales functions	"…we don't have sales in Digia at this level, so the sales is centralised. It is either Digia's centralised [Account] sales, or MDC level solution sales, which sells it. And then, marketing is also centralised. Therefore presales, offering development, product development and technical competences is within the teams, and sales, marketing are centralised at Digia level."	IP-01
Activity	Operations, Support Services	Development support, Technology competences, Support operations	"…the cloud team competences from the common things is what we use, and of course the support team from Rauma. We use Service Center…The network has grown from the early days, when there were just me and [co-worker]."	P-01-1
Activity	Operations, Support Services	Support operations, Support resources	"…[Service Center] have been instructed to carry out basic maintenance operations and if the service fails or becomes unresponsive during the holiday time, I don't have to immediately react to it, but instead the AWS alerts go to Center and they have checklists of actions...only after the checklist of actions has been carried out and things don't still work out, they contact me."	P-01-1
Activity	Product Development, Sales	Product development, Technology competences, Sales resources	"Also, regarding product development, the data and analytics area is the most used area of Digia's business areas… Value from data program, ProDiary took part in it, and there were developed use cases around the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..."	IP-01
Activity	Product Development, Support Services	Development support	"…when we moved from the [data center supplier] to AWS, that's when the cloud team came in, and when it was founded."	P-01-1

Primary type	Effective domain	Item	Quotes from interviews	Source
Activity	Product Development, Support Services	Development support	"…when we moved from the [data center supplier] to AWS, [co-worker name] specifed the environment we needed and the platform to the point in which I had the platform where to install the Domino servers. Building the infrastructure was the responsibility of the cloud team..."	P-01-1
Activity	Sales	Sales functions	"…utilising shared resources is much smaller. The operations occur more around the team itself. In the same sense, central sales function is used, especially with sellers who have responsibility over that customer group."	IP-01
Activity	Support Services	Support operations	"…the support from Rauma operates Windows environments and server maintenance…"	P-01-1
Activity	Support Services	Support operations	"…Service Center, which is the first level support."	P-01-1
Activity	Support Services	Support operations	"Service Center's role is clear, it is the first level support, so they handle the tickets. It is somewhat important thing."	P-01-1
Activity	Support Services	Support operations, Support resources	"[IT support team is] Digia's own staff, they offer all kinds of server maintenance from there. For example if ProDiary runs out of disk space, the matter is taken to the IT support team and they start doing something, and I don't have to worry about it."	P-01-1
Resource	Management	Business development support	"…both [Iiris and ProDiary] are very small teams. This means that there isn't all the know-how, especially about business…Both areas have the potential to grow faster than what has been historically, and we have aimed to bring support for that more widely in our delivery group and business unit level, so that we could support and bring know-how, tools and resources for the business development."	IP-01
Resource	Management, Sales	Management functions, Sales resources	"[Value from Data -campaign] probably wouldn't have gone forward through any other means, at least not into practice… it was turned into billable work very soon."	P-01-2

Primary type	Effective domain	Item	Quotes from interviews	Source
Resource	Operations, Support Services	Development support, Technology competences, Support operations	"[cloud team is used] for maintaining the service platform, I didn't have any expertise about AWS, or using cloud services or resources in general when ProDiary was taken to [data center provider]. It was completely new, that we bought disk space somewhere and start installing to the services offered by someone else..."	P-01-1
Resource	Product Development	Product development, Technology competences	"The Value from Data -campaign in the recent years came from outside our team… Some specification activities were arranged with the analytics team, and we started to go through the diary data, and they made somes demos about it, word clouds etc. about the data of one customer. It was really good, it was clear pretty fast what analytical capabilities could be implemented to the diary..."	P-01-2
Resource	Product Development	Product development, Technology competences	"…we invested to the solution by taking image analytics to the solution and piloted it with a customer successfully. It was also in a firm level data and analytics pilot, the ProDiary as a product, and data and analytics functionality were brought into it."	IP-02
Resource	Product Development	Technology	"We have had the IPR all the time, that is why it was even possible to make it a SaaS service."	P-01-1
Resource	Product Development	Techonological competences	"…we had been developing our own Domino applications for [event], so we had been hosting Domino applications. We had the understanding about what it took to maintain a Domino application… But to make it a real service, it was completely different thing."	P-01-2
Resource	Product Development Support Services	Development support, Techonological competences	"In that sense it has been our salvation and really, really good thing, that we have been within Digia, as there is really versatile competencies inside the firm after all, when you just put in the effort of finding them. There hasn't been a need to learn everything by ourselves."	P-01-2

Primary type	Effective domain	Item	Quotes from interviews	Source
Resource	Product Development, Support Services	Techonological competences	"...it was very very important, that there were people who have been developing for AWS also larger environments… they had been running larger environments and knew what kind of services should be purchased and what we need."	P-01-1
Resource	Sales	Firm reputation, Technological competences	"…it has been very good, that there has been large enough backing there. Digia is from its size the kind firm, that you can go and talk to other firms. It offers the backing, so that if we were a two person firm with [co-worker]...it would be practically impossible to sell diaries... expertise is always available."	P-01-2
Resource	Sales	Sales resources	"With this new model, our business area sales is centralised, and there we get sales resources. But in addition to solution sales, we have centralised [Account] sales."	IP-02
Resource	Support Services	Development support, Support operations, Support resources	"…[cloud] team or the IT support team from Rauma, they have also a lot of other stuff to do than ProDiary. ProDiary is only one service to them which they handle there alongside everything else, and there is a lot of similar other work, so it fits in there just fine."	P-01-1
Resource	Support Services	Development support, Technology competences	"...the cloud team has been built along the way, and it has become a distinct resource."	P-01-1
Resource	Support Services	Support operations	"Yes, resources are very allocated and dedicated, and shared resources are merely used. There is certain support from Service Center and centralised IT support, but mostly dedicated resources."	IP-02
Customer	Customer Need	Partially shared customer need	"Basically [ProDiary] is completely different. But it has some overlapping features, such as a workers' shift management. We have a product, which is an actual shift management product, and there is some overlappings with some of our systems."	P-01-1

APPENDIX 3: DATA CODING OF DYNAMIC CAPABILITIES, IIRIS

Recognized dynamic capabilities and their microfoundations in Iiris case.

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Sensing	Customer inno-vation	-	"The [strategic customer]… was excited about this product and its possibilities, and they had future visions, which we have utilised in the development of Iiris."	-	-
Sensing	Scouting external business envi-ronment	"We have to follow competition, and insights about its analysis, and we have to follow competitor pricing etc."	"You have to be always acknowledged, about what possibilities there is and how they can be developed, and experiences about their utilisation, from the R&D side."	"…Tech Radar, in which we have mapped different technologies at Digia level."	"We have firm level processes for scouting markets, e.g. a Tech Radar facilitated by CTO office."

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Sensing	Signature devel-opment pro-cesses	"The way we produce our service and R&D, there isn't any ready model within Digia for it. We use de facto stand-ards that exist in this devel-opment area. We've had to adjust and optimise them as our operations and customer base grow."	"Product development works as agile, we have own system for it."	"Especially in Iiris team we have defined processes with which the product develop-ment is carried out, and those practices have been built up throughout the years in order to match the needs in that area."	"…product develop-ment…has been clarified and strengthened, and prod-uct development vision brightened, about what cus-tomer issues [Iiris] solves…"
Seizing	Business model hybridisation	"…within that project…we decided with the customer that they would participate for covering the costs, we would participate for covering the costs, and thus the first productisation about a cer-tain part of the system was made."	"…the first phase was that we developed this service together with the [strategic customer]…it had a very im-portant role in this."	-	-

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Seizing	Culture of trust and commitment	"What really helps us is that we have our own work that we do. Our own team, and own culture."	"We have described it in a way that we live inside an Iiris 'bubble'…if our team members don't want, or are not interested, to meet other people at Digia, get inter-ested to other businesses within Digia, it isn't neces-sary. So people can live within the Iiris 'bubble' if they want to."	-	"The main incentive in indi-vidual level is that one wants to do his job well, and is committed to the solu-tion… The main guidance comes from that they feel that it is their own solution, own product, little bit like an own child. I think that's where the main motivation stems from."
Seizing	Evolutionary so-lution develop-ment	"…when something comes up in customer cases, we productise it. Those features can be then implemented to that customer case, but also the others."	"…even though the custom-er's monitoring was in ques-tion, we addinitionnaly were thinking about how to de-velop the Iiris product, to en-able those monitorings."	"We had a customer, though which we saw the potential and similar needs with other customers, and then we have slowly productised the solution we have made for one customer also for oth-ers."	-

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Seizing	Intrapreneurship	"[a key person] was so good in managing entities, that it has been one key factor that we are in this position to-day… he has been excep-tional… He has the ability to consider so many different aspects and he is so efficient in decision making and exe-cution. It has been personi-fied in [a key person], espe-cially the beginning, that we have been able to make pro-gress. He has been so effi-cient."	"We have decribed often, that we are kind of a startup within Digia. We have worked pretty much like startups, in very agile way, and with little hierarchy…ti-tles won't help when we spar together and think what we do and how we do it, and all the team members participate actively..."	"Organisationally, both solu-tions operate as an own business team, and they are responsible for the business and solutions, technology…"	"The main incentive in indi-vidual level is that one wants to do his job well, and is committed to the solu-tion… The main guidance comes from that they feel that it is their own solution, own product, little bit like an own child. I think that's where the main motivation stems from."
Seizing	Microinvestments	"We have a given budget…a certain amount is invested for product development con-tinuously to bring certain fea-tures."	-	"…inside the unit we can do certain prioritisations, and that's what we have done, we have certain areas, in which we invest, and in those the profitability objec-tive can be smaller…"	"…it is smaller, what we can enable…it must stand that both are not in the invest-ment phase."

Dynamic capability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Seizing	Structural separation	"Currently we have a separate focus area, within a DG. Or a part of a bigger entity, and due to that we have our own business plan and governance…independent part of a larger DG."	"We have micro teams, who have certain customers. Then we have separate DevOps team, R&D team and sales team…there is fixed R&D, DevOps and solution teams with named persons… But the micro teams, formed from these teams...they have been divided per customer."	"Digia's organisation is formed from business units…every business unit is divided into delivery groups (DG)…in our SSS (Secured and Scalable Solutions) DG, to which Iiris and ProDiary belong, we have a focus area separation. Focus area is a P&L responsible unit inside a DG, a business team basically."	-
Transforming	Adaptation capability	-	"…we reorganised [our business team], and took model again from Digia's integration team with [a strategic customer]…and ended up with microteam structure."	-	"…in the product development…we have existing roadmap, and it is executed continuously, and [Iiris] product develops incrementally all the time."

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Transforming	Building cospe-cialised assets	"…a customer claimed the IPR to be theirs…we ended up rebranding the service concept…"	"We have Iiris -academy for our team. It's a productised orientation path named Iiris -academy, which everyone completes…for experienced team members we have own learning paths…which we have designed together, in order to solve how to maintain learning and how to introduce new concepts."	"Iiris requires special com-petences, you have to know the monitoring technologies, solutions and products. It is made from open-source components, and there is typically shortage of readily available expertise in that area…"	"…there has been this idea of mixing different solutions in the firm, that how we can utilise them and build more on top of them and com-bine."
Transforming	Central resource coordination	-	-	"…connecting Iiris with the other offerings is important here…we have done a lot of cooperation and utilised sales resources, offering and customer relationships from other business units. Iiris goes along with many other offers as an option."	"…ultimate coordination happens by the focus area manager. In that domain it is the manager's responsibility to know, that we are going to the right direction based on the metrics, and guide the allocation of product de-velopment, sales and mar-keting resources."

Dynamic capability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Transforming	Decentralisation	"…why Iiris took off was because I was managing the DG back then, and we were able develop it within our DG, maybe even in hidden… We did it within our own DG, with our own budget and own date. Maybe it went unnoticed then because it was so small then, it didn't draw too much attention, it sank into the numbers well. Everything seemed positive, and nobody wasn't looking after."	"We have described it in a way that we live inside an Iiris 'bubble'…if our team members don't want, or are not interested, to meet other people at Digia, get interested to other businesses within Digia, it isn't necessary. So people can live within the Iiris 'bubble' if they want to."	"…teams have the option and freedom to make decisions about the business…teams have the experience, they know the customer, and they have the passion to develop it further. We have wanted to support by giving authorisation to make decisions, within the given boundaries and objectives...decisions and suggestions should emerge from the team..."	"[Iiris] is quite stand alone as a focus area, and could be anywhere in the firm. It carries itself."

Dynamic capability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Transforming	Firm level integration mechanisms	"…managing [Service Center collaboration] happens through how the process goes, but we are in a very close collaboration… [Service Center] is our primary internal partner, and our processes have been aligned to better fit together."	"…[with a customer] we made a proper annual service calendar, which determines who will have meetings with who, when, and what business areas are involved… now our different business areas communicate with each other..."	"…one clear factor is that how we can build an overarching story or offering to our customers, that how these things are connected, especially regarding Iiris. That what it adds to the Digia offering, how it supports the story. This offering development is one mechanism, though which we have attempted to bring Iiris to the larger picture. The objective is, that it would be clearly a part of Digia's offering. Everybody knows, what its role is, what value it offers, and that this would be clear for customers."	"…it was strengthened, that [Iiris] is better part of the offerings from other business areas. It is in the materials, product demos, solution presentations, offering templates."

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Transforming	Knowledge sharing	"We have an introductory academy, in which all areas are gone through, and there is mentors, who train people about things work. It takes about 1–1,5 months to complete that, and then we start to take people aboard for actual work in our micro teams and customer work. In the teams their competence development is watched, and after that they are given more independent responsibilities about the work."	"…teams channels are heavily used. We have product development, monitoring development, micro teams, feedback and offtopic channels…people can use them with low expectations, and best ideas are implemented."	"Digia had this value from data program about a year ago, in which Iiris was…as a first system…we created a machine learning use case, which was then developed with the data & analytics unit…"	"[orientation methods] depend from the solution, so more specific, and for example in Iiris it is very productised, because the business is more mature, the study paths and materials are intact."

Dynamic ca-pability	Microfoundation	Quotes from interviews			
		I-01	I-02	IP-01	IP-02
Transforming	Supportive business governance	-	-	"…business developments are followed up and guided constantly… larger investment and growth areas are gone through, especially if they have effects on business metrics, that can we make e.g. more forward looking investments… From business control perspective we have monthly coordination and steering inside our DG…a monthly performance review…"	"…we have had also planning closer to business teams, Iiris and ProDiary, in which we have been more ambitious and paved the path for order of magnitude higher revenues."

APPENDIX 4: DATA CODING OF DYNAMIC CAPABILITIES, PRODIARY

Recognized dynamic capabilities and their microfoundations in ProDiary case.

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	**P-01-2**	**IP-01**	**IP-02**
Sensing	Customer innovation	"…we had the idea about internal consultation… but [the project] ended up with the customer telling us what they need."	"Customer need [was the key for success], clearly and plainly. There wouldn't be ProDiary service, if there weren't [a strategic customer], and they wouldn't have the need."	-	-
Sensing	Scouting external business environment	"…the request for proposal…was lost, as they didn't like the visual appearance of the product. We then began to draft the next update."	"…you have to understand how the customer processes work, and overall their world…understanding what the customers do, and why they want things, is important."	"…Tech Radar, in which we have mapped different technologies at Digia level."	"We have firm level processes for scouting markets, e.g. a Tech Radar facilitated by CTO office."

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	P-01-2	IP-01	IP-02
Sensing	Signature development processes	"…customer guides us and also pays us, to get what they really need. We are not guessing, that would it be something that what they want."	"…officially we follow CPM (core process model) with all of our product development. But we don't really do it like that. We comply with it, but we still have our own practices, because Domino is an environment of its own kind, and e.g. version control is different with it, compared to newer systems, which have tools for that."	-	"…a strong guidance came from this model that we developed, that we need to sharpen the value proposition, conduct market research, what works, what competences we have, what resources we have, what we should acquire, what to recruit, where to invest, so we don't do everything."
Seizing	Business model hybridisation	"…the model with [a strategic customer] is very peculiar, as they pay for our development continuously… Officially we don't do product development, without charging our customer at least a bit."	-	"…business model has been adapted to match the customer expectations, and for example we have priced additional features with a monthly fee based pricing."	-

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	**P-01-2**	**IP-01**	**IP-02**
Seizing	Culture of trust and commitment	"…my enthusiasm, combined with [a manager] understanding it, and then the customer having a really strong need to be able to continue the service…"	"Feedback is the most significant motivator. We work in close cooperation with our customers, and communicate with them all the time… The feedback has been always so positive… It is definitely the biggest driver, why I have the motivation to do this. The feeling that I know the product to be important for them, and [customers] being happy about what we do."	"…very dedicated team, which carries out the development…"	"The main incentive in individual level is that one wants to do his job well, and is committed to the solution… The main guidance comes from that they feel that it is their own solution, own product, little bit like an own child. I think that's where the main motivation stems from."
Seizing	Evolutionary solution development	"…we noticed quite early, that the customers had all quite similar needs. That's how the idea formed about where we are right now, that the product isn't customised for every customer, but instead we created a specific form, that can be configured."	"We use the kind of model...we try not to create customised solutions, but instead implement the wished feature for all the customers."	-	-

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	P-01-2	IP-01	IP-02
Seizing	Intrapreneurship	"I had a very strong vision about it, as I had been working with the service for so long. I had seen how happy the customers were, and how important the product was for them. I had, and I still have, a very strong vision for it, it is such a good product."	"…there was never any actual decisions made in any level about renewing ProDiary's interface as a separate project…I had vision about it, it had to be done, if we ought to continue offering ProDiary. It was developed partially as a secret. If we would've asked someone for a permission to use 120 days for product development for a new user interface, I don't think nobody would have given us that permission...that saved the diary, after all"	"Organisationally, both solutions operate as an own business team, and they are responsible for the business and solutions, technology…"	"The main incentive in individual level is that one wants to do his job well, and is committed to the solution… The main guidance comes from that they feel that it is their own solution, own product, little bit like an own child. I think that's where the main motivation stems from."

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	P-01-2	IP-01	IP-02
Seizing	Structural separation	"I have clearly felt, that we are completely separate entity from all the other business areas [within the firm]…"	-	"Digia's organisation is formed from business units…every business unit is divided into delivery groups (DG)…in our SSS (Secured and Scalable Solutions) DG, to which Iiris and ProDiary belong, we have a focus area separation. Focus area is a P&L responsible unit inside a DG, a business team basically."	"[ProDiary] is in Managed Digital Core business unit, and within it in a Secured and Scalable Solutions delivery group, in which we have 6 different focus areas. ProDiary is part of Secured Development and Operations focus area."
Transforming	Adaptation capability	-	"The first ISO audition was a wakeup call…in the last audition I was much more confident, as I knew that we had documentation existing in our wiki, we had proper version control, external ticketing systems, we had Jira, and everything was tip-top by all means."	-	-

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	**P-01-2**	**IP-01**	**IP-02**
Transforming	Building cospecialised assets	"…it was really really important, that we had people, who have been developing also larger environments for AWS. …I didn't have that kind of expertise."	"My expertise is quite specific and deep, and the understanding of the service has been mostly with me. And [the co-worker]'s coding expertise, it requires the understanding of Domino Designer environment…it would be difficult to replace either of us quickly..."	"...Value from data program, ProDiary took part in it, and there were developed use cases around the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..."	-
Transforming	Central resource coordination	-	"The Value from Data - campaign initiative came outside our team…we arranged few planning sessions with the analytics team, and they made some demos in there… It wouldn't have came from anywhere else, at least into practise."	"...Value from data program, ProDiary took part in it, and there were developed use cases around the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..."	"…as we saw this need to drive the sales and marketing, as the resource pool isn't the most optimal, we created a position for SSS level sales and marketing management…until business unit level solution sales was centralised."

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	**P-01-2**	**IP-01**	**IP-02**
Transforming	Decentralisation	"…managers have been changing rapidly, and we have been thrown from one unit to another inside the firm, that there hasn't been probably a good idea about what ProDiary is higher in the organisation."	"Decisions have been carried out mostly by me, maybe by the business manager. And even those have been more like that I have just notified the business manager that from now on we need to do this."	"ProDiary, as a small team…has been operating as an individual unit. There is only few persons, and it is too small for a separate focus area, and its has been part of something larger. Currently it belongs to Secure Development and Operations - focus area, but operates still very independently, managing their own sales cases, offering development and operations."	"…decisions are made mostly within ProDiary team…business goals...give the boundary conditions within we need to operate, but in a sense [ProDiary team] is independent, that nobody is coming outside the ProDiary to give solutions, about for example what features to implement next, the responsibility is in ProDiary team and the service manager about the development and roadmap..."

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	**P-01-2**	**IP-01**	**IP-02**
Transforming	Firm level integration mechanisms	"…if the service fails or becomes unresponsive…[Service] Center has a handwritten list of procedures…"	"…those who we work with inside the firm, such as Service Center, they have very accurately specified operational models. It is really easy to work with them, as they just tell us what to do. E.g. when ProDiary was taken to their services for the first time, I just had to answer their questions, which they proposed...Service Centers collaboration is moderated by their own needs and processes..."	"...guiding sales and planning marketing are also part of it… we try to increase the priority inside our sales organisation…"	-

Dynamic capability	Microfoundation	Quotes from interviews			
		P-01-1	P-01-2	IP-01	IP-02
Transforming	Knowledge sharing	"Soon we ended up in quite deep waters, and I had to learn quite a lot at that point, about how to run this kind of service… It was good that we were able to practise with the smaller customer first, and then when [a strategic customer] came along, we got the financial backing…"	"The wiki is for describing the service from the technical side and also otherwise, and there is all kinds of things. That's how we have documented the service, and our know-how."	"...Value from data program, ProDiary took part in it, and there were developed use cases around the customer data… In that cooperation, there were PoC type of models created with the data and analytics team, and they have been sold to customers..."	"In ProDiary, as the business is much smaller, orientation happens with in-person training, more custom, because there is only limited number of people working with it."
Transforming	Supportive business governance	-	"The first ISO audition was a wakeup call…in the last audition I was much more confident, as I knew that we had documentation existing in our wiki, we had proper version control, external ticketing systems, we had Jira, and everything was tip-top by all means."	"...we have aimed to bring support for that more widely in our delivery group and business unit level, so that we could support and bring know-how, tools and resources for the business development. Starting point is, that team would the ownership from their business, and because of that they make decisions, which improve development and growth."	"…we have had also planning closer to business teams, Iiris and ProDiary, in which we have been more ambitious and paved the path for order of magnitude higher revenues."