Implementing Business Model Innovation: Human and organisational perspectives

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Implementing Business Model Innovation:

human and organisational perspectives

Mohammad-Ali Latifi

Implementing Business Model Innovation: human and organisational perspectives

Dissertation

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Delft, 12 Dec, 2021

Mohammad-Ali Latifi

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To my father,
and all those who have sacrificed their lives for the sake of peace and humanity,

To my mother and mother-in-law
and all those who dedicate their lives to the betterment of humanity

To my wife Fateme, my daughter Dina, and my son Danial
whom I love dearly.

Chapter 1: Introduction

1.1 Problem statement

Business environments are subject to technological advancement and rapid changes in regulations and customers' preferences (Latifi & Bouwman, 2018). To sustain continued growth, to become more profitable and to survive, firms not only have to adapt their business strategy but, more specifically, their business model (Vukanovic, 2016). Since the advent of the Internet, as an expression of rapid technological and related changes, the notions of *business model (BM)* and *business model innovation (BMI)* have gained attention in industry and academia (Aspara et al., 2010; Foss & Saebi, 2016). A BM describes the logic of how a company creates, delivers, and captures value (David J. Teece, 2010). A well-designed BM includes value propositions that are attractive to customers. BMI is a means of renewal and adaptation to changing technologies, regulations and markets (Hartmann et al., 2013). A BMI helps to create competitive advantages and revenue streams, and enables substantial value capturing by the business that delivers innovative and different kinds of products and services (Teece, 2010).

Since performance improvement is at the heart of any firm, BMI has attracted much attention (Hartmann et al., 2013; Karimi & Walter, 2016; Lambert & Davidson, 2013). BMI is related to changing BM components or architecture (Foss & Saebi, 2016). In comparison to innovation in product, service, process and marketing (Oslo Manual, 2005), the fundamental changes to the core components or to the architecture of a firm's BM (Nair et al., 2013) is associated with high risk and uncertainty (Chesbrough, 2010; Sosna & Nelly Trevinyo-Rodriguez, Velamuri, 2010; Waldner et al., 2015; Yannopoulos, 2013). BMI as a process (not outcome) requires managing both technical and people parts of change in the current BM. The technical part handles the physical aspects of the change in technologies, processes, and structures, while the people part associates the change management aspects to handle human and organisational factors such as managing conflicts, resistance to change, and motivation. Human and organisational factors necessitate interaction with people with different levels of expertise and ask for specific leadership styles and capabilities in different stages of the BMI process (Sobieraj, 2016; Smith et al., 2010) and managers should be enabled to manage the BMI process in an effective and efficient way. Therefore, if not handled properly, a well-formulated BM may fail to lead to performance improvement (Chesbrough, 2010; Knab & Rohrbeck, 2014). Many BMIs fail due to poor implementation, such as IKEA's Boklok proposition for prefabricated houses and TenneT's security of electricity supply focused BM. Christensen et al. (2016) research revealed that more than 60% of BMI efforts in their sample companies did not deliver the expected performance. Moreover, Knab and Rohrbeck (2014) claimed that even though incumbent firms designed 21 business models in 2010 in the German SMART energy market, sixteen business models failed after four years. Hene, BMI might not result in performance improvement, and accomplishing BMI requires sound implementation.

Therefore, BMI scholars have called for the analysis of causal relations of the antecedences and the effects of BMI, for example, based on large-scale investigations, and applying advanced and sophisticated methodologies (Clauss, 2016; Methlie & Pedersen, 2008; Spieth et al., 2014; Zott et al., 2011). Although BM researchers seem to agree on BM frameworks that can help managers identify

relevant factors to understand a firm's BM, these frameworks do not inform them on causal relationships that may improve their decisions (Methlie & Pedersen, 2008). So far, most academic studies have primarily looked at the types and components of BMs and rarely proposed distinct explanations of BMI performance (Haggège et al., 2017). As a consequence, informed managerial guidelines for BMI are lacking as there is a lack of causal models that also take into account managerial activities related to human and organisational factors.

Although some models and frameworks emphasize business model design and innovation that are widely used, there is no dominant framework for BMI implementation that focuses on management challenges (see section 2.6 for more detail). There is also a need for tooling and additional implementation methods for BM management, as well as insight into BM implementation practices (Bouwman et al., 2012).

To summarize, existing literature on BMI underlines the need for exploring the human and organisational side of BMI; how human and organisational factors can be managed to effectively engage in the BMI process to increase a firm's overall performance. To explore this question, this study focuses on a specific research domain, i.e., small and medium-sized enterprises (SMEs). SMEs account for the majority of businesses worldwide and are important contributors to job creation and global economic development, however, most management studies mainly focus on large firms. Having clear guidelines and implementation models will help SMEs to innovate their BM more efficiently. The following section shortly explores existing insights in order to frame our research gap in more detail. For a more detailed discussion, see chapter two of this book.

1.2 Positioning the research

A firm's high performance is the ultimate goal for almost all business owners and managers. Since the early 20th century, performance has been at the core of management thinking (Haggège et al., 2017), including organization theory, strategic management, Innovation management and operation management, and it is of interest to both academic scholars and practicing managers (Venkatraman and Ramanujam,1986). Firm performance is a multidimensional concept (Murphy et al., 1996), and its definition evolved during the last decades. According to Peterson et al. (2003), the definition of firm's performance centered mainly on the capability and ability of an organization to efficiently exploit the available resources to gain accomplishments consistent with the company's goals and consider their relevance to its customers. Since top managers are assessed and judged based on their firm's performance, an impressive performance influences the continuation of the management team (Gray,1977). Managers seek to find ways to improve the performance of their firms constantly.

In a competitive environment, to maintain continued growth, to become more profitable, and even to survive, it is essential for companies to look ahead and respond to the customer's preferences, regulations and apply innovative technologies in their offering to be able to compete. To do so, companies can innovate their products or services (significant improvements in technical specifications, components and materials, incorporated software, user-friendliness or functional characteristics), processes (change in techniques, equipment or software), marketing (change in product design or packaging, product placement, product promotion or pricing), and/or organization (change in business practices, workplace organisation or external relations) (Oslo Manual, 2005). Besides traditional types of innovation, i.e., products, services, processes, marketing, and organisational innovation, BMI has emerged as a new conceptual focus and can be viewed as critical to innovation (Schneider and Spieth,

2013; Zot and Amit, 2007). Business model innovation is a way to stand out from the crowd to differentiate from competitors in a situation when differentiation is not possible based on product or process innovation (Chesbrough, 2010).

BMI helps companies to create competitive advantages and revenue streams that lead to superior performance. Consequently, business model innovation has gained prominence in recent years (Wirtz et al., 2016). Dell (computer industry), Wal-Mart (retailing), Uber (transport), and Southwest (airline industry) are some iconic examples of groundbreaking innovative BMs and their association with the firm's performance and/or improved competitive advantage. All these companies created a new business model by introducing or reorganizing core elements of existing business models in their respective industries.

Although there are different research streams towards BMI, in this study, we look into the BMI as a process starting from (1) exploring the opportunity, (2) (re-)designing a viable BM, (3) testing the (re-) designed BM, (4) implementing the validated BM, and finally (5) to manage the firm's overall performance improvement. We are aware that the BMI is not a linear process that starts from phase 1 (exploring the opportunity) and ends in phase 5 (managing the firm's overall performance improvement) but may have feedback loops. To be commercially competitive, BMI must address the real need of customers with an affordable quality product or service that can be delivered using the available resources and capabilities to the company. Therefore, BMI is usually iterative, having several rounds of feedback and correction cycles, to create value for both firms and their customers.

Although BMI has benefited a considerable number of businesses, it has also had a negative impact on a large number of others (Neely, 2008). External and internal stakeholders may suffer if key components of the BM are restructured (MacBryde et al., 2015). So, BMI can have both positive and negative consequences (see section 2.8 for more detail). As a result, determining how and when to innovate a BM is a difficult challenge for business managers/owners (Hartmann et al., 2013). To comprehend the influence of BMI on performance, it is necessary to identify the causal link between BMI and performance (Fry & Smith, 1987). Therefore, BMI researchers have called for causal investigations of the antecedences and effects of BM, such as using large-scale samples and advanced methodologies (Clauss, 2016; Methlie & Pedersen, 2008; Zott et al., 2011).

In the last decade, research attention (Ben Romdhane Ladib & Lakhal, 2015; Brettel et al., 2012; Hu, 2014; Gronum et al., 2016; Wei et al., 2017) to explain how BMI contributes to firm's performance has largely been directed by efficiency-centred and novelty-centred BM designs as introduced by Zott and Amit (2003) (see Figure). *Efficiency-centered business model* design focuses on achieving transaction efficiency through reducing transaction costs for all transaction participants, whereas *novelty-centered business model* design refers to new ways of conducting economic exchanges among different participants. The latter can be accomplished in a variety of ways, including connecting previously unconnected actors, linking transaction participants in novel ways, and developing new transaction mechanisms (Zott & Amit, 2007). Although transaction cost approaches provide an intriguing perspective, they are insufficient (Leih et al., 2015). Learning, resource accumulation, and long-term asset orchestration are all ignored in existing studies (Leih et al., 2015). To detect the impact of disruptive technologies and market opportunities in connection to BMI, both owners/managers and staff must be skilled and trained in seeking, learning, and executing relevant activities (Foss and Saebi, 2015). As a result, organizations must have specific organisational capabilities in order to create and capture values through BMI (see section 2.8.1 for more detail). Routines for new product creation, quality control, marketing, knowledge transfer, and performance assessment are examples of ordinary skills

that help firms to manage their everyday operations to produce and "sell" their value propositions efficiently (Eisenhardt and Martin, 2000).

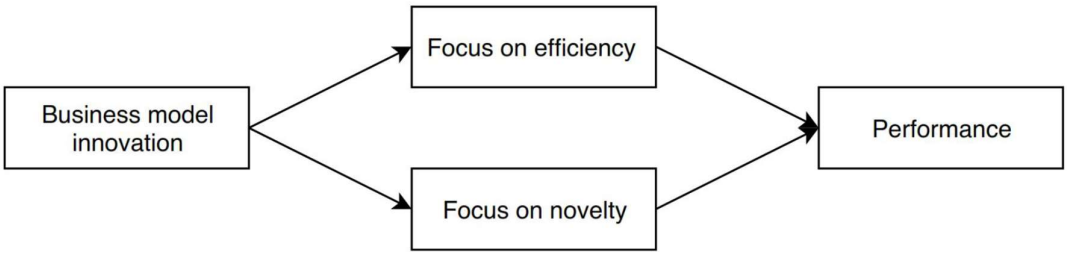

Figure 1.1: Basic/Dominant causal relationship between BMI and firm performance in the literature (adapted from Zott and Amit (2003))

On the other hand, firms require new capabilities to detect and exploit new opportunities (Foss and Saebi, 2015), e.g., dynamic capabilities (see section 2.8.1 for more detail). Dynamic capabilities are shaped by a business's history, values, and routines and are unique to each company (Teece, 2012). Because BMI typically alters existing operational activities, businesses must rethink their employees' technical and transferable capabilities to do the new routines, as well as their ability to explore and adapt to the environment's continual changes. Hence, addressing the gap in research on how BMI affects firm performance needs to include organisational capacities as mediating factors.

Exploring moderation factors can be insightful to explore the situations in which BMI can have more positive effects on firm performance. There is a limited number of research that studied the contingency factors under which the relationship between BMI and firm performance can be strengthened or weakened. To date, the extant literature seems to have paid attention to moderating effects of firm and industry level factors on the impact of BMI on various performance outcomes (Terrenghi et al., 2017). Some factors were linked directly to the firm, for instance, size and age of the firms (Hartmann et al., 2013; Rubera and Kirca, 2012) and the other factors were related to its business environments, such as competition intensity (Velu & Jacob, 2016; Walder, 2015), high-tech versus low-tech industry sectors (Rubera and Kirca, 2012), environmental dynamism (Heij et al., 2014), and technological turbulence (Pries & Guild, 2011). There is a gap in the literature taking the humans inside the firm into account as are the key enablers of the old business model, and are supposed to operate the new one. We are interested in learning more about the factors that influence the behavior of individuals participating in the BMI process, and eager to investigate this behaviour, not just on an individual level, but also on a group and organisational level. We labeled these factors shortly as "human and organisational factors". The term "organisational" has been used to emphasize the organisational level of analysis rather than just the individual level, and it encompasses the factors that impact how the organization and everyone inside organisation behaves (see section 2.7 for more detail). Since no prior research has investigated the human and organisational factors in the context of BMI, as far as we know, change management literature might be a good place to start. BMI and organisational change management are similar in that they deal with systematic changes to the organization's business system; the firm encounters resistance to change among its stakeholders and needs to be ready for such change. The management of attitude, intention, and behavior is a relevant topic to resolve the raised issues (Breiby & Wanberg, 2011). However, BMI and organisational change belong to two different realms of research and are perceived differently. Compared to incremental organisational change, BMI has a fundamentally different nature

since the former involves mostly continuous improvement in routine tasks or minor changes in products, services, or processes. Compared to radical organisational change, both BMI and radical change engage in a fundamental change of the key elements of organizations. The BMI involves changes in business logic in the value network and therefore entails more ambiguity and risks. The broad implication of the present research is to bring existing knowledge on managing radical change into the BMI implementation field. Although change management literature from a BMI perspective is hardly developed, these two fields are closely linked to each other by many aspects (Breiby & Wanberg, 2011) and might even be much more connected than what we have seen in literature so far. Therefore, in this research we will use change management concepts and practices to generate new knowledge on the human and organisational factors in implementing BMI.

1.3 Research Domain

This study focused on a specific research domain, i.e., on Small and Medium-sized Enterprises (SMEs). With the advancement of new technologies and globalization of markets, it is crucial for SMEs to be adaptive and remain competitive to survive or grow. Therefore, SMEs require to be more innovative. BMI is one approach that gains much attention from scholars and firm owners or managers to improve the performance of firms (Zott et al., 2011). We focused on SMEs because SMEs represent 99% of the total active enterprises all around the world (Robu, 2013) and are a major source of entrepreneurial skills and creativity and contribute to economic growth (Renner et al., 2008) and job creation (Wheelen & Hunger, 1998). Although SMEs represent a large portion of all enterprises, most studies in strategic and innovation management, business models, and entrepreneurship are mainly focusing on large firms and far less on SMEs. Despite the fact that according to consultancy companies BMI is considered to be more profitable than pure product and service innovation (IBM, 2008), SMEs are less involved in innovating their BMI (Barjak et al., 2014; Heikilla, 2018). European Community Innovation Survey (CIS, 2010) shows that only 5.5% of European SMEs innovated their BM, and they are less familiar with the concept of BMI or lack the knowledge on how to implement BMI and fail to deliver expected performance related to BM innovation effort. Since SMEs usually suffer from a shortage of resources (Rogers, 2004) especially human and financial, having clear examples, guidelines and implementation models will help SMEs change their BM efficiently. In the literature, tools and additional implementation models for innovating the BM in SMEs, which takes the human and organisational factors into account, are largely missed (Foss & Saebi, 2015).

1.4 Research objective and main questions

Based on the problem description (section 1.1) and the identified theoretical gaps (section 1.2), the objective of this study is:

> *To develop and test a model for implementing Business Model Innovation in SMEs focussing on "human and organisational" factors to improve performance.*

The model can offer grounding for the development of a tool for managing human and organisational aspects of the implementation of BMI in established SMEs. Such a model should shed light upon our understanding of the managerial side of BM implementation by highlighting the role of managers and employees within organization as a key driver for any change in a BM. Five research questions were formulated to realize the research objective.

First, to understand the relevant factors and to analyse the gap in more detail, various streams of literature, including business model innovation, strategic management, entrepreneurship, change management, performance management, and organisational behaviour are explored. So the first research question aims to understand why BMI efforts do not deliver the expected outcome, and is formulated as follows.

RQ1: *Which critical factors play a role in different steps of the BMI process?*

The answer to the RQ1, leads us to the focus of this research, the implementation phase of BMI process. We would like to explore the BMI literature to know this phase to develop a conceptual framework that explains the complex mechanisms through which BMI influences firm performance. So the second research question is:

RQ2: *Which factors related to the implementation of BMI are mediating and/or moderating the relationship between BMI and firm's performance?*

The theoretical insights obtained from the previous step will be tested empirically in two steps: first, to examine the mediation, and second, the moderation effects. The next question is to find an answer to whether the causal relationship between BMI and firm overall performance identified in RQ2 is valid in our research domain, which is European SMEs, or not; therefore, the third research question is:

RQ3: *Is the relationship between BMI and the firm's performance mediated by the herefore (RQ2) identified factors in SMEs?*

Next, to validate the moderating effects on the relationship between BMI and firm overall performance explored in RQ2, another survey is needed to test the moderation model. Therefore the fourth research question is:

RQ4: *Is the relationship between BMI and the firm's performance moderated by the herefore (RQ2) identified factors in SMEs?*

Although the way human and organisational factors related to implementing BMI in SMEs have been rarely studied, case study research can bring first-hand knowledge on the issue. Building on the theoretical and practical insights gained in the previous steps, the case study approach can find an explanation to previous findings and explore new human and organisational factors in a real-life context of SMEs that have not been found in the current literature. Therefore, the fifth research question is:

RQ5: *How do human and organisational factors mediate or moderate the relationship between BMI and firm's performance within the selected SMEs?*

To define the boundary of our research more clearly, items that are excluded from the scope of the study are explained below:

1. Effectively implementing the BMI means that both the technical side (hard factors) and the human side (soft factors) of the change should be orchestrated and managed to move an organisation from its current state (old BM) to a desired future state (new BM). By technical side, we mean the logistical or physical aspects of the change in technologies, processes, and structures while designing, developing, and delivering the technical solution in a given time, cost, and scope constraints and utilizing resources effectively. The technical side of implementing a BMI is out of the scope of this study, and we do not explore it in detail. However, we are aware that hard factors and soft factors (interfaces and people) in organizations are changed simultaneously (Beer & Nohria, 2000. p. 133ff).

2. Our focus is not on implementing any generic type of strategy or organisational change, which leads to incrementally improving the firm's performance such as six sigma, new product innovation or market development, or cost reduction program. We focus on fundamental changes in how businesses create, deliver and capture values for their stakeholders for BMI.

3. Since this study aims to research changing an existing BM (e.g., As-is) to a new BM (e.g., To-be), we deliberately exclude the iterative process of exploring unique BMs in start-up companies. Start-ups, by definition, are built to search for a repeatable and scalable business model (Blank, 2005) and often do not have a well-established business model. We did not consider the continuous changing of a BM in a start-up company in their learning process to explore a unique BM as a change in BM.

4. Human and organisational side of any organisational change, such as BMI, consists of the extensive literature in motivation, leadership style, culture, communication, power and politic, individual and group conflict, which cannot be considered all in detail. We just focused on developing a framework for the implementation of BMI in SMEs. Then future research can study each component of such a framework in more detail.

1.5 Research approach

This research adopted a mixed-method approach (Tashakkori & Teddlie, 2003) to address the research questions and fulfill the research objectives. A mixed-method approach enables us to capture the unexplored complexity of human and organisational phenomena (Sandelowski, 2001) during the changing process of a BM in SMEs, particularly the employees' role and how it can be managed to enhance their performance. In this study, the mixed-method approach consisted of five phases, e.g., two literature reviews, two quantitative studies and one qualitative research. Since the topic is almost new to the field of BMI, the research begins with two literature reviews to (1) explore a theoretical gap in managing the critical factors in the BMI process and (2) propose a conceptual model to fill the gap. The existing theories on business model innovation, implementation process and barriers to implementing BMI, and performance improvement with a primary focus on the "human and organisational" factors are reviewed (see chapter 2). These two literature study, provide answers to RQ1 and RQ2.

Then, in phases three and four, the conceptual model, which is developed in the previous phase (RQ2), is tested. To test the conceptual model, we make use of Envision project survey carried out in 2017 and 2018. The quantitative stages of our research are aimed to understand how BMI indirectly influences SMEs performance (mediation effects) and under which conditions human and organisational factors affect the relationship between BMI and SMEs' overall performance (moderation effects). The former quantitative study helps us to investigate how BMI can lead to the superior performance of the firm and answers RQ3; however, the latter assists us to examine what human and organisational factors, such as employees motivation, and skills and also organisational culture in the implementation of BMI, impacts a firm performance and therefore provides empirical evidence to tackle RQ4.

To accomplish the research objective, in phase five, qualitative research is used to explain and clarify the outcomes of the quantitative component and new dimensions of implementing a BMI in SMEs are explored (Schoonenboom and Johnson, 2017). In that sense, the qualitative analysis in the multiple case studies starts from the outcomes of the quantitative components and aims at providing an explanation

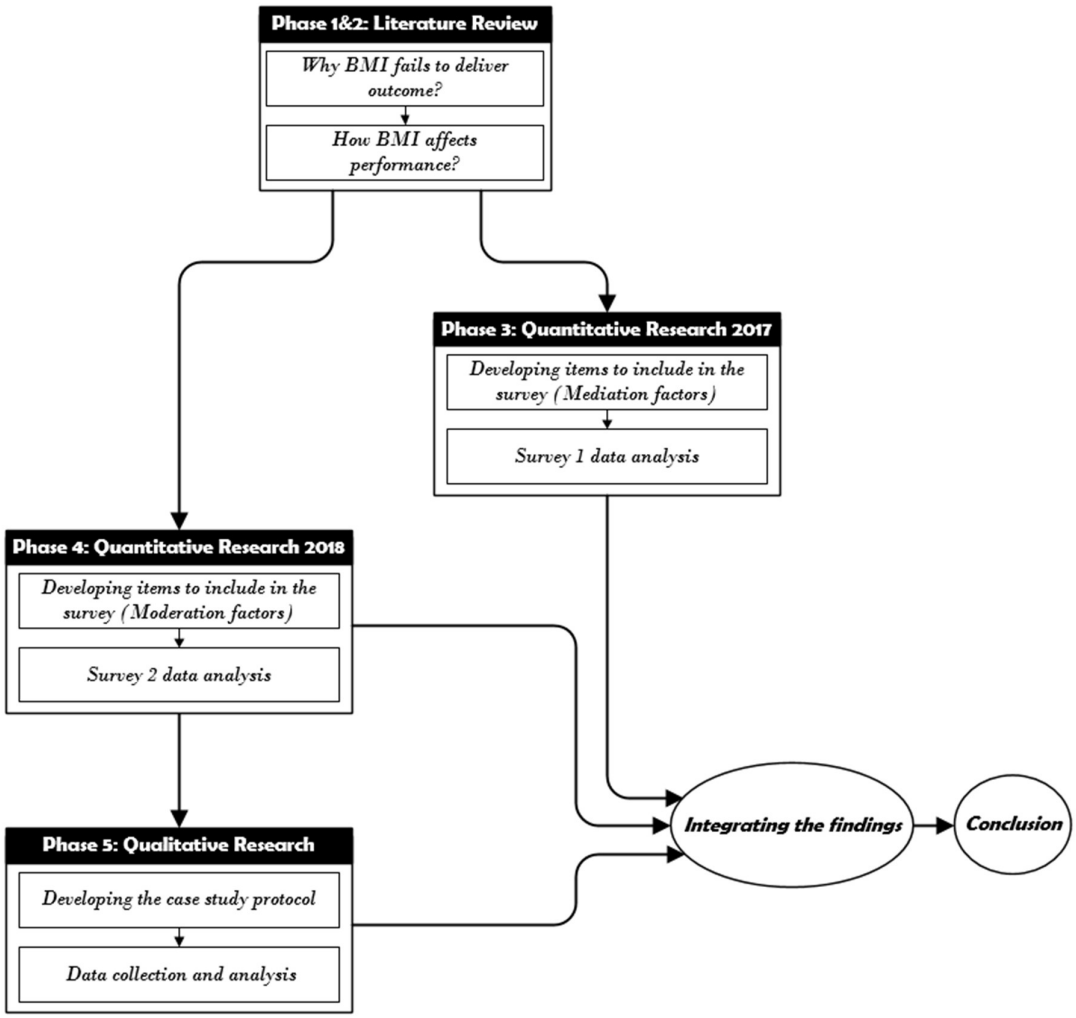

Figure 1.2: Exploratory sequential mixed-methods research design

for that result of the quantitative data analysis by relating them to the contextual circumstances in which the quantitative outcomes are produced. A case study is a useful research approach when researchers need to understand better how a given phenomenon happens and to build new theories or to obtain new insights based on a deep analysis (Eisenhardt & Graebner, 2007; Yin, 2009). The purpose of our case study is to gain an in-depth understanding of the employees' role in implementing BM innovation, which, in turn, helps explore and evaluate the model developed in the quantitative stage. To assure a certain extent of external validity, a multiple case study design (Stake, 1995; Yin, 2003) is used for collecting and analyzing the data in the qualitative research phase. The multiple cases (Stake, 1995) serve the purpose of "illuminating and explaining a particular issue" (Creswell, 2005). The unit of analysis is the firm's organisational level. The unit of observation is interviewees, including top managers, middle managers, and other employees on operational levels who are engaged in the process of BMI. Four cases are selected on content (theoretical) and practical consideration. The cases are selected to gain insight into the human and organisational parts of implementing the BMI. Four Dutch

cases were chosen from different industries, i.e., manufacturing, healthcare, and publishing industries, out of the 122 SMEs cases available in the Envision project case repository. Basic information about the history and BM were available in ENVISION project. To increase the reliability of the case study and provide guidelines to collect data in a systematic way, a case study protocol, as well as an interview guideline, were developed. The integration of outcomes from quantitative and qualitative components of research provides a set of recommendations for the design requirements of a tool for managing the implementation process of BMI. The outline of the mixed-methods research applied in this research is visually represented in Figure 1.2.

1.6 Outline of this dissertation

The current chapter presents the problem under investigation i.e., BMI, from both a theoretical and practical perspective. This chapter also includes a short discussion of the research area, relevant literature, and research methods. As seen in Figure 1.3., chapter two provides the theoretical background underlying this research. It includes an overview of previous studies on business model innovation, business model innovation process, business model innovation implementation, the mediating and moderating factors that impact the relationship between BMI and firm's overall performance. The aim of chapter two is to identify gaps in the BMI literature, relate the concepts together to provide a theoretical framework and research model. The model will be examined in quantitative parts of research and explained in the qualitative component of the study. Chapter three presents an overall view of small and medium-sized enterprises (SMEs) and specifies the application of theoretical concepts from chapter two to the research domain. Chapter three starts by explaining the importance of SMEs in the global economy, as well as the European context. To provide basic and original insight into BMI in European SMEs, this chapter presents general findings from ENVISION project based on data gathered from European SMEs between 2016 and 2018. At the end of chapter three, a short description of the Dutch SMEs sector and particularly a brief background of four selected cases (for the qualitative part) is presented. The mixed-method approach is explained in chapter four about the research method taken. Six key criteria to design our mixed-method approach are presented. The quantitative approach is also presented in chapter four, e.g., the sample size, data gathering process, and data analysis technique (Structural Equation Modelling). Then the multiple case study approach is presented as the qualitative part of the research. The case selection criteria, the data analysis approach, and case study quality criteria are discussed in the last part of chapter four.

In chapter five, the respondents' demographics for the first survey (2017) are presented. The research measurement model and structural model are assessed. Then, the results of hypotheses testing related to mediating effects are presented. Chapter five is closed with a discussion and conclusion about the findings. Chapter six provides information on the second survey (2018) to test moderating effects between BMI and firm performance, including demographics, model assessment, hypothesis testing, discussion, and conclusion. In chapter seven, a detailed description of within-case data analysis for four case studies is provided. Then a cross-case data analysis is presented. Chapter seven ends with a discussion and conclusion. Finally, in chapter eight, we integrate the findings from three studies and discuss the findings. The key findings are summarised, and the answer to each research question is presented. Theoretical and empirical contributions are discussed, and practical recommendations are provided. The recommendations can be used as requirement principles to develop tools that contribute to BMI implementation in SMEs. Chapter eight closes by discussing limitations to this study and outlining avenues for future research.

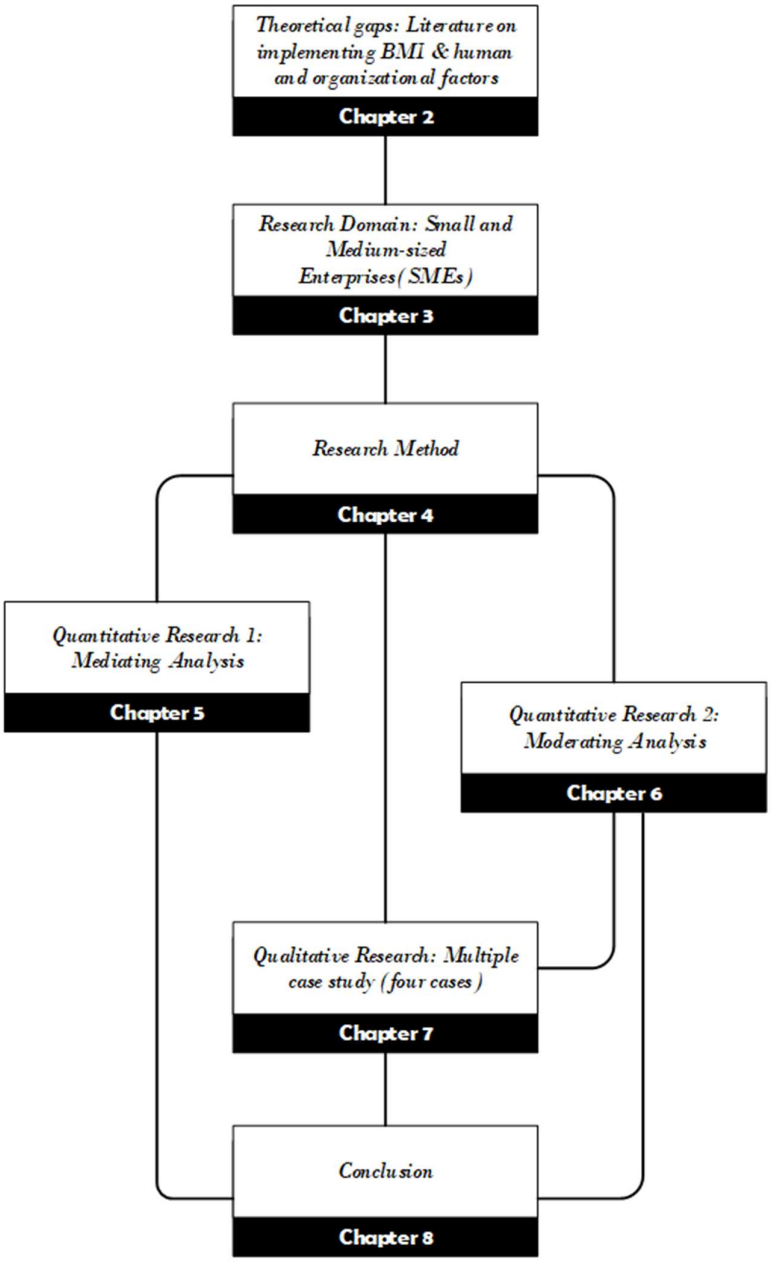

Figure 1.3: The outline of dissertation

Chapter 2: Theoretical background

In order to reach the research objective presented in chapter 1, research questions need to be addressed. The research questions contain several concepts which will be explored in this chapter. Then the findings of the literature review to answer research questions 1 and 2 will be presented.

The chapter proceeds as follows. First, the business model (section 2.1) and business model innovation (section 2.2) concepts are discussed in more detail. Section 2.3 elaborates on business model innovation process literature. Section 2.4 discusses the literature on firm performance. To understand and analyse why BMI fails in companies, the result of a literature review is presented in section 2.5. The outcome of section 2.5 necessitates discussing the concept of BMI implementation. Therefore, section 2.6 describes literature on the implementation of BMI, in order to explore and understand the BMI implementation process. The finding of section 2.6 guides us in exploring change management and the human and organisational side of BMI implementation in section 2.7. The result of our literature review on exploring mediating and moderating factors to explain the relationship between BMI and firm performance are discussed in section 2.8. This research conceptual model and hypotheses are presented in section 2.9. Finally, section 2.10 concludes with a discussion of the research framework.

2.1 Business Model

The concept of business models has reached global impact, both for practitioners and scholars among different disciplines from strategic management, information system, and entrepreneurship, to innovation and technology management (Casadesus-Masanell and Ricart, 2010; KPMG, 2006; McKinsey, 2008; Osterwalder & Pigneur, 2010; Wirtz et al., 2016). While the term "business model" has become prevalent in the mid-1990s, scholars do not agree on what a business model is. Literature is developing largely in silos, according to the phenomena of interest of the respective researchers (Zott, 2011). In the early definition of BM, Timmers (1998) defines BM as an architecture of product, service, and information flows. The discussion on BM definitions evolved during the last two decades. BMs are defined as a system (Amit & Zott, 2001), heuristic logic (Chesbrough & Rosenboom, 2002), stories (Magretta, 2002), concise presentation of the decision-making process (Morris et al., 2005), interlocking elements (Johnson et al., 2008), the architecture of a network to create value for customers (Bouwman et al., 2008), an abstract presentation to achieve strategic goals (Al-Debei & Avison, 2010), articulation of business logic (Teece, 2010), and architecture of value creation (Wirtz et al., 2016). In Table 2.1 some frequently cited definitions of Business Models are presented.

Although definitions differ across studies and time (see Table 2.1), according to Foss and Saebi (2016), definitions are converging to or are consistent with Teece's (2010) definition of a BM. Therefore, we use Teece's definition for BM in this research, i.e.

> "*An articulation of the logic that demonstrates how a business creates and delivers value to customers through a viable structure of revenues and costs to capture that value for the enterprise*."

Table 2.1: Business Model definitions, sorted chronologically (adapted from Zott et al. (2011))

Author(s), Year	*Definitions*
Timmers, 1998	The architecture of the product, service, and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; a description of the sources of revenues (p: 2).
Amit & Zott, 2001;	The content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities (p: 511).
Chesbrough & Rosenbloom, 2002	The heuristic logic that connects technical potential with the realization of economic value (p: 529).
Magretta, 2002	Stories that explain how enterprises work. A good business model answers Peter Drucker's age old questions: Who/What/How create, deliver and capture value for specific customers (p: 4).
Morris et al., 2005	A concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets (p: 727).
Johnson, Christensen, & Kagermann, 2008	Consist of four interlocking elements: customer value proposition, profit formula, key resources, and key processes, that, taken together, create and deliver value (p: 52).
Bouwman et al., 2008	A blueprint for how a network of organizations co-operates in creating and capturing value from technological innovation (p: 33).
Al-Debei and Avison, 2010	An abstract representation of an organization, of all core interrelated architectural, co-operational, and financial arrangements designed and developed by an organization presently and in the future, as well all core products or services the organization offers, or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives (p: 372).
Zott & Amit, 2010	A system of interdependent activities that transcends the focal firm and spans its boundaries (p: 216).
Teece, 2010	An articulation of the logic and provision of data and other evidence that demonstrates how a business creates and delivers value to customers through a viable structure of revenues and costs for the enterprise delivering that value (p: 179).
Wirtz et al., 2016	A simplified and aggregated representation of the relevant activities of a company. It describes how marketable information, products or services are generated by means of a company's value-added component. In addition to the architecture of value creation, strategic as well as customer and market components are taken into consideration, in order to achieve the superordinate goal of generating, or rather, securing the competitive advantage (p: 41).

Apart from its popularity, this definition also can provide a ground to analyse BM change in firms. According to Foss and Saebi (2016), the BM literature, until now, can be categorised into three streams of research. First, the BM is employed as a basis for firm classification. By the advent of the Internet and the emergence of e-businesses, the BM was increasingly used to understand and analyse the value drivers of e-commerce. Second, the BM is seen as a good explainer of firm performance; specifically, BM, by focusing on novelty and efficiency, is claimed to play a key role in firm performance (Zott, 2003). Third, the BM is considered as the unit of innovation (Zott et al., 2011). Although Mitchell and Coles (2003) were first to explicitly propose the idea that managers can purposefully innovate their BM besides their products, services, and processes.

This research belongs to the second and third streams of BM research. While we do not study dimensions of e-business (first stream), we would like to explain firm performance by considering its

BM as an object of innovation. The selected definition of BM helps to recognize different stages in the business model innovation process (see section 2.3) and how an opportunity can be explored and related value can be created (designed and tested) and delivered (implemented) to customers in order to capture value for the enterprise (grow).

BM is not a stand-alone concept, and there is a strong link between a company's BM, strategy, and its operational tactics. However, a limited number of researchers view business model and business strategy as identical concepts and use them interchangeably. Other researchers believe that even though both concepts are related, they represent different levels of information, useful for different purposes (Shafer et al., 2005). In their studies, Al-Debei and Avison (2010), Cavalcante et al. (2011), Morris et al. (2005), and Osterwalder et al. (2005) looked at the BM as an intermediate layer between the business strategy and the business processes, as illustrated in Figure 2.1.

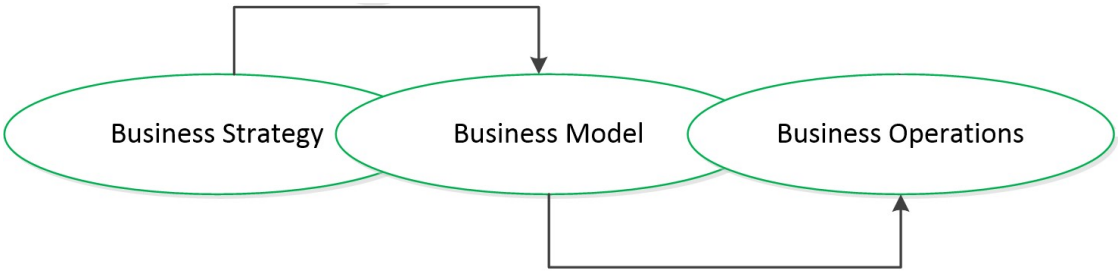

Figure 2.1: Business model links with business strategy and operations

(adapted from Al-Debei & Avison, 2010)

The intersections represent two crucial transitional points to be followed by business organizations. (1) business strategy to BM and (2) BM to business operations. In the first intersection, derived from business strategy, the firm translates its general strategy into a value proposition, partnerships, and financial structures required to meet the company's strategic priorities and objectives. Business strategy is related to the choice of business model through which a firm will compete in the marketplace (Casadesus-Masanell and Ricart, 2010). Porter (1980) defines strategy as a way a business positions itself within its industry by deliberately choosing a different set of activities to deliver a unique mix of value. Magretta (2002) argues that the business strategy explains how business organizations aim to perform better than their rivals, while the BM describes how all pieces of a business fit together.

In the second intersection point, the BM serves as a guideline from which the operational process should be derived. Business operational process (tactic) refers to the choices available to a firm to take action to give life to the chosen business model. Although a business model outlines what a company can do to generate value, recognizing how this can be accomplished necessitates a thorough understanding of the major business operations (Solaimani, 2014). In other words, the implementation of a business model is facilitated and carried out by operational activities at different organisational levels (Al-Debei and Avison, 2010; Bouwman et al., 2008). This research focuses on the business model together with intersections with both business strategy and operations in terms of organisational and human factors.

2.2 Business Model Innovation

Next to the product, service, process, marketing and organisational innovation (Oslo Manual, 2005), business model innovation (BMI) has established itself as the most important object of innovation (Fichman et al., 2014; Sinfield et al., 2011). Consequently, BMI has gained its importance in recent years (Wirtz et al., 2016), especially since the successful implementation is associated with sustainable competitive advantage (Casadesus-Masanell and Zhu, 2013; Massa & Testa, 2011). BMI is seen as an effective form of innovation (Chesbrough, 2007; Wirtz et al., 2016) that creates new ways to organize business to sustain competitive advantage (Mitchell and Coles, 2003; Casadesus-Masanell and Zhu, 2013; Massa & Tucci, 2014) and to adapt to market changes quickly (Johnson et al., 2008). BMI allows companies to explore new value propositions to generate revenues as well as to find new ways to create and capture value for its stakeholders (Amit and Zott, 2011; Magretta, 2002; Teece, 2010) either by modifying the existing business model or designing and implementing a new business model (Massa & Tucci, 2014).

As is the case with the BM concept, a thorough analysis of existing literature shows considerable conceptual ambiguity regarding what constitutes business model innovation (Spieth et al., 2016; Clauss, 2016) and different definitions for BMI have been provided by scholars (see Table 2.2). Some scholars define BMI as the discovery of a fundamentally different business model (Markides, 2006; Berglund & Sandström, 2013) and search for a new logic of the firm (Casadesus-Masanell and Zhu, 2013), while the others describe it as a replacing of the current business model (Mitchell and Coles, 2004), a reconfiguration of activities (Santos et al., 2009), and switching to a new business model (Sosna et al., 2010). Several researchers define business model innovation as the result of rearranging business model core components (Osterwalder et al., 2005; Bucherer et al., 2012; Frankenberger et al., 2013), but it is unclear which components of a business model need to be changed (Souto, 2015). Lindgardt et al. (2009) focus on value delivery and define a business model innovation as changes in two or more business model components that lead to novel ways of value delivery. However, Björkdahl (2013) sees business model innovation as the result of the new logic of value creation and value capture. On the other hand, Aspara et al. (2010) and Amit and Zott (2012) emphasize the change in roles and relations among activities and parties involved in BMI and Abdelkafi al. (2013) defines BMI as a modification in at least one of the value dimensions. This ambiguity in the definition is mostly due to a lack of clarification in the business model literature (Aspara et al., 2010; Abd Aziz & Mahmood, 2011; Huang et al., 2012). Considering the different ways to define BMI, we have a preference for the BMI definition of Foss and Saebi (2016, p:216) i.e.

> "*Designed, novel, and nontrivial changes to key components of a firm's existing BM and/or the architecture linking these components*."

So, in this research, BMI implies that firms change their existing business model to a new one. In other words, this research focuses on established firms that already have a BM. Although some scholars consider the innovation of single elements or components as a BMI (e.g., Markides, 2006; Johnson et al., 2008), we consider a fundamental change of the business model as a BMI. According to Wirtz et al. (2016), this view is in line with the extant body of the literature (e.g., Casadesus-Masanell and Zhu, 2013; Johnson et al., 2008; Schindehutte et al., 2008; Schneider and Spieth, 2013).

Foss and Saebi (2016) also identified four streams of BMI research, namely: (1) conceptualization and classification of BMI, (2) BMI as a process (e.g., the importance of capabilities, leadership, learning mechanism), (3) BMI as an outcome (e.g., identifying or describing an innovative BM), and (4) BMI

and organisational implications or performance. This research touches on BMI research, organisational change processes (BMI research stream 2) with a focus on the BMI process, change management, the organisational capabilities, and as will be discussed in sections 2.3, 2.7, and 2.8, respectively. The fourth stream, which addresses the organisational performance implications of BMI will be discussed in section 2.4. The common pitfalls to hinder the positive impact of BMI on firm performance are presented in section 2.5, while in section 2.6, implementation of BMI will be discussed in more detail.

Table 2.2: Definitions of Business Model Innovation, sorted chronologically
(adapted from Foss and Saebi (2016))

Author(s), Year	*Definitions*
Mitchell and Coles, 2004	Replacing of the current business model that provide product or service offerings to customers and end users that were not previously available. Also the process of developing these novel replacements can be seen as business model innovation (p: 17).
Markides, 2006	The discovery of a fundamentally different business model in an existing business (p: 20).
Santos et al., 2009	A reconfiguration of activities in the existing business model of a firm that is new to the product service market in which the firm competes (p: 14).
Aspara et al., 2010	Initiatives to create novel value by challenging existing industry-specific business models, roles and relations in certain geographical market areas (p: 47).
Gambardella and McGahan, 2010	Adopting a novel approach to commercializing the firms underlying assets (p: 263).
Yunus et al., 2010	Generating new sources of profit by finding novel value proposition/ value constellation combinations (p: 312).
Sorescu et al., 2011	As a change beyond current practice in one or more elements of a retailing business model (i.e., retailing format, activities, and governance) and their interdependencies, thereby modifying the retailer's organizing logic for value creation and appropriation (p: 57).
Amit and Zott, 2012	Redefining (a) content (adding new activities), (b) structure (linking activities differently), and (c) governance (changing parties that do the activities) (p: 44).
Bucherer et al., 2012	A process that deliberately changes the core elements of a firm and its business logic (p: 184).
Abdelkafi et al., 2013	A business model innovation happens when the company modifies or improves at least one of the value dimensions (p: 13).
Aspara et al., 2013	A change in the perceived logic of how value is created by the corporation, when it comes to the value-creating links among the corporation's portfolio of businesses, from one point of time to another (p: 460).
Berglund and Sandström, 2013	A BMI can thus be thought of as the introduction of a new business model aimed to create commercial value (p: 276).
Casadesus-Masanell and Zhu, 2013	The search for new logics of the firm and new ways to create and capture value for its stakeholders; it focuses primarily on finding new ways to generate revenues and define value propositions for customers, suppliers, and partners (p: 464).
Khanagha et al., 2014	Business model innovation activities can range from incremental changes in individual components of business models, extension of the existing business model, introduction of parallel business models, right through to disruption of the business model, which may potentially entail replacing the existing model with a fundamentally different one (p: 324).
Foss and Saebi, 2016	Designed, novel, and nontrivial changes to the key elements of a firm's BM and/or the architecture linking these elements (p: 216).

In terms of how business model innovation can be operationalized, well-known innovation surveys, like European Community Innovation Survey (CIS, edition 2010), the Japanese National Innovation Survey (JNIS, edition 2012), or the US Business R&D and Innovation Survey (BRDIS, edition 2010), as yet do not have any item to measure the BMI concept (Barjak et al., 2014). Velu (2015) considers diversification/product launch and external funding as the two key indicators of BMI. Some researches are ambiguous about how they measure concepts (Clauss, 2016; Spieth et al., 2016), or use a set of business model components as BMI indicators without referring to their origin (Huang et al., 2012). In a nutshell, BMI is measured in a number of ways, some of which are derived from data that was initially collected for other purposes, as mentioned by Bouwman et al. (2018).

Based on the theoretical discussion on BMI, we argue that business model innovation is, in fact, a multidimensional construct. In this research, we will measure BMI with seven items. Each item referred to one of the three dimensions of BM, defined by Barjak et al. (2014). Firstly, *value creation* in which participants are asked whether firms have introduced new products or new services (Giesen et al., 2007; Mitchell & Coles, 2003). Secondly, *value delivery* is measured by focusing on a new market segment (Itami & Nishino, 2010, p. 364), sharing new responsibilities with business partners, and starting to collaborate with new business partners (Barjak et al., 2014). Thirdly, *value capturing* is measured by introducing a new pricing mechanism and creating a new revenue stream (Johnson et al., 2008).

2.3 Business Model Innovation Process

Although BM ontologies and tools are not quite well known (Heikkilä et al., 2016; Marolt et al., 2016b), attention to the BMI process is even more limited (Frankenberger et al., 2013). Unlike technology, product and service innovation, where the stage-gate-based process is broadly accepted and used, the BMI practice has not yet reached this level of maturity (Winterhalter et al., 2017). Although one can consider that BM innovation happens through a process of trial-and-error and experimentation, adaptation and learning by doing (Sosna et al., 2010; Demil & Lecocq, 2010), which might vary from company to company in different competitive environments (Wirtz & Daiser, 2018; Zott et al., 2011), having a framework to guide organizations' BMI efforts and map the necessary activities and potential challenges, can help them to implement their BMI more effectively (Geissdoerfer et al., 2017). A BMI framework provides the opportunity to predict and recognize possible conflicts in the early stage and manage the BMI process as a whole and serve as a guideline to structure BMI initiatives (Wirtz & Daiser, 2018). Despite the importance of having a BMI process, only a small number of researchers have considered BMI as a process that constitutes several phases or process steps (Frankenberger et al., 2013).

In their literature review, Wirtz and Daiser (2018), distinguished 20 approaches for the BMI process that have been presented so far. The identified approaches were different in content, procedure, and scope. They found that there was a varying number of process steps. The BMI process of Linder and Cantrell (2000), for instance, employed a three steps process ("describing the actual BM", "developing a new BM", and "changing the BM") that to some extent were at an abstract level, while the BMI process of Pramataris et al. (2001) is comprised of ten activity-oriented process steps. Furthermore, some BMI processes are mostly BMI design-oriented; for instance, as the process presented by Voelpel et al. (2004), while other processes focus on BMI operations, such as Zott et al. (2010) and their six-step BMI process. Several researchers go beyond the implementation stage and suggest post-implementation process steps such as considering isolating mechanisms to block competitors' imitation (David J. Teece, 2010), organization-wide learning to maintain growth (Heikkilä, et al., 2016; Sosna et

al., 2010), and manage required adaptions and modifications of BMI (Geissdoerfer et al., 2017; Osterwalder et al., 2010). Figure 2.2 summarised the BMI processes that have been presented in the literature.

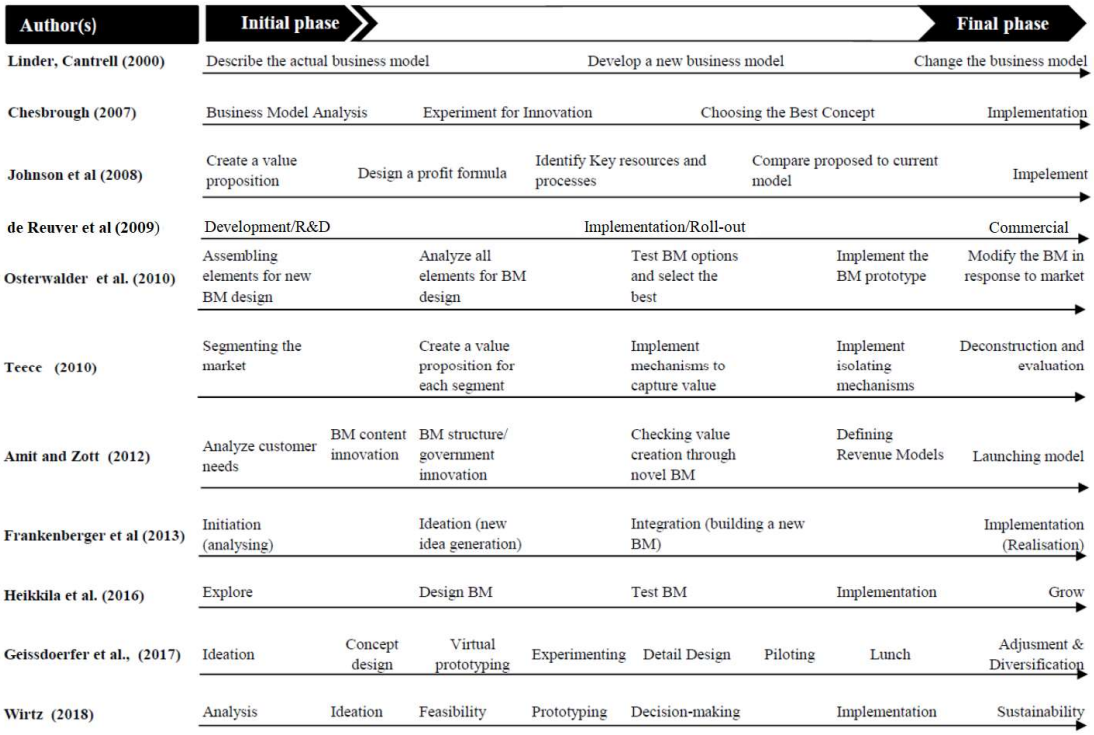

Figure 2.2: Overview of BMI processes
(adapted from Wirtz and Diaser, 2018)

In this research, we take Heikkila's five-step process of BMI (Heikkila et al., 2016b), since, in the ENVISION project, to which this research contributes, this five-phase process for BMI is used. This five steps BMI process is useful to analyze BMI in SMEs in which simplicity of the BMI process is crucial. This can help to recognize the underlying patterns and typical situations that SMEs are struggling with in striving for BMI. In the first step, SMEs using strategic-oriented tools, like Porter's 5-forces, SWOT, or environment scanning tools, scan their business environment to explore the opportunity to develop a new BM. Afterward, a viable BM to exploit that opportunity will be designed. The BM Canvas is a commonly used ontology-based tool together with STOF (Bouwman et al., 2008), and Visor (El Sawy & Pereira, 2013). Next, in the third step, the designed BM is tested by setting up experimentation on a small scale. BM can be assessed in three dimensions; viability, feasibility, and robustness (Haaker et al., 2017), in which a viable BM provides benefits for both the customer and provider of a product or service and assesses by financial measures. Feasibility tackles the question of whether the BM can actually be implemented in practice and required resources are available, while robustness is the long-term viability and feasibility of a BM in a given future environment. In the fourth phase, the approved BM is launched and implemented on a large scale. The implementation step deals with the process or technical implementation as well as change management aspects that engage relevant people. Finally, in the last step of the BMI process, firms increase their profitability and expand their market. In this step, specific metrics can be used to analyse the progress and to adjust the BM if required (Figure 2.3).

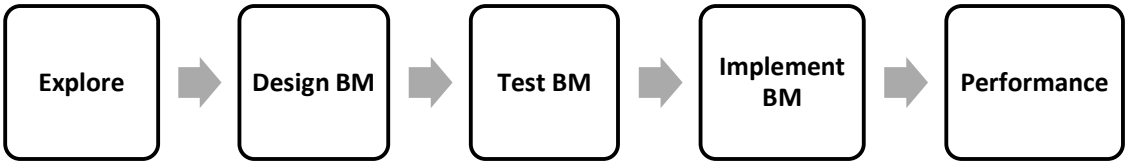

Figure 2.3: Business Model Innovation Process in Envision Project
(Heikkilä et al., 2016)

We are aware that the BMI is not a linear process that starts from step one (exploring the opportunity) and ends in step five (managing the firm's overall performance improvement). To be commercially competitive, BMI must address the real need of customers with an affordable quality product or service that can be delivered using the available resources and capabilities to the company; therefore, BMI is usually an iterative process with several rounds of feedback and correction cycles to create value for both a firm and its customers. So, in the end, BM and BMI concepts need to be connected with another key concept in this research, i.e., firm performance. In the following section, we review the literature to find a definition for firm performance and how to measure it. As the focus of this research is on small and medium-sized enterprises (SMEs), the measurement of SME's performance is discussed afterward.

2.4 Firm Performance

Since the early 20th century, performance has been at the core of management thinking (Haggège et al., 2017) and is a recurrent theme in most branches of management, including organization theory, strategic management and operation management, and it is of interest to both academic scholars and practicing managers (Venkatraman and Ramanujam (1986). As managers are assessed and judged on their firm's performance, good performance influences the continuation of the firm (Gray, 1997). Although firm performance has become an essential concept in management research and is frequently used as an ultimate dependent variable, there is hardly a consensus about its definition and measurement (Taouab & Issor, 2019).

The definition of performance evolved during the last decades. According to Taouab and Issor (2019), from the 50s to the end of the last decade of the twentieth century, firm performance was considered as the equivalent of organisational efficiency, which represents the degree to which an organization, as a social system with some limited resources and means, achieves its goals without an excessive effort from its members. The criteria used for assessing performance were productivity, flexibility, and inter-organisational tensions (Georgopoulos & Tannenbaum, 1957). From the first decade of the twenty-first century, the definition of organisational performance principally focused on the capability and ability of an organization to efficiently exploit the available resources to achieve accomplishments consistent with the set objectives of the company, as well as considering their relevance to its users (Peterson et al., 2003). Colase (2009 cited in Taouab, and Issor, 2019) considers the word performance as a bag-word because it covers various and different notions such as growth, profitability, return, productivity, efficiency, and competitiveness.

2.4.1 Performance Measurement

Although firm performance plays a vital role in management research, there is a long discussion about the best approach to the concept utilization and its measurement, especially in SMEs (Jarvis et al., 2000; Wood, 2006). The complexity of performance is perhaps the major factor contributing to the debate (Beal, 2000). From the ’50s, for two decades, the firm performance was measured mostly by financial metrics (Taouab & Issor, 2019). While performance definition shifted from efficiency and goal orientation to capability to exploit available resources as well as users satisfaction, the performance gained broader meaning. Therefore, various approaches were introduced to measure firm performance. Financial performance is at the centre of firm performance. Accounting-related metrics such as return on equity (ROE), return on assets (ROA) and return on sales (ROS) measure financial achievement (Parker, 2000) and tap current profitability. Although financial performance measures are crucial, they are not sufficient to define a firm’s overall performance (Murphy et al., 1996). Business performance determines market-related items like growth, market share, diversification and product development (Gray, 1997). Business performance considers both existing business measures (sales growth and market share) and the future positioning of the firm (new product development and diversification).

Firm performance can be assessed by objective or subjective measures. Objective measures are the absolute values of a firm’s actual performance, which, for instance, can be found in its financial statement (Battor & Battor, 2010), and subjective measures usually ask managers, financial analysts or employees, to assess their company’s performance relative to that of their competitors (Greenley, 1995) based on their perception. There is a common consensus among researchers that objective measures of performance are far preferable to subjective measures (Beal, 2000). Despite such debate, objective measures on the performance of small- and medium-sized enterprises (SMEs) are difficult to capture. Most SMEs are private companies and are not legally required to share their financial data (Khan et al., 2014). Though available, SMEs’ accounting data maybe are inaccurate because they are usually unaudited. Also, managers and owners of SMEs are usually reluctant to disclose their business financial data willingly to others (Gibcus & Kemp, 2003). Lastly, the firms may have other particular goals rather than financial such as growth, survival, or independence (Meijaard et al., 2002; Peacock, 2004). On the other hand, owners of SMEs are willing to provide subjective evaluations of their firms’ performance (Gray,1977).

Nevertheless, a number of researches proved that subjective and objective performance indicators are correlated (Dawes, 1999; Dess & Robinson, 1984; Venkatraman & Ramanujam, 1987; Wall et al., 2004) and can be used interchangeably. Compatible with the stream of SMEs performance measurement literature (Khan, 2014), in this study, firm performance is measured through perception-based measures related to the firm’s overall performance in terms of accomplishment of objectives, and compared to major competitors and industry performance (De Luca et al., 2010).

So, in this research, firm performance is measured using eight items, namely five financial performance measures (sales growth, profit growth, return on investment, net income, and market value) and three market performance measures (speed to market, market share, and penetration rate). All items are measured using a 7-point Likert scale (Venkatraman; Ramanujam, 1986). To consider the possible lag between implementing a BMI and its effect on performance, we ask participants to consider the possible effect in the last 24 months.

So far, key research concepts such as business model, business model innovation, business model innovation process and firm performance have been discussed, and their operational definitions have

been provided. In the next section, we analyze why business model innovation fails to deliver expected outcomes for companies. This will assist us in identifying the critical parts of the BMI process that need to be addressed in greater depth.

2.5 Business Model Innovation Process and firm performance[1]: What are the most common pitfalls awaiting?

Although business model innovations are supposed to be more profitable than pure product or process innovations (Verma & Bashir, 2018; IBM, 2008), a well-formulated business model may fail to produce superior performance for the firm if they are not appropriately implemented. While researchers and practitioners see the relevance of the BM concept, an ever-increasing number of companies acknowledge that it is difficult to implement a new BM, and many attempts fail (Friedrich von den Eichen et al., 2015). Despite the importance of BMI, it is often handled poorly by many firms (Chesbrough, 2010; Knab & Rohrbeck, 2014). In their two years of an in-depth study of 26 BM innovations from idea to development, Christensen et al. (2016) identified that more than 60% of BMI efforts faced failure. Moreover, Knab and Rohrbeck (2014) claimed that even though incumbent firms designed 21 business models in 2010 in the German smart energy market, after four years, only five business models were implemented.

There are many reasons why business models fail. Understanding these reasons can help us to better manage implementation processes and to define BM implementation management practices. To explore the potential barriers to implanting a viable BMI, and to have a bigger picture of what is happening in the BMI context, we started from Al-Debei and Avison (2010) notion, which considers BM as a link between business strategy and business processes (see Figure 2.4) since BM is not an independent concept to define long-term, mid-term and short term objectives of a firm. So we could distinguish two specific steps related to (a) implementing strategies in BM, and (b) implementing BM Innovation in operations (see Figure 2.4). This model is used as the starting point for this systematic literature review on this topic.

Based on the review of the literature an in-depth analysis of 21 papers (for more details, see Latifi and Bouwman, 2017), 75 important factors that can cause a problem in the BMI process were distinguished. The identified factors were coded and clustered into four sources of problems. These clusters were related to the (1) relation between strategy and business model, (2) the BM per se and elements related to components of the business models, (3) issues related to BMI implementation within organisational setting and culture, and finally (4) BM assessment-related issues. Table 2.3 (on page 25) summarised the identified barriers to blocking a superior performance by innovating the firm's BM. In the following, the four sources of problems will be discussed in detail.

[1] Parts of this sub-section are published as "*Why does Business Model Innovation fail to deliver expected outcomes?*" at International Society for Professional Innovation Management Conference (ISPIM), Toronto, Canada on 19-22 March 2017.

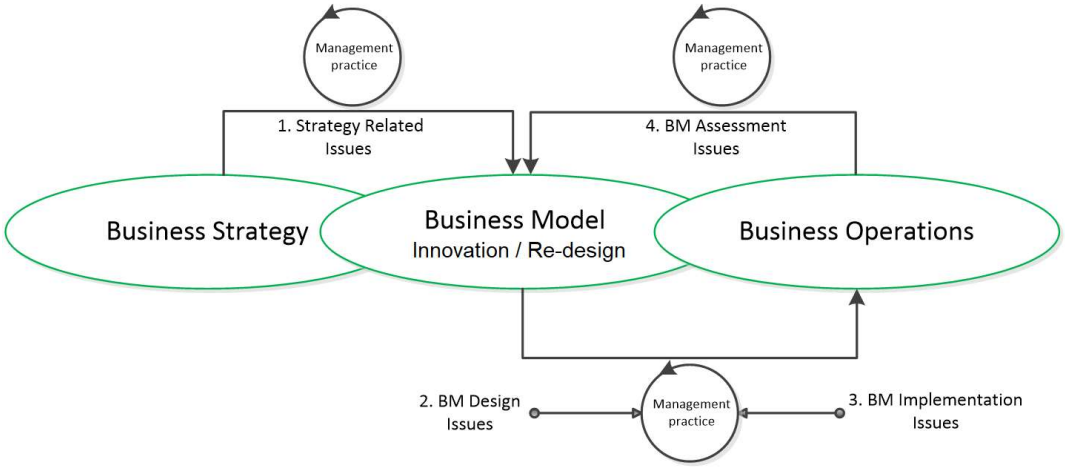

Figure 2.4: Key factors that influence BMI

2.5.1 Strategy-related Issues

In a number of publications, the lack of strategy (Serrano et al., 2010; Bernd et al., 2016) or inconsistency between strategy and BM (Yannopoulos, 2013; Hittmár et al., 2014) are mentioned. It is also one of the criticisms of the CANVAS model that it does not connect strategy to the BM ontology (King, 2020). It is also mentioned that BM thinking does not fully integrate environmental constraints with the design of the business model (Batocchio et al., 2016; Lauritzen, 2014; Yannopoulos, 2013). In our view, this is also highly dependent on what view one has on strategy. In an outside-in perspective typically found in strategic positioning approaches, the environment of the company plays a significant role in the strategic analysis. Therefore we see environmental constraints (Osterwalder, 2012; Batocchio et al., 2016; von den Eichen et al., 2015) as related to a lack of proper framing of BM implementation and as a failed connection between strategy and BM (Yannopoulos, 2013). To mitigate the risk of failure, companies strategically tend to run two parallel BM simultaneously. Implementing business models in parallel may foster new idea generation and technology development (Fang, 2008) and diversify revenues and profits (Clausen & Rasmussen, 2013). However, according to O'Reilly and Tushman (2004), managing parallel BMs is a challenging task. Each BM requires specific competencies, processes, culture, and leadership styles and requires much effort to manage them separately. According to Clausen and Rasmussen (2013), running two parallel BMs increase organisational complexity and makes it more challenging to rely on shared resources that do not necessarily provide a fit with the complete set of business models, and it increases coordination cost (Hacklin et al., 2018).

2.5.2 BM Design-related Issues

There are also issues with regard to the BM itself. The designed business model may have been flawed and non-viable (Yannopoulos, 2013; Osterwalder, 2012; Batocchio et al., 2016; Lindgardt et al., 2009). Some authors point to misalignment of components with each other (Batocchio et al., 2016), for instance, between value proposition and customer segments (Lauritzen, 2014), or with regard to the use of resources related to financial viability (cost versus revenue) (Batocchio et al., 2016; Lauritzen, 2014;

Serrano et al., 2011; Hittmár et al., 2014) or even components that are dysfunctional (Yannopoulos, 2013). Finally, according to Christensen et al. (2016), a large number of BM, which involves the grasp of opportunities that seem to be consistent with their current BM, fail only because of rejection by present business partners or its current customers, which usually leads to redesigning the BM.

2.5.3 BM Implementation-related Issues

The translation of the designed business model into the organization's activities and actions is characterized as BM implementation (Osterwalder, 2010). BM implementation is a complicated and challenging task, not only intellectually but also in practice and on an action level (Gerasymenko et al., 2015). In this stage, managers are expected to make a shift from the world of (data) analysis and planning into operation, managing conflicts, interacting with people on different levels of expertise, and modifying the current processes of BM. The way the changes are communicated to the staff and encouraged to engage in the transformation process, allocating scarce resources, organisational restructuring, developing unique competencies and promoting continuous learning are important issues to manage (Yannopoulos, 2013). Various studies mentioned “poor implementation” in general as one of the main reasons for BM failure without articulating any specific problems (Osterwalder, 2012; Batocchio et al., 2016; Zot & Amit, 2010; Chesborough, 2010; Nunes & Breene, 2011; Lindgardt et al., 2009; Yannopoulos, 2013; Batocchio et al., 2016). However, our literature review extracted several specific implementation-related issues. To create a better insight on implementation-related issues, identified factors that are similar to each other, or pertain to the same topics or general concept are grouped together. In the end, we reached four sub-groups of issues related to BM implementation, i.e., leadership and management, resources allocation, employees, and change management skills.

First, we discuss management and leadership-related issues. According to Christensen et al. (2016), CEOs require to understand the priorities related to each stage of the business model. Presenting a road map view of business model evolution (de Reuver et al., 2013; Heikkilä et al., 2018) can help them to demonstrate why most efforts to change the BM fail. Moreover, there should be a person with authority and capability to innovate the BM (Yannopoulos, 2013) to support the new change initiatives (Hittmár et al., 2014). According to Batocchio et al. (2016), Zott and Amit (2010), Chesbrough (2010), and Nunes and Breene (2011) concluded in their studies that the key source of BM failure is connected to management issues.

Second, resource allocation as a process of providing financial resources, skills, knowledge, information and time available for the implementation stage is frequently mentioned in research as an important barrier to BM implementation. The lack of necessary funds (Hittmár et al., 2014; Knab & Rohrbeck, 2014) and insufficient use of available resources (Hittmár et al., 2014; Lindgardt et al., 2009) create severe problems for BMI. When a company has become stuck in a various number of uncoordinated, bottom-up innovations, it faces a disproportionate and overlapping portfolio of experiments, and because of the resulting highly diversified portfolio, there is no resource available or even no attention and support from the senior management team (Lindgardt et al., 2009). To allocate resources to execute different activities and projects, firms require to meticulous plan their scarce resources efficiently (Ramanathan, 2009), should decide what their priority is and how they want to distribute their resource and capabilities for long and short-term objectives as well as for routine tasks.

Third, while the BM should be implemented in the entire organization, employees need to be encouraged to participate in change. People in a company are key to a BM innovation program (Hittmár et al., 2014). Depending on the degree of changes in the BM, employees are not only required to receive

some training to develop relevant capabilities, for instance in marketing, technology, or communication (Botocchio et al., 2016; Hittmár et al., 2014), but hiring new personnel with special qualification also might be required (Knab & Rohrbeck, 2014). Moreover, what the business model entails needs to be shared and communicated within the organization. Lack of communication is an important issue for failure (Serrano et al., 2011). Lack of communication can lead to serious conflicts among employees, departments, and management teams (Hittmár et al., 2014). Furthermore, a shared understanding of staff about how they are doing their job and what values and norms are core to the firm will shape the firm's culture. A consistent culture will affect the way of understanding the necessity of change in current BM, and required coordination among different management and operational levels (Von den Eichen et al., 2014; Hittmár et al., 2014; Lauritzen, 2014). So, it is important to provide an appropriate environment for BMI (Hittmár et al., 2014). Inappropriate incentive and award systems (Von den Eichen et al., 2014; Knab & Rohrbeck, 2014) and lack of motivation (Hittmár et al., 2014) are also barriers to BM implementation.

Fourth, many times scholars referred to "change management skills" as a must-to-have to effectively implement a new BM. Innovating a BM can be seen as a subset of generic organisational change in which fundamental changes in the key elements of an organization take place. The skills, like how to overcome resistance to change among managers and employees, are usually missing in firms that attempt BM innovation (Hienerth et al., 2011; Von den Eichen et al., 2014; Yannopoulos, 2013). The managers have some historical bias regarding the existing BM (Lindgardt et al., 2009; Von den Eichen et al., 2014), and psychologically they have a fear of loss of control (Hienerth et al., 2011). While change management skills and knowledge focuses on changing the organisational system that supports the business model, It is also includes management of attitudes, behaviors, and issues related to the change. Change management can help business to overcome internal resistance to BMI and realize the To-be BM in a more efficient way. In section 2.7 we will explore managing the people side of changes in more detail.

2.5.4 Assessment and continuous management issues

BMI is a continuous process and needs to be assessed timely to take prompt actions, such as correcting flawed assumptions in the current BM or responding to a recent change in the internal or external environment (Gerasymenko et al., 2015). The earlier problems and non-viability of the BM are detected, the lower the possibility of failure (Yannopoulos, 2013). Companies continuously should assess and monitor environmental change and evaluate the internal progress. It could help managers to use an efficient reward system to reinforce activities in line with BMI during the planning and design phases. Bad evaluation or assessment causes difficulties in BM innovation (Batocchio et al., 2016; Ramanathan, 2009). Also, the lack of risk analysis in order to identify risk early is a source of BMI failure (Yannopoulos, 2013; Hittmár et al., 2014). In addition, governance issues play a role here. If no clear performance metrics or KPIs are defined (Batocchio et al., 2016), it is difficult to measure if the objectives are achieved. In this context, it also needs to be stressed that defining metrics plays a key role if one wants to move from the current to a To-be business model (Heikkilä et al., 2016). The lack of a clear roadmap (Christensen et al., 2016), clear priorities (Christensen et al., 2016), combined with missing metrics (Ramanathan, 2009), do lead to failure and distraction (Rumble and Mangematin, 2015). A clear roadmap also assists prevent that the BMI project from being time-consuming

(Yannopoulos, 2013) and costly. In this context, the absence of a person in charge of leading and managing the innovating of the BM can also be mentioned (Serrano et al., 2011; Yannopoulos, 2013).

So, this systematic literature review provides ingredients to answer the first research question, which was "*Which critical factors play a role in different steps of BMI process?*". The result highlights that out of 75 identified barriers that lead to failure in BMI efforts, 43 barriers (about 58 %) are related to the BM implementation stage. However, this percentage for strategy-related, BM design, and BM continuous management stages are pretty smaller, with 13%, 20%, and 9%, respectively (Figure 2.5). It means that despite the fact that managers focus on designing a viable, feasible and robust BM and invest a lot of time and energy in this stage, the big challenges are found in the implementation stage of BM. This research suggests that far more emphasis should be put on the implementation stage. Most of the identified barriers can be controlled by the management team if they focus and use change management skills.

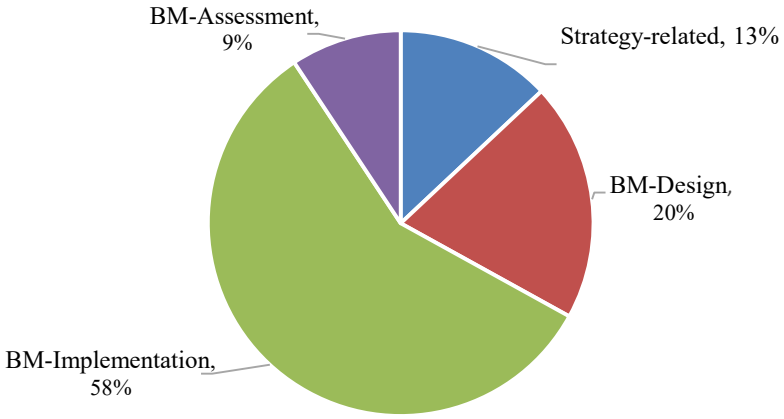

Figure 2.5: Distribution of identified barriers in four categories (N=75)

Moreover, deeper analysis on those factors, which were associated with the BM-Implementation phase, shows that only 33% of factors were related to the technical side of implementing a BM, e.g., lack of alignment between processes, financial resources, and execution plan. But the majority (almost 67%) were related to the people side, such as lack of motivation in employees, training, effective communication, change management skills, and cultural issues. This finding emphasises the importance of the implementation phase in the BMI process, particularly its people side, and motivates a more thorough examination of the BMI implementation phase. So, we will go over the BMI implementation phase in greater depth.

Table 2.3: Identified barriers to implementing Business Model Innovation

Category	Barriers	Reference
Strategy related issues (Section 2.5.1)	Lack of strategy	Serrano et al. (2010)
	Environmental change, especially in technology	Osterwalder (2012), Yannopoulos (2013), Hittmár (2014)
	Lack of design tools	Rumble (2015)
	BM Inconsistency with strategy	Yannopoulos (2013);
	Managing dual BMs inside the firm	Yannopoulos (2013); Spieth (2016)
	Fixation on ideation (without execution)	Lindgardt et al. (2009)
BM design issues (Section 2.5.2)	BM itself is inefficient and is faulty	Osterwalder (2012); Yannopoulos (2013); Lindgardt et al. (2009); Von den Eichen (2014); Lauritzen (2014)
	Solving an irrelevant customer job; alignment between value proposition and customer segment;	Osterwalder (2012); Lauritzen (2014)
	Business model financial viability (costs and revenue);	Lauritzen (2014)
	Inadequate business model selected	Batocchio (2016)
	Bad planning (i.e., Lack of risks analysis);	Batocchio (2016); Hittmár (2014)
	Defining internal and external environment too narrowly in regard to where to search	Von den Eichen (2014)
	Inconsistency with current BM or its customers.	Christensen (2016)
	Lack of Collaboration with Research Institutions	Serrano et al (2010)
BM Implementation issues (Section 2.5.3)	Flawed and inefficient implementation of BM.	Osterwalder (2012); Lauritzen (2014); Yannopoulos (2013); Batocchio (2016)
	Management is the main reason for failure.	Zott and Amit (2010), Nunes and Breene (2011); Yannopoulos (2013); Hittmár(2014); Christensen (2016);
	Lack of control	Ramanathan (2009)
	The lack of necessary funds	Hittmár (2014); Yannopoulos (2013); Lindgardt et al. (2009); Knab, 2014
	Insufficient use of available resources	Hittmár (2014); Ramanathan (2009)
	Requiring additional data during innovation	Yannopoulos (2013)
	Resistance to change, people and system	Lindgardt et al. (2009); Yannopoulos (2013); Hienerth et al (2011); Knab (2014); Von den Eichen (2014)
	Culture-related barriers	Von den Eichen et al., (2014); Hittmár (2014); Lauritzen (2014)
	Communication	Serrano et al (2010)
	Inadequate qualification of personnel	Batocchio et al(2016); Hittmár (2014)
	Low level of employee motivation and false incentives	Hittmár a (2014); Von den Eichen et al., (2014); Knab, (2014);
	The lack of trust between departments	Hittmár a (2014)
	Diffuse responsibility	Von den Eichen et al., (2014)
	Bureaucratic issues, “difficult” paperwork	Von den Eichen et al., (2014)
	Isolated efforts	Lindgardt et al. (2009)
	Project Management skills	Serrano et al. (2010)
	Failure to scale up	Lindgardt et al. (2009)
	Focus on short-term activities	Lindgardt et al. (2009)
	Technical and organisational complexity	Hittmár (2014)
BM Assessment & Continuous Management issues (Section 2.5.4)	Bad evaluation or assessment	Batocchio et al (2016); Von den Eichen et al., (2014);
	Delay to fix parts that does not work	Von den Eichen, (2014);
	Lack of early identification of risk	Hittmár a (2014); Yannopoulos (2013)
	Lack of performance monitoring	Ramanathan (2009); Yannopoulos (2013)
	Continuous screening of Internal and external environment	Von den Eichen, (2014); Yannopoulos (2013);

2.6 BMI Implementation in more detail

While reviewing the literature, the only phase that was listed in almost every related study on the BMI process was the implementation phase, which was considered to be a crucial phase of the BMI process (Batocchio et al., 2016; Chesbrough, 2010; Frankenberger et al., 2013; Osterwalder, 2012; Yannopoulos, 2013). Moreover, our research on the reasons why BMIs fail to deliver expected outcomes emphasised the importance of the implementation phase of BMI (Yannopoulos, 2013). One company can achieve its strategic goals by having a sound business model design together with a consequential implementation (Osterwalder et al., 2005). Although there are some commonly used models and frameworks such as Canvas (Osterwalder et al., 2005), Stof (Harry Bouwman et al., 2008), Csoft (Heikkilä et al., 2010), Visor (El-Sawy & Pereira, 2013) for researchers and practitioners in the areas of business model design and evaluation, there is no dominant framework for BMI implementation or model that provides clear steps to explain how BMI need to be implemented in practice (Rumble & Mangematin, 2015). The existing BM frameworks are (1) descriptive, which means they can be valuable for analyses (Canvas, Stof, Visor), (2) focussed on brainstorming (Canvas), or on design (Canvas, Stof, Csoft), but these frameworks do not offer practical tools for managing the process of BMI implementation, though the BM road-mapping tool (de Reuver, 2013) provides an overall view on tasks and activities required to shift from current BM towards implementing a new one. Understanding the challenges of effective business model change and implementation has received relatively scant scholarly attention (Chesbrough, 2010; Zott and Amit, 2008). There is a clear need for tooling and additional implementation methods as well as insight into BM implementation practices (Bouwman et al., 2012; Bouwman et al., 2020; Rumble & Mangematin, 2015).

There is a clear gap in the literature on defining the BMI implementation concept. According to Osterwalder (2010), business model implementation includes the "translation" of the business model to a plan into more concrete elements, such as a business structure (e.g., departments, units, human resources), defining all related projects, specifying their time frame, business processes (e.g., workflows and responsibilities). Our definition of BMI implementation is adapted from Osterwalder's (2010):

> "*Translation of the designed business model into the moves and actions of the organisation. Through BMI implementation, a firm develops and integrates its structure, culture, resources, people and system so that its BM becomes a reality*."

The process of implementing business model innovation is, however, still underdeveloped (Berends et al., 2016; Birkinshaw & Goddard, 2009). There are many ambiguities about how firms solve their dilemmas that happen during the BMI journey (Broekhuizen et al., 2018), how to plan the process (Sosna et al., 2010), and what is the best organisational structure (Christensen et al., 2016) to implement BMI. Several studies provide guidelines and rules about how managers should execute BMI implementation. Below, we summarize the literature on BMI implementation and guidelines to develop effective implementation strategies.

Frankenberger et al. (2013), introduced the implementation phase as a crucial point in time for BMIs. They do not explain how exactly firms can implement their BMI but express two major challenges firms face in the implementation phase. First, overcoming resistance to change inside the organization. People usually are afraid of the change because of feeling ambiguity for their future or do not understand or are convinced about the reason to change. A second challenge is to

manage the chosen implementation approach. To reduce the risk, firms mostly employ an incremental trial and error and experimentation approach. The major challenge is to ensure that learnings from these actions are then used to fine-tune the business model or to perform larger adjustments if required.

Osterwalder (2010) recommends that to better manage the BMI implementation the required activities are often itemized in a project management document. Osterwalder (2010) mentioned four essential activities related to the implementation phase: (1) conducting a highly visible, multi-channel internal communication, (2) active support of top management, (3) rapidly adapting the business model as well as aligning with the current and new business model, and (4) being master in project management.

The translation of business model designs into concrete activities can be supported by using tools, such as De Reuver et al. (2013) business model road-mapping approach (Remane et al., 2016). By BM road-mapping approach, de Reuver et al. (2013) could help an organization provide a roadmap of actions to business model changes. The process of business model road-mapping involves four core steps: (1) identifying the desired change in the business model, (2) analyzing how these desired changes impact business model components, (3) translating the plan into executable actions, and (4) back-casting transition paths. In the same vein, Batocchio et al. (2016) introduce a nine-step roadmap for the implementation of BMI.

Both road-mapping tools developed by De Reuver et al. (2013) and Batocchio et al. (2016) deal mostly with identifying required activities and breaking them down for shifting from current BM to a new BM as well as the project management aspects of BMI implementation. Those road-mapping tools focus less on the human and organisational side of the BMI implementation. However, our findings (see section 2.7) and current research indicate that most BMI and change initiatives appear to struggle for non-technical factors such as non-acceptance of the new value proposition, skill issues, management support, or communication issues. According to Kotter and Cohen (2002), a high failure rate in any organisational change is rarely due to technological considerations but rather to human factors.

In BMI literature, there is a clear gap taking the people inside the firm into account, though they are the key drivers of the firm who run the old business model, and will operate the new one. In our research we focus on those factors that affect the behaviour of people involved in the BMI process. We are eager to investigate this behaviour not only at the individual level but also on group and organisational levels. We labeled these factors shortly as "*human and organisational factors*". The term 'organisational' has been used to highlight the organisational level of analysis and not only the individual level and it encompasses the factors that influenced how the organization and everyone within it behaved. Some examples of these factors are employees' motivation, empowerment, engagement, training and competence, leadership style, resistance to change, inter-personal and inter-division collaborations and conflicts, organisational culture, and communication methods. Since no previous research, to our knowledge, has investigated the human and organisational factors in BMI context, change management literature might be a valuable reference to start with. Although change management literature from a BMI perspective is hardly developed, these two fields are closely linked to many aspects (Breiby, 2011) and should be more connected than what we have seen in literature so far. Therefore, in this research, we also tried to use change management concepts and practices to generate new knowledge on the human and organisational factors in implementing BMI.

2.7 Change management, and human and organisational factors

Change in BM, as a type of organisational change, typically has an effect on financial, organisational, and human resources. What distinguishes the human and organisational resources from financial and technical parts of change is that they are often unpredictable, whether by actively resisting change, failing to adapt to a new situation, or simply ignoring it. BMI often entails a modification in everyday activities and even in organisational culture, which may contribute to misinterpretation of corporate signals and values, as well as a shift in power dynamics. Many fundamental changes in BM can result in employee lay-offs, demotion and job dissatisfaction as new ways of working are introduced, and customers can become dissatisfied as they experience an unwanted change, or a decline, in service (Mills et al., 2008). These changes can pose significant constraints to implementation of BMI if not properly handled (Kotter, 2010). Organizations to address and manage the human and organisational elements use change management practice. Change management, in particular, deals with the individuals who have to change their attitude and behaviour as a result of an organisational change. It is concerned with their expectations, needs, capabilities, motives, fears, and resistances.

Change management has been defined as "*the process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers*" (Moran & Brightman, 2001, p: 66). Change management is related to transforming the organization to a new state; it may require changing even in the management of attitudes and behaviors of people in the entire organization. Implementing a strategic initiative or business model often needs to change objectives, roles, responsibilities, organisational structure, awards and incentives, monitoring and controls. While the effects of BMI can reach across corporate boundaries and external stakeholders can be affected, organisational change management efforts are mostly focused on internal stakeholders(Kohnke et al., 2012)

Change management is an established field of research and references to change and change management can be found in the psychological literature since the 1950's. There are several models for change management. Some models see change management as a process like Lewin's, Kübler-Ross, and Kotter. For instance, Kotter's (2012) model contains an eight-step process (Figure 2.6), while starts from creating a climate to change and goes to enabling and engaging the whole organizations and ends in implementing and sustaining change. However, some scholars provide a list of activities that are important in the time of change, e.g., ADKAR, McKinsey 7-S. Kohnke et al. (2012), for instance, introduced four distinct activities that are necessary for change management. These four sets of activities are (1) communication: ensuring that people are kept updated and have the opportunity to express their desires and concerns, (2) motivation: ensuring that people support the change and are able to participate effectively, (3) empowerment: enabling individuals to engage in and become active in change, and (4) qualification: ensuring that employees have the necessary qualifications and skills to

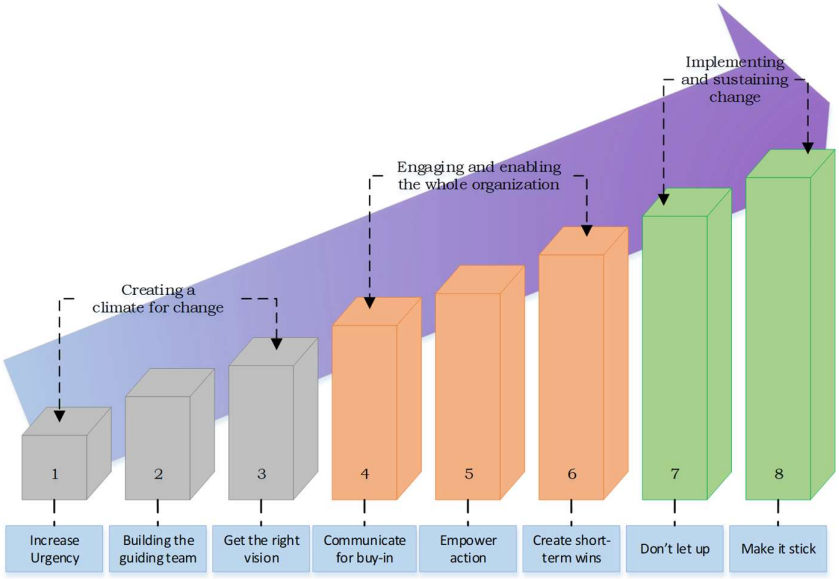

Figure 2.6: Kotter's 8-step Change Management Process (Kotter, 2012)

work. Since the model provided by Kohnke et al. (2012) purely focuses on the human and organisational side of change and excludes the project management perspective, it will be used in this research in the qualitative part of our research (Chapter 7).

As there is not much known about the implementation of BMI, exploring the causal mechanism under which BMI affects firms' overall performance can help us to better understand this phenomenon. This exploration may shed light on some aspects and dimensions of the BMI implementation black box. In the next section, we address the questions: (1) 'why' and 'how' BMI affects performance, because researchers simply directly relate BMI to performance without understanding what is in between, and (2), 'when' and under which conditions, the relationship between BMI and firm performance can be strengthened. In the next section, our focus is more on existing empirical research and less on a theoretical grounding.

2.8 Business Model Innovation and firm performance[1]: What is the causal mechanism?

Although a significant number of companies have gained advantages from BMI, there are many more that have performed extremely poorly (Neely, 2008), or failed to meet their objectives (Halecker et al., 2014), and even went out of business (Garfield, 2011). Therefore, BMI can have very positive and negative consequences, and firms can experience substantial growth or go bankrupt, depending on whether or not the BM is implemented correctly. Hence, knowing how and when to innovate a BM is

[1] Parts of this sub-section are published as "Business Model Innovation and Firm Performance: The Role of Mediation and Moderation Factors" at 31th Bled Conference Digital Transformation – Meeting the Challenges, June 17 - 20, 2018, Bled, Slovenia.

a serious challenge for firm managers/owners (Hartmann et al., 2013). So BMI does not automatically trigger an impressive performance. To date, there is no clear understanding of cause-effect relationships and mutual dependencies in the linkage between BMI and firm performance (Methlie & Pedersen, 2008; Knab & Rohrbeck, 2014). A plausible approach may be to analyse mediating and moderating factors that allow firms to translate BMI into higher performance (Guo et al., 2017). Relations between variables are mostly more complicated than simple bivariate relationships between the predictor (i.e., BMI) and criterion (i.e., firm performance).

To develop a conceptual framework that explains the complex mechanisms through which BMI influences firm performance, we did not restrict our literature review based on the date of publication or the kinds of papers we reviewed, which meant that journal articles, conference papers, working papers and book chapters were included (Webster & Watson, 2002). Several online databases, such as Web of Science, ABI/INFORMS, Science Direct, and Wiley Online Library, have been searched using keywords 'business model (innovation)' 'mediating,' 'moderating,' and 'performance.' This yielded 115 publications at the time we conducted the research (2018). These were considered to be relevant based on the titles, abstract and keywords. Omitting duplications, these produced 97 unique articles. In the next step, based on the reading of the abstracts, articles were screened for their fit and correspondence with our research objective. We included articles based on the following criteria. (1) Articles should include hypotheses concerning the relation between BMI and business performance and these hypotheses are tested explicitly and empirically using a quantitative, empirical, analytical approach. (2) Reference is made to BMI as a way of changing the main components of the BM by introducing a new system of creating, delivering and capturing value.

Based on the inclusion criteria mentioned above, we identified 35 articles as irrelevant and thus these were excluded from our dataset. Only articles reporting relevant outcomes (62 publications) were reviewed to determine whether or not they met our criteria. Through an in-depth review, we identified 27 articles as relevant. Furthermore, we identified references in the articles, which were used as a secondary source for the literature analysis, which resulted in 10 additional articles, which we could include in our sample. As a result, our systematic literature review was built on 37 articles. Figure 2.7 shows that the topic has received attention in recent years, with approximately 76% of our 37 selected articles being published between 2012 and 2017. Moreover, 33 of the articles appeared in journals, three were conference papers, and one was a working paper.

To describe, classify and analyse the articles, we used a coding approach for classifying mediator, moderator and control variables. All key constructs were listed on a coding sheet (Dey, 1993) and classified into new overarching categories (Burnard, 1991). To limit the number of categories, concepts were clustered (Dey, 1993).

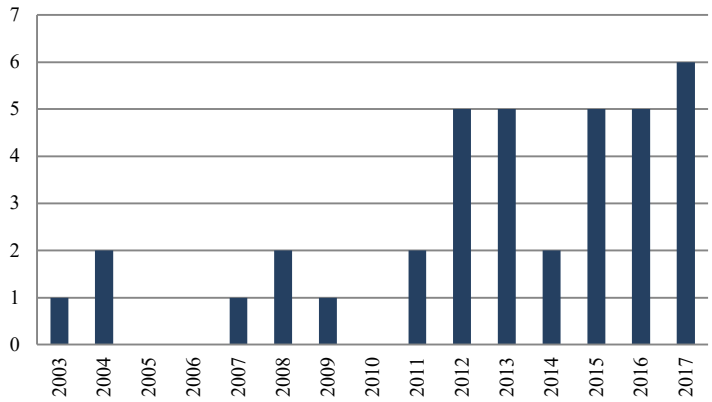

Figure 2.7: Number of selected papers in our literature review (Yearly)

To find out through which causal mechanism the BMI influences a firm's performance indirectly, the systematic literature review revealed twelve distinct mediating factors as well as twenty moderating factors that can affect the direction/strength of those relationships. In the following, we discuss the identified factors in more detail and categorise them into sub-groups. This will help make the findings more manageable and practical and reach a conceptual framework that explains the complex mechanisms through which BMI influences firm performance.

2.8.1 Mediation factors between BMI and firm performance

In the last decade, research attention (Ladib and Lakhal, 2015; Brettel et al., 2012; Hu, 2014; Gronum et al., 2016; Wei et al., 2017) focus on how BMI contributes to a firm's performance has largely been directed by efficiency-centered and novelty-centered BM designs (Zott and Amit, 2003). The systematic literature review provided a list of twelve mediating factors between BMI and firm performance. To boost the overall performance of firms, some mediators were mostly related to generating revenue by increasing the firm's sales, namely exploring new markets, new customers and new value propositions, and developing service bundling; we, therefore, called them '*Revenue growth*.' Some mediators focus on efficiency – that is, minimising the cost, increasing productivity and reducing time to market – and are referred to as '*Efficiency growth*.' Additionally, we identified some mediators that we could not put into revenue growth or Efficiency growth groups (e.g., organisational learning and opportunity recognition), although they do enable companies to increase their revenue and efficiency. We labeled this group as '*Organisational capabilities*', which is vital to the long-term performance of business since a culture of openness and knowledge sharing reinforces a high level of cooperation within the firm and its associated network.

Efficiency Growth. Heikkilä et al. (2018) stress that BMI influences firm performance occurs when there is a strategic focus on efficiency. Their findings confirm the research by Zott and Amit (2007) on the impact of efficiency-centred BM design on a firm's overall performance. BMI can take the ICT ventures to complete its transactions more efficiently by reducing transaction costs within the firm and with outsiders (Howell et al., 2018; Ladib & Lakhal, 2015). According to Chesbrough (2007), BMI leverages performance not only by reducing production costs but also by utilizing available resources more effectively. For instance, by adopting new partnering models such as outsourcing, organizations are able to scale operations more effectively. Gronum et al. (2016) and Wei et al. (2017) also found that

BM designs that focus on efficiency enhance a firm's performance by reducing inventory costs – thus benefitting both customers and suppliers – and decreasing marketing, sales, and other communication expenditures. Furthermore, increasing the business scale leads to reduced operational costs (Hu, 2014). Therefore, by focusing on lowering the operational cost, savings can be passed on to customers.

Revenue Growth. As suggested by Heikkilä et al. (2018), the focus can also be on implementing a growth strategy by attracting new customers and expanding the firm's markets. Some scholars argue that BMI, through the creation of new value propositions (Teece, 2010; Wei et al., 2017) or opportunity recognition (Guo et al., 2017) can attract new customers by exploring a market niche not addressed by competitors (Zott and Amit, 2007) and in such a way, increase firm's revenue growth. These could occur via new ways of market penetration (increasing the number of customers/sales in existing markets) or new ways of market development (selling existing products or services in new markets). Moreover, BMI, by combining existing and new channels in a smart way, can create new value (Ladib and Lakhal, 2015). Also, by adopting new partnering models, organisations are able to create additional access to customers to rapidly scale up when new opportunities arise (Giesen et al., 2010). Introducing a new BM with new components also can provide opportunities for new complementary effects among existing components of services and products (Heij et al., 2014), and in this way, it can increase revenues. Gronum et al. (2015) confirmed the mediatory effect of the novelty design theme between innovation breadth and firm performance. They stated that the BM novelty could improve the performance through the following mechanism; the firm can offer new combinations of products, services, and information to customers (bundling), links customers to products/services in novel ways (new experience) (Bouwman et al., 2008), design new transaction mechanism (Zott & Amit, 2007), and finally, innovating in one component needs to be complemented by changes in other components.

Organisational Capabilities. In addition to efficiency and novelty themes, engaging in BMI might lead to further development of organisational capabilities that in turn provide an innovative, opportunity-seeking environment with a risk-taking attitude, resulting in a superior organisational outcome. The capacity to innovate is one of the key factors that improve business performance (Burns & Stalker, 1961; Porter, 1990). An organisation's culture, i.e., norms, values and beliefs within the organisation, can boost behaviour that is ultimately related to business performance (Hult et al., 2004). When specific attitudes are accommodated via organisational culture, the consequences are diffused across circumstances, groups and individuals inside the firm. A right culture that supports the implementation of a strategic attempt and encourages the enthusiastic participation of all employees is not easy to imitate and thus can lead to a sustainable competitive advantage (Anning-Dorson, 2017).

Moreover, a large number of studies found a significant relationship between firm innovativeness and performance in different types of organisations (Menguc & Auh, 2006; Rubera and Kirca, 2012). In the study of 181 firms, Hult et al. (2004) found that market orientation and entrepreneurial orientation as a result of BMI positively affect innovativeness and subsequently influence business performance. Hult et al. (2004) concluded that innovativeness appeared to be a key mediator in their empirical research. This can be done within a firm in various ways, such as by sharing the business idea within the entire organisation, developing opportunity-seeking capabilities and creating real value propositions. As a consequence, BMI can contribute to innovativeness (Bouwman et al., 2018a).

Another organisational capability that might mediate the relationship between BMI and performance is the ability to sense and seek opportunities. The role of BMI in opportunity-seeking behaviour has been emphasised in several studies (Chesbrough, 2010; Dewald & Bowen, 2010). Mahmood and Hanafi (2013) showed that entrepreneurial orientation is a resource and capability that provides a competitive

advantage and gives a firm's performance an impressive boost. Several studies investigated the direct effects of corporate entrepreneurship on a firm's performance (George & Bock, 2011; Karimi & Walter, 2016; Miller, 2011). Moreover, organisational learning is one of the critical organisational processes through which information and knowledge can be processed, and it can change the attributes, behaviours, capabilities and performance of an organisation (Cohen & Levinthal, 1990; Günzel & Holm, 2013; van Beers & Zand, 2014).

Hu (2014), in his research conducted on 163 companies, confirmed that BMs affect technological innovation performance through organisational learning indirectly. Mahmood and Hanafi (2013) affirmed that entrepreneurial orientation is a capability that provides a competitive advantage and impressive performance to the firm. In addition, research conducted by Ladib et al. (2015) also expressed that by learning how to gather the unique know-how and utilizing rare resources, BMI creates a benefit of hard to imitate innovations.

Organisational capabilities such as innovativeness, opportunity recognition, organisational learning and culture, can help owners/managers and employees to excel at the scanning, learning, creating activities needed to sense new technological and market opportunities (Foss & Saebi, 2015). Firms' resources can be orchestrated more effectively by utilizing organisational capabilities (Leih et al., 2015). Organisational capabilities such as opportunity recognition and organisational learning enable a firm to explore and take advantage of opportunities and synchronize business processes and models (David J Teece et al., 1997). These capabilities provide the flexibility to make the required modification and alignment within and outside the firms' eco-system. Indeed, a high level of internal cooperation requires support from a culture of openness and knowledge-sharing. According to Leih et al. (2015), learning capability can improve firms' capability to identify and deal with market challenges better, faster, and at lower costs than rivals, as well as improve firms' ability to develop new propositions to customers in a new or existing market. Based on these premises, we acknowledge that the organisational capabilities not only can mediate the relation between BMI and a firm's overall performance, it might positively affect the firm's Efficiency growth and revenue growth.

In most BMI research, attention has largely been focused on efficiency and novelty, mostly with reference to Zott and Amit (2007), rather than the organisational or more human side of BMI. Although researches with a focus on transaction cost (Zott and Amit, 2007) offer an interesting perceptive, they are incomplete. Existing research turns a blind eye to the role of learning, resource accumulation and long-term asset orchestration (Leih et al., 2015). Both owners/managers and employees must be skilled and trained in searching, learning and performing activities required to identify emerging technologies and market opportunities in relation to business model innovation (Foss and Saebi, 2015). Therefore, firms to be able to create and capture values through BMI require some sort of organisational capabilities. Ordinary capabilities enable firms to efficiently operate their everyday activities to produce and "sell" their value propositions – such as routines for new product development, quality control, marketing, knowledge transfer and performance measurement (Eisenhardt & Martin, 2000). However, firms require something more if they wish to sense and exploite opportunities and to revise business processes and models in new business environments (Foss and Saebi, 2015). This asks for new and additional capabilities called dynamic capabilities. Teece (1997) defines organisational dynamic capabilities as "*the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments*". Dynamic capabilities can be unique to each company and are shaped by a firm's particular history, values and routines (Teece, 2012). Therefore it makes it difficult for competitors to imitate the firm's dynamic capabilities. Since BMI usually changes the

existing operational activities, firms need to reconsider their employees' technical and transferrable capabilities to perform the new routines as well as their ability to explore and adapt to the ongoing changes forced by the environment. Therefore, BMI affects both ordinary organisational capabilities and dynamic capabilities. Therefore, we are interested to know how the afore discussed research gap (causal mechanism between BMI and firm performance) can be filled by taking the organisational capabilities into account as new mediating factors. Therefore, since the relationship between organisational capabilities and BM design has been rarely studied (Pucci et al., 2016) and mostly discussed within qualitative and case-based investigations (Casadesus-Masanell and Ricart, 2010), in this research, in addition, to examine the relationship between BMI and firm performance quantitatively, we investigate the relationship between organisational capabilities and the firm's Efficiency growth and revenue growth.

2.8.2 Moderation factors influence the relationship between BMI and firm performance

Building on the same systematic literature review of 37 articles mentioned earlier, we could identify twenty moderating factors. To make our moderation analysis more tangible and insightful, we categorised those twenty factors into four groups. The categorisation was formed based on two criteria; (1) the extent to which the moderating factors can be controlled and managed by firms and (2) the extent to which they are generic or specific to the firms and BMI.

Starting from the first criterion, we realized that some factors are unmanageable and firms cannot manipulate them to improve the performance of a BMI effort, for instance, firm age and industry competitive intensity. Although they can influence the relationship between BMI and performance, firm owners and managers are not probably able to change these. On the other hand, some factors are manageable. For example, practitioners can choose to use BM tooling, try to influence their employees' motivation, or initiate some specific actions.

For the second criterion, we found that several moderation factors are related to general aspects of organisational change, such as management support, employees' skills, and effective communication. Those factors are commonly discussed in the strategic management domain. However, some moderating factors are more relevant to BMI, such as BM tooling and BM experimentation or degree of novelty. This way, we could categorise twenty moderation factors into four groups; Firm-Characteristics, Industry-Characteristics, BM-Implementation, BM-Practices (Figure 2.8).

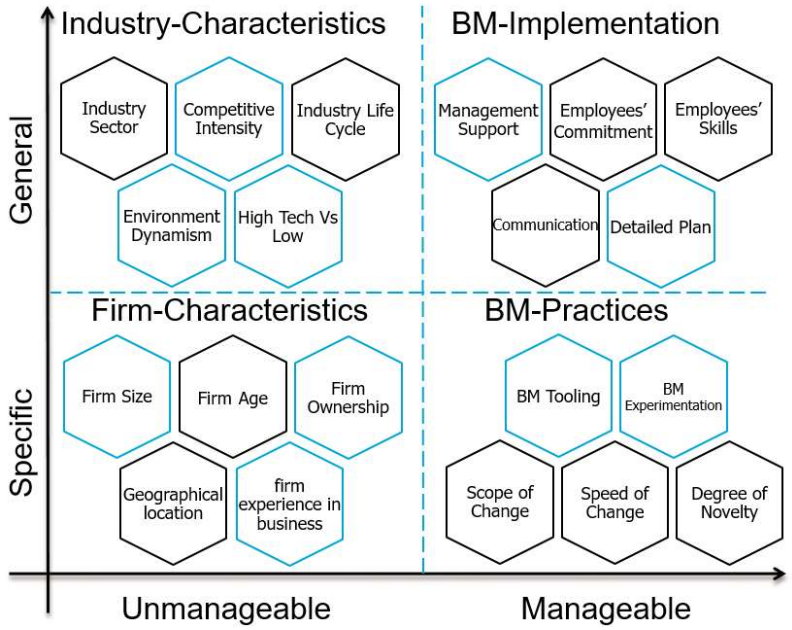

Figure 2.8: Clustering moderation factors that influence the relationship between BMI and firm performance

Firm-characteristics. Prior research revealed that firms do not profit equally from innovativeness because their capability to capture the value of innovativeness depends on different characteristics of firm and industry (Sorescu & Spanjol, 2008; Tellis & Chandy, 2009). Therefore, some specific characteristics of organizations can strengthen or weaken the relationship between BMI on performance. Based on our literature review, it was found that firm characteristics consists of firm size (Hartmann, 2013, Gronum et al., 2016), firm experience (Zott & Amit, 2007), firm age (Heij et al., 2014; Rebera & Kirca, 2012), country of origin (Velu & Jacob, 2016; Zott & Amit, 2007), and ownership structure (Guo et al., 2017; Velu, 2015).

Firm size and experience of the firm in a specific business are positively related to performance, and therefore several researchers investigated their moderating role (e.g., Hartmann, 2013; Zott & Amit, 2007; Klepper & Simons, 2000). The size of the firm also has been associated with firm innovation in a variety of research (Gronum et al., 2016; Heij et al., 2014; Rubera & Kirca, 2012; Damanpour, 1991). Rubera and Kirca (2012) argued that the larger the firms, the more likely they benefit from innovativeness in terms of market and financial positions. They can utilize more resources and reach consumers more quickly because they have better access to distribution channels, enjoy economies of scale, benefit from brand reputation.

Gronum et al. (2016) consider firm age, measured by the number of years since its founding, as moderating variables on the relationship between BMI and performance. In their research, Heij et al. (2014) also took into account firm age as a moderator variable. According to Velu (2015), the firm's geographic location can have an important effect on business model innovation because businesses located in a similar region may experience knowledge spillover and hence agglomeration effects can be achieved. Ownership types of firms e.g. sole proprietorship, corporation, cooperative, nonprofit organization, state-owned enterprises, private companies, and limited Liability companies matters because of the owners' ability to redeploy resources and their willingness to recoup invested expenses (Guo et al., 2017; Velu, 2015)

Industry-characteristics. Industry-characteristics impact has theoretical foundations in the Industrial Organisation theory discussing environmental factors in relation to the industry in which a firm acts and having a significant influence on a firm's performance (Rauter et al., 2017). We considered industry sector, industry life cycle, industry competition, environmental conditions (dynamism, complexity, and turbulence), high-technology versus low-technology industries as relevant industry-characteristics factors. Gronum et al. (2015), Heij et al. (2014), and Brettel et al. (2012) considered the industry sector as a moderating factor between BMI and firm performance. Moreover, the industry life cycle has an important role to play in affecting BMs (Wei et al., 2017). Waldner et al. (2015) expressed that most BMI to occur in the emergent life cycle stage of the industry, but not in mature or in decline stages. Rules of the game in the business world are not only determined by the firm's actions but also by competitors and environmental causes (Carayannis et al., 2015). When a potential competitor decides to enter the industry, the firm may have to modify its plan of action based on the competitor's BM (Casadesus-Masanell & Ricart, 2010). Waldner et al. (2015), in their empirical research on a sample of 1,242 Austrian firms, argued that industry competition negatively influences the degree of BMI.

Although dynamic environments are sometimes seen as an antecedent of BMI (Lopez-Nicolas et al., 2020), in other studies, dynamic environments are considered as moderating variables. Dynamic environments can be seen as a source of opportunities (Schneider and Spieth, 2013). Thus, in more dynamic environments, developing and running a new BM can be expected to have a stronger effect on firm performance than in less dynamic environments (Heij et al., 2014). On the other hand, regulatory changes occurring within and outside the industry can influence the performance of an ongoing BM innovation (Bohnsack et al., 2014; de Reuver et al., 2009). In their research on 190 entrepreneurial firms, Zott and Amit (2007), found little support to moderating effect of environmental conditions on the relationship between BM design and the performance of a firm. Rubera and Kirca (2012) argued that since innovation has a different impact on the high-technology and low-technology industry, the technology level of the industry can be taken into account as a moderator. Innovation is crucial for competition in high-tech industries, in which firms are forced to constantly introduce new products to meet rapidly changing consumer needs.

BMI-Implementation. Latifi and Bouwman (2017) revealed that about 60% of identified barriers to accomplishing BMI objectives and attaining expected performance lies in the implementation stage of BM. Although managers mostly concentrate and spend a lot of time and energy on (re-)designing a viable BM, the major challenges can be found in the implementation of a BM, as BMI implies fundamental changes (Nair et al., 2013). Various studies mentioned "poor implementation" as one of the main reasons for BM failure (Osterwalder, 2012; Batocchio et al., 2016; Chesbrough, 2010; Yannopoulos, 2013). Therefore, the more skillful and knowledgeable firms are in implementing their BMI, the more performance enhancement will occur. Many studies revealed that a key source of BM failure is connected to its management (Batocchio et al., 2016; Zott et al., 2010; Chesbrough, 2010). Moreover, Martins et al. (2014) affirmed a positive relationship between the BM change experience of a firm's CEO and performance.

People in a company are key to the success or failure of a BM innovation program (Hittmár et al., 2014). Depending on the degree of changes in the BM, not only employees' training is required to develop relevant capabilities (Batocchio et al., 2016; Hittmár et al., 2014), but hiring new personnel with special qualifications also might be needed (Knab & Rohrbeck, 2014). Serrano et al. (2010) stated that lack of communication is an important issue for the successful implementation of BMI. Similar to any sort of organisational change it is crucial to express why making change is urgent for a company, what is the

plan of action, how it will happen, what does it mean for every individual and group in an organization. The greater the change, the more necessary it is to share and communicate the reason for change. Since the change in the current BM involves considerable uncertainties, it can be hindered by relevant stakeholders and cause resistance to change. Lack of communication also leads to distrust between employees, departments, and management (Hittmár et al., 2014), therefore can influence the effective implementation of BMI.

BMI-Practices. The concept of BMI practices defines as the way the team in charge of the BMI implementation makes the transition from strategy to BMs by undertaking specific methods to facilitate the way the strategy of the company is expressed in its BM (Bouwman et al., 2018b). Foss and Saebi (2016) reported that different organisational capabilities and practices are required to support BMI, such as experimentation and learning through trial-and-error (Sosna et al., 2010), and tools to support practitioners in managing the BMI process were presented. Moreover, as one of the management practices in BM innovation, Bocken et al. (2016) stated that business experimentation not only can lead to the creation of a higher number of BMI but also is viewed as a process to achieve greater levels of innovation in the BM. According to Brunswicker et al. (2013), the BM 'experimentation' helped firms to test assumptions and hypothesized outcomes through empirical observations such as usage data. Yli-huumo et al. (2015) argued that most of their research participant acknowledges that even though using experimentations might require investing more time to create and release the features to the end-user, it is still a better approach when expanding business and introducing high-quality products. By experimentation, from their point of view, a company can stop operating based on false assumptions that might fail to built a good product-market fit.

Although there are some commonly used tools and frameworks such as Canvas, Stof, Csoft, and Visor to support the process of BMI (to see more tools, visit businessmakeover.eu), Terrenghi et al. (2017) expressed the necessity for developing software and tools that support the entire process of BM management. There are, however, hardly any empirical studies on whether BM tooling contributes to the process of BMI or not (Harry Bouwman et al., 2020). Karimi and Walter (2016) argued that companies mostly use the BM concept for analysis and design but have not yet fully embraced it as a management instrument in the implementation and control phases.

Moreover, according to Gerasymenko et al. (2015) and Nicholls-Nixon et al. (2000), the scope of change in BM can vary from case to case. For instance, BMI can affect only a single component, such as value proposition, or may involve a change in the entire BM and architecture linking the BM components. The scope of BMI can impact the outcome of BMI. Aside from the scope, the speed of change, which refers to how much change is induced in a given timeframe, the path used to reach the new BM are crucial. When opposed to a radical change in a short time period, an incremental and step-by-step approach to implementation might have a different effect on BMI (Hulsink & Elfring, 2003; Foss & Saebi, 2016). The degree of innovativeness in BM also can be important. There might be a different level of performance expected for different degrees of novelty in BM, for instance, a BMI which is totally new to the world (market leader), may differ from BMI which is executed in other industries (market challenger) but it is new to the specific industry and to a BMI which is only new to a specific firm (market follower) and there are several examples of such BM run by competitors (Dahlin & Behrens, 2005; Zott & Amit, 2007). Being among the first companies to implement a new BM (market leader and challenger) has a number of benefits and drawbacks. The advantages include securing the market position and being the first choice of consumers, having a strong market reputation, and being seen as the ultimate resource within the market. However, maintaining that role for long

periods of time is exceedingly challenging and expensive, making it difficult for smaller firms to serve as market leaders and challengers. As a follower, though, BMI can still help firms differentiate from their competitors by focusing on customer segments overlooked by larger competitors while enjoying lower costs, lower R&D expenses, and lower customer service costs. Knowing which practice is more beneficial for companies for implementing a BMI can create competitive advantages and prevent costly failure. Taran et al. (2015) introduce a three-dimensional measure to qualify the innovativeness of a new business model, i.e., radicality, reach, and complexity. Taran et al. (2015) refer *radicality* to the novelty (incremental vs. radical) of each building block and *reach* that concerned with whether innovation is new to the company or, at the other end of the spectrum, new to the world (degree of novelty), *complexity* considered as the number of building blocks altered (scope of change). Although, according to their definition, radicality and complexity are very close concepts, speed of change (time-wise) can be another contingency factor that affects the relationship between BMI and firm performance. These three characteristics are crucial, and owners and managers should consider them before making decisions about the organization and management of business model innovation processes (Taran et al., 2015).

2.9 Conceptual model and hypotheses

As the outcome of our literature review, by identifying mediating and moderating factors playing roles in the relationship between BMI and firm performance and categorised them into relevant sub-groups, we developed a reference model (Figure 2.9) explaining the mechanism by which BMI influences a firm's overall performance.

This model provides a foundation for our empirical research in the following chapters. The reference model is rather holistic and comprises 34 constructs. It is, therefore, not feasible to examine the model in a single study. So, the mediation model (presented in Figure 2.10) will be used to empirically investigate the model by testing the following hypotheses (Chapter 5), as also motivated by the proper literature review:

***H1**: If a firm engages in BMI, the firms' overall performance will improve.*

***H2**: Efficiency growth mediates the relation between BMI and a firm's overall performance.*

***H2a:** The BMI has a direct positive effect on efficiency growth, and*

***H2b:** Efficiency growth has a direct positive effect on a firm's overall performance.*

***H3**: Revenue growth mediates the relation between BMI and a firm's overall performance.*

***H3a:** The BMI has a direct positive effect on revenue growth, and*

***H3b:** Revenue growth has a direct positive effect on a firm's overall performance.*

***H4**: Organisational capabilities mediate the relation between BMI and a firm's overall performance.*

***H4a:** The BMI has a direct positive effect on organisational capabilities, and*

***H4b:** Organisational capabilities have a direct positive effect on a firm's overall performance.*

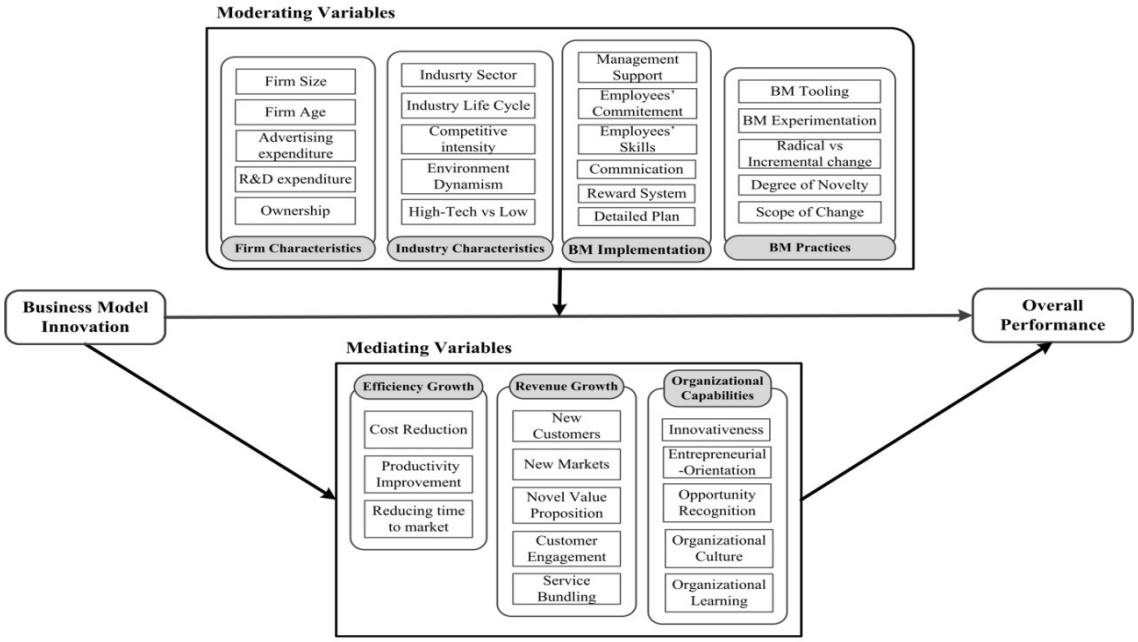

Figure 2.9: BMI mechanism to influence a firm's overall performance (Latifi & Bouwman, 2018)

Apart from testing the mediating effect of organisational capabilities, organisational capabilities such as innovativeness, opportunity recognition, organisational learning and culture can assist owners, managers and employees in excelling at the scanning, learning and creating activities required to identify new technological and market opportunities (Foss and Saebi, 2015). Through organisational capabilities such as opportunity recognition and organisational learning (Leih et al., 2015), a firm may coordinate resources more effectively and efficiently, allowing it to explore and take advantage of opportunities, as well as synchronize business processes and models (Teece et al., 1997). These capabilities give the company the flexibility to make the necessary changes and alignments both within and outside of the firm's ecosystem. Indeed, a culture of openness and knowledge-sharing is required to sustain a high degree of internal collaboration. Learning capability, according to Leih et al. (2015), may enhance firms' capability to recognize and deal with market challenges better, faster, and at lower costs than competitors, as well as improve firms' ability to develop new propositions for consumers in new or existing markets.

Based on these premises, we acknowledge that organisational capabilities can not only mediate the relationship between BMI and firm overall performance, as proposed by research hypothesis H4b, it may also have a positive effect on a firm's efficiency and revenue growth. Since the relationship between organisational capabilities and BM design has rarely been studied (Pucci et al., 2017) and in most cases has been discussed in qualitative and case-based investigations (Casadesus-Masanell and Ricart, 2010), we want to conduct a quantitative examination of the relationship between organisational capabilities and the firm's efficiency and revenue growth (see Figure 2.10), which leads us to the following hypotheses:

H5: *If a firm engages in BMI, its organisational capabilities positively affect efficiency growth*

H6*: If a firm engages in BMI, its organisational capabilities positively affect revenue growth*

As motivated in the literature review (section 2.8.2), we will investigate moderation factors which are clustered into four groups; BM-implementation, BM-practices, firm-characteristics, and industry-characteristics. We had to eliminate some moderating variables presented in Figure 2.9 from our analysis to make testing the moderation model feasible. According to Terrenghi et al. (2017), the extant literature has paid attention to moderating effects of firm and industry level factors on the impact of BMI on various performance outcomes. However, in line with our research objective which focuses on human and organisational factors in implementing BMI in SMEs, we managed to keep more factors that were relevant to BM-implementation and BM-practices.

The first group of hypotheses in moderation analysis is related to BM-implementation factors. BM implementation is a difficult and challenging undertaking both intellectually and in practice (Gerasymenko et al., 2015). Since there has been little previous study on human and organisational factors in the context of BMI, change management literature might be a valuable reference to start. Innovating a BM may be viewed as a subset of general organisational change in which fundamental changes in an organization's core elements take place (Hienerth et al., 2011; Von den Eichen et al., 2014; Yannopoulos, 2013). Despite the fact that BMI literature from a change management viewpoint is hardly developed, these two areas are inextricably connected in many ways (Breiby, 2011). As a result, in this study, we also attempted to employ change management concepts and practices to produce new knowledge on the human and organisational factors involved in BMI implementation.

Organisational change is frequently connected with some degree of individual change, and is often the result of an informal and natural process of learning and development. Therefore, purposeful training is necessary to assist individuals in developing new knowledge, skills, attitudes and behaviours (Botocchio et al., 2016; Heys, 2018; Hittmár et al., 2014). Frankenberger et al. (2013) stated that BM innovation program (Hittmár et al., 2014). Inadequate incentives and award systems (Knab & Rohrbeck, 2014; Von den Eichen et al., 2014), as well as a lack of motivation (Hittmár et al., 2014) are other hurdles to BM implementation. Similar to any other type of organisational change, it is critical to communicate why making change is urgent for a firm, what the plan of action is, how it will take place, and what it means for each individual and group in the organization. The larger the change, the more important it is to share and communicate it. Because the change in the current BM entails considerable uncertainty, it may be hampered by key stakeholders and cause resistance to change. Lack of communication also fosters distrust among employees, departments, and managers (Hittmár et al., 2014), which might have an impact on the effective implementation of BMI. Furthermore, a shared understanding among employees about how they are doing their duties, as well as what values and norms are core to the business, will shape the firm's culture. A consistent culture will influence how various management and operational levels recognize the need for change in existing BM, as well as the needed coordination (Von den Eichen et al., 2014; Hittmár et al., 2014; Lauritzen, 2014). As a result, it is critical to establish an appropriate organisational environment for BMI (Hittmár et al., 2014).

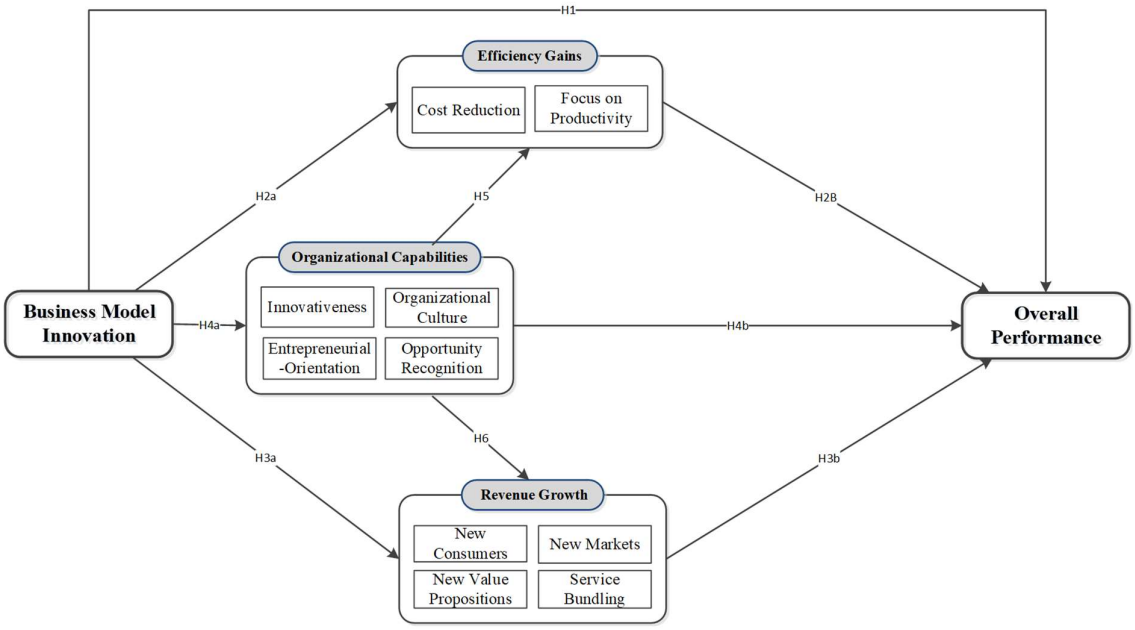

Figure 2.10: Research conceptual model to test mediation relationship between BMI and firm performance

Hence, knowing which factors, as mentioned in general change management literature, are also relevant `to BM implementation, can assist us to better understand and manage the implementation of BMI attempts. We, therefore, propose the hypotheses H7 to H11 as follows:

H7: *Employees Motivation moderates the relationship between BMI and SME's performance, such that the relationship is stronger when employees' motivation is high.*

H8: *Employees Development moderates the relationship between BMI and SME's performance, such that the relationship is stronger when employees development is high.*

H9: *Effective Communication moderates the relationship between BMI and SME's performance, such that the relationship is stronger when effective communication is high.*

H10: *Resistance to Change moderates the relationship between BMI and SME's performance, such that the relationship is stronger when resistance to change is low.*

H11*: Culture of Innovation moderates the relationship between BMI and SME's performance, such that the relationship is stronger when a culture of innovation is high.*

Aside from BMI implementation moderating factors which are more associated with general aspects of managing change in the human and organisational side of BMI, the literature proposes other specific factors which are related BMI. According to Foss and Saebi (2017), multiple organisational capabilities and practices are necessary to support BMI, such as experimentation and trial-and-error learning (Sosna et al., 2010), as well as tools to assist practitioners in managing the BMI process. Several tools and frameworks, such as BM Canvas, Stof, Csoft, and Visor, have been developed to aid in the BMI process. However, as stated before, there is little empirical research on whether BM tooling contributes to the BMI process or not (Bouwman et al., 2020; Karimi and Walter, 2016). Furthermore, Bocken et al. (2016) stated that BM experimentation is one of the management practices in BM innovation that not only may lead to the formation of a bigger number of BMI but is can also be considered as a process to reach higher levels of innovation in the BM. Brunswicker et al. (2013) claim that the BM 'experimentation' helps businesses test assumptions and expected outcomes using empirical

observations such as usage data. Experimentation helps a company to cease operating under erroneous assumptions that might lead to a weak product-market fit (Yli-huumo et al., 2015). Therefore, they advise conducting experiments as a recommended practice when adopting a BMI initiative.

Moreover, the scope of change in BM might vary from case to case (Gerasymenko et al., 2015; Nicholls-Nixon & Cooper, 2000). For instance, BMI can influence simply a single component, such as value proposition, or it can affect the entire BM, and architecture links the BM components. The scope of BMI can have an effect on the outcome of BMI. Apart from the scope, the speed of change (the amount of change induced within a certain timeframe) and the path followed to reach the new BM plays a critical role. When compared to a radical change in a short period of time, An incremental and step-by-step approach of implementation might have a distinct effect on BMI (Foss & Saebi, 2016).

The degree of innovativeness in BM is likely to have a profound effect on performance. For different degrees of novelty in BM, different levels of performance may be expected. For instance, a BMI that is completely new to the world differs from a BMI that has already been implemented in other sectors. At a lower degree of innovativeness, a BMI can also be implemented by rivals in the same industry, but it is new to a firm (Dahlin & Behrens, 2005; Zott & Amit, 2007). These three characteristics are also important, and owners and managers should take them into consideration before making judgments on how to organize and manage business model innovation processes (Taran et al., 2015). Therefore, the second group of hypotheses (Hypotheses H12 to H16) in moderation analysis which is related to BM-practices factors, are proposed as follows:

H12: *BM Tooling moderates the relationship between BMI and SME's performance, such that the relationship is stronger when BM tooling is high.*

H13: *BM Experimentation moderates the relationship between BMI and SME's performance, such that the relationship is stronger when BM tooling is high.*

H14: *Degree of Novelty in BMI moderates the relationship between BMI and SME's performance, such that the relationship is stronger when the degree of novelty is high.*

H15: *Scope of Change in BM moderates the relationship between BMI and SME's performance, such that the relationship is stronger when the scope of change is low.*

H16*: Speed of Change in BMI moderates the relationship between BMI and SME's performance, such that the relationship is stronger when the scope of change is low.*

Among the different moderating factors related to Firm-characteristics, the size and age of firms are among the most widely used variables in management studies. Therefore, in line with our research objective that is to study SMEs, we found firm's size and age are relevant moderating variables; hence we proposed the following hypotheses related to Firm-characteristics factors:

H17: *Size of the firm moderates the relationship between BMI and SME's performance, such that the relationship is stronger when the size of the firm is smaller.*

H18: *Age of the firm moderates the relationship between BMI and SME's performance, such that the relationship is stronger when the firm is at its early age.*

The competitive intensity and technology turbulence were chosen to be investigated because they were used more in empirical research in our literature review (section 2.9.2) and their relevance to the SMEs context. Therefore, we proposed the following hypotheses related to Industry-characteristics factors:

H19: *Competitive Intensity moderates the relationship between BMI and SME's performance, such that the relationship is stronger when competitive intensity is high.*

H20: *Technology Turbulence moderates the relationship between BMI and SME's performance, such that the relationship is stronger when technology turbulence is low.*

The moderation model (shown in Figure 2.11) will be empirically investigated in our quantitative research 2, and the results will be presented in Chapter 6.

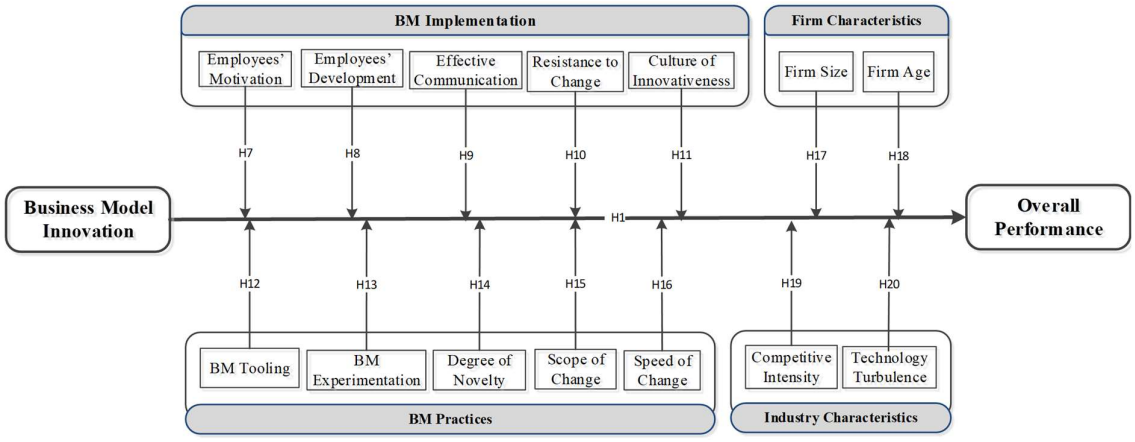

Figure 2.11: Research conceptual model to test moderation effect on the relationship between BMI and firm performance

2.10 Conclusion

This chapter illustrated a substantial conceptual gap in implementing a BMI effort. Several fundamental theories and concepts with regard to business model innovation, business model innovation process, implementation of business model innovation, and firm performance were discussed. To understand the shortcomings, the section continued to investigate several streams of literature to explore the reasons why BMI fails to deliver expected outcomes and how BMI affects a firm's overall performance by exploring the role of mediating and moderating factors. From a theoretical viewpoint, it was argued that the existing body of knowledge falls short of providing an approach to (1) describe the implementation phase of BMI and (2) the role of human and organisational factors in the BMI implementation. Our literature reviews resulted in a research conceptual model as a foundation for our empirical research in the following chapters (chapters 5, 6, and 7). As shown in Figure 2.9, the reference model is holistic and comprises 34 constructs. It is, therefore, not feasible to examine the model in one single survey. So, the reference model is divided into two separate conceptual models, which will be used to empirically test the mediation and moderation models (Figure 2.10 and Figure 2.11).

While mediating subgroups (section 2.9.1) were analyzed, we found that efficiency-centred and novelty-centred design BMs, to a large extent have been used in the literature concerning firm performance. Although considering the efficiency-centred and novelty-centred design BMs are insightful, they are incomplete: they might minimise or turn a blind eye to the role of learning, resource accumulation and long-term asset orchestration (Leih et al., 2015). The third identified mediating group, i.e., organisational capabilities – contributes to a firm's readiness to change, and especially to its ability

to survive the longer term, rather than just achieving a fit for a short time span. Although the concept (organisational capabilities) is not new to the field, this study is one of the first to investigate the mediating role of organisational capabilities between BMI and a firm's overall performance. Here we are interested in establishing whether organisational capabilities result in the superior performance of firms and whether engaging in BMI also improves their organisational capabilities. Hence, following this line of reasoning, we propose the following proposition:

> Proposition I: Organisational capabilities play a key role in exploring new ways of increasing firm revenue and its operational efficiency, which leads to the firm's overall performance.

While identified moderating subgroups (section 2.9.2) were subjected to scrutiny, we figured out that the moderating factors which are related to firm-characteristics and industry-characteristics are mostly fixed, and firms cannot manage them to improve the performance of BMI effort. On the other hand, moderating factors associated with BM-Implementation and BM-Practices are mostly actionable, for example, practitioners can do BM experimentation or increase their employees' motivation. BM-Implementation and BM-Practices related factors are more manageable. Therefore, there is much room for firm owners, managers, and even researchers to work in these two specific subgroups to reach a higher firm performance. Hence, following this line of reasoning, we propose the following proposition.

> PII: Moderating factors which are related to BM-Implementation and BM-Practices are highly influential and effectively can affect the relationship between BMI and the firm's overall performance.

Because at present, there is not much known in the business model literature regarding the effects of BM-implementation skills, BM-Practices, and organisational capabilities on firm performance, proposition I and proposition II will be used in our qualitative research. The qualitative research not only can produce new insights into the human and organisational side of BMI, but also can provide a ground to find explanations for our findings in our two quantitative studies.

The next chapter provides a description of the domain of our study, i.e., Small and Medium-sized Enterprises (SMEs), with a focus on SMEs characteristics, BMI in SMEs, and the role of SMEs in the Dutch economy. As part of this specification, we will also briefly present the three industries in which our case companies are active, i.e., manufacturing, healthcare, and publishing.

Chapter 3: Research Domain

Small and medium-sized enterprises (SMEs) are a major source of entrepreneurial skills and creativity and contribute to economic and social cohesion (OECD, 2019). SMEs hold the key to innovation and are also emerging as global players by participating in worldwide production and supply chains. SMEs serve as the backbone and driver of economic growth (Barjak et al., 2014). Research reveals that SMEs are responsible for a large proportion of innovations in products and services, job creation and employment (Wheelen and Hunger, 1998). SMEs operate and create opportunities across a wide array of geographic areas and sectors; SMEs employ different labour force segments, including low-skilled workers, and provide skill development opportunities. As such, job and value creation in the SME arena is a vehicle for inclusive growth (Koirala, 2018). With the advancement of new technologies and globalization of markets, it is crucial for SMEs to be adaptive and remain competitive in order to survive or grow. Therefore SMEs are required to be more innovative. Business model innovation (BMI) is one approach that gains much attention from scholars and firm owners or managers as a way of improving the performance of firms. Although SMEs represent 99% of the total active enterprises worldwide (Robu, 2013), most studies in strategic and innovation management, business models, and entrepreneurship mainly focus on large firms (Heikkila et al., 2018). Owners/Managers of SMEs are less familiar with the concept of business model innovation or lack the knowledge on how to implement business models (Barjak et al., 2014; Heikkila et al., 2018). In this research, we focus on the SMEs context to contribute to literature on business model innovation in SMEs.

This chapter, first provides a definition of SME, followed by a discussion on distinctive characteristics of SMEs compared to large companies. Next, background about SMEs in Europe and the Dutch context will be presented. In the end, we will provide information on the Dutch printing, manufacturing, and healthcare industry since our cases will be chosen from these sectors.

3.1 SME definition

Literature does not offer any universally accepted definition for SME, and there are several “approaches” to the concept (Robu, 2013). The economic, cultural, and social differences among states around the world are reflected both in the definition as well as in the classification of SMEs (Robu, 2013). Over the years, each country has had different approaches when it comes to the small and medium enterprises.

Since this research is linked to the European region, we use the definition of SMEs by the European Commission (2021), in which SMEs comprise three different categories of enterprises, namely micro-enterprises, small enterprises and medium-sized enterprises. The classifications of the groups include the number of employees, turnovers and the balance sheets total. The classifications of the groups are described in Table 3.1. This research will proceed with these definitions of SMEs from here on.

What makes small and medium-sized enterprises different than large one? In the next section, we will discuss the distinctive characteristics of SMEs compared to large enterprises, specifically from a business model innovation perspective.

Table 3.1: Classification of SMEs by European Commission (European Commission, 2003)

Company Category	No. of Employees	Turnover	Balance Sheet Total
Micro SMEs	0 to < 10	< €2 million	< €2 million
Small SMEs	10 to < 50	< €10 million	< €10 million
Medium-Sized SMEs	50 to < 250	< €50 million	< €43 million

3.2 SMEs characteristics and BMI

The definition of SMEs is quite broad. Statistically, SMEs encompass almost 97-99% of whole businesses worldwide (Spence, 2007). However, Small and medium-sized enterprises (SMEs) are not a homogeneous group of businesses, but rather these cover a diverse population with different interests and needs that operate in very different contexts. Variations in size, sector, location, technology level, available resources and other characteristics such as company maturity and business mission result in drastically different trajectories. However, literature provides some characteristics which are more common in SMEs compared to large organizations. This section explains the different characteristics of SMEs and discusses the advantages and disadvantages of these differences for BM innovation. Internal factors such as management, finance, human capital, marketing, and R&D, as well as external environmental factors such as industrial structure, regulation and partnership, will be discussed.

3.2.1 Internal organisational factors

Ownership and business legal structure: Large enterprises are often structured as corporations that pay taxes independently from their owners. Corporations' owners are shareholders who vote to appoint executive board members but usually do not directly run the company. SMEs are typically run by owner-managers who have established and grown businesses for years (Janrattana, 2016). Mostly, owners-managers are also legally responsible for business debts. On the one hand, owners-managers are in charge of formulating and implementing any fundamental change in their business, e.g., BMI, and because of the ownership, they have full authority to make changes in any part of the organisation. However, on the other hand, owners-managers feel some kind of dependency/bond to the current BM and may feel threatened by new approaches (Janrattana, 2016). SMEs are more able to think outside the box and make quick decisions since they do not have severe obligations like a board of directors.

Organisational Structure: Having a less bureaucratic and hierarchical structure is one of the clear differences between SMEs and large organisations (Pullen et al., 2009). Due to the number of personnel within SMEs, they possess a flatter structure, and it is easier to interact with decision-makers and

respond to customer requests. In contrast, large enterprises are inherently more hierarchical due to a large number of employees, partners and more complicated business processes. The structure in large enterprises shows a tendency to have lots of policy manuals, job descriptions and meetings.

Strategic focus: According to Frick and Ali (2013), SMEs are less interested in business strategies and long-term development, and the majority of SMEs have no plans for growth (Hakim, 1989). SMEs mainly focus more on how to perform their everyday business to ensure survival (KfW, 2016). while large firms tend to have a long-term strategic plan. The strategic direction primarily develops in a separate department rather than the departments which are engaged in daily routine activities.

Financing: SMEs usually have difficulties attracting financial resources to innovate their business model (Hewitt-Dundas, 2006). The common sources of financing for new small enterprises are from the personal savings of owners, small business loans from banks, and loans from friends and family members (World Bank, 2019). Well-established SMEs may be able to obtain funding from outside investors and venture capitals. Large enterprises, however, have less difficulty in raising capital (Charlie Karlsson & Olsson, 1998). Large corporations can also raise money by selling shares of stock to the public and selling corporate bonds. Large businesses can mitigate risk by diversifying their portfolio of projects at various levels of completion (Rothwell & Zegveld, 1982).

Human resources: Apart from tangible resources (such as financing), SMEs also lack intangible resources. This is because SMEs have limited access to human capital skills and knowledge than larger firms (Rogers, 2004). SMEs' lack of knowledge or competencies (Akrich & Miller, 2007; Chesbrough et al., 2011) becomes critical when SMEs wish to carry out a BMI in parallel with technological innovation or new product development (Bouwman et al., 2014). In 2017, twenty-five percent of SMEs in the EU reported a lack of skilled staff or experienced managers as their most important problem (OECD outlook 2019).

However, SMEs have a flatter organisational structure, so employees can more often contact the senior management, which allows them greater exposure and to broaden their personal skill-set. Therefore, employees of SMEs are able to understand and adjust more quickly to changes in their industry and contribute more to the company than someone of an equivalent designation in a large enterprise (Rothwell & Zegveld, 1982). At the other hand, large enterprises usually offer higher salaries and greater job security (Karlsson, Olsson, 1998).

Organisational Culture: One of the most noticeable distinctions between the two types of companies is organisational culture. The most frequently mentioned advantage of SMEs is their dynamic and entrepreneurial mindset, which can respond rapidly to changing circumstances, whereas large enterprises are bureaucratic and less flexible (Rothwell and Zegveld, 1982). In SMEs, management participates actively in the innovation process, often as idea generators (Hartman et al., 1994).

Innovation management: Being more resource-constrained may limit SMEs' ability to carry out innovations (European Commission, 2007; Parker, 2009). However, research suggests that resource scarcity is beneficial for innovation (Gibbert et al., 2007; Hoegl et al., 2009) and that small innovative enterprises can find ways to compensate for resource shortcomings (Bos-Brouwers, 2010). However, according to OEDC report (2018), SMEs are, on average, less innovative than large enterprises. While 48.5% of large enterprises in the EU28 undertook in-house R&D from 2014 to 2016, only 18.8% of EU-28 SMEs did so. However, some small enterprises are highly innovative and can reach productivity levels above those of large companies by using their internal strategic resources effectively (e.g., managerial and workforce skills, ICT, R&D) to show better performance. The innovative capability of

SMEs has been considered to be the main driver of competitive advantage with their continuous developments of products and processes as the means to survive in highly competitive environments (Verhees et al., 2010; Wolff & Pett, 2006).

Apart from their difficulties in attracting prominent scientists and engineers, SMEs also suffer the disadvantage in conducting R&D because of the inherent risks (Acs & Audretsch, 1990; Rothwell and Zegveld, 1982).

Another characteristic of SMEs compared to larger firms, is its internal behaviour and conditions supporting innovation activities such as entrepreneurship, high responsiveness, and flexibility (Massini et al., 2005). According to Raguraman (2019), SMEs have the adaptability and agility to exploit new technological innovations or business opportunities, which large enterprises find challenging to utilize due to limited flexibility. This innovative flexibility of SMEs can help SMEs become versatile in dealing with the competition and a rapidly changing environment.

Apart from internal organisational factors, which can be controlled by owners and managers, external factors like politics, competitors, economy, customers, are beyond control of owners and managers but can make a huge impact on firm's performance either in positive or negative ways. External factors are usually unpredictable, hard to prepare for, and often bewildering. In the next section, external factors which influence SMEs will be described.

3.2.2 External environmental factors

Industry sector: SMEs dominate some sectors more than others; for example, SMEs typically operate in service sectors with lower entry costs and resource requirements such as accommodation, professional services, and retail trade, while there are relatively fewer SMEs in transportation or manufacturing sectors, which are capital-intensive (Schuh et al., 2018).

Financial Support: SMEs are also eligible for a wide range of small business grants, both from the local government and private investors. SMEs usually receive different supports such as competitiveness analysis, developing networks, and tax exemption schemes from governments. This can encourage creativity and risk-taking and allows small companies to explore new opportunities. However, large companies have greater capabilities to use specific government incentives for foreign investment, which are typically geared to encourage large investments (Svetličič et al., 2007).

Market Niche: Another distinction between SMEs and large companies is that SMEs tend to focus on a niche market, particularly in a local or regional market, whereas larger enterprises tend to offer a wider range of products and services to a broader range of customers (Hamel, 2019). Although the fragmentation of production worldwide has provided smaller businesses with significant scope to compete in specialised segments of global value chains and scale-up activities abroad, SMEs are typically less engaged in internationalization than large firms (Etemad et al., 2001). According to Rothwell and Zegveld (1982), SMEs have an advantage over large enterprises marketing their product and services. Because SMEs are more flexible and are able to react quickly and efficiently to both market and technological changes. However, Oakey et al. (1988) argue that major barriers to increase sales in SMEs are logistical problems and their poor-selling efforts.

Global vs. local environmental effect: As opposed to large enterprises, SMEs are more reliant on their immediate external environment, such as regional and national economies. SMEs are generally locally based and heavily influenced by what happens in their own community, but large firms tend to be

international and more flexible in their production locations (Karlsson & Olsson, 1998). Moscarini and Postel-Vinay (2012) also stated that large enterprises are more pro-cyclical than SMEs, which implies they are more influenced by global business cycles. This fact might have ramifications for how different business sectors and national economies respond to economic downturns.

External communication: Large enterprises have an advantage in external communication. Large firms have required financial and human resources to maintain the relationship with relevant parties and send people to conferences and seminars worldwide. But it is considerably more difficult for an SME to update its technical knowledge (Rothwell and Zegveld, 1982). Since SMEs often are not capable of internalizing all activities related to their innovation process (Maillat, 1990), network cooperation can provide economies of scale for all parties (Camagni, 1991), and SMEs need to build and maintain the local networks (Karlsson & Olsson, 1998).

Performance difference in SMEs and Large Enterprises: Govindarajan et al. (2019) argued that the performance gap between the US large and SMEs has increased in the last decades. While the difference in median return on operating assets was 15% in the 1990s, it has recently doubled to 30-35%, an enormous gap in the profitability of operating assets. Govindarajan et al.'s (2019) group analysis shows that the large companies are getting more profitable, whereas the small ones suffer from chronic unprofitability.

SMEs can acquire the capacity to use and combine emerging digital technologies to transform their business models and work practices to innovate and flourish. Digital business platforms ease access to markets, strategic resources, and networks by reducing associated costs. At the same time, digital business platforms reduce structural disadvantages faced by SMEs in achieving economies of scale, allowing them to reach scale without mass. Big data analytics combined with mobile apps, sensors, artificial intelligence, 3D printing, drones etc., enable new business models that leverage shorter distance and time to markets, which in turn are likely to benefit smaller and more responsive businesses.

Although there is a small percentage of high-growth small enterprises (rather young) that make a significant contribution to job creation and maintain turnover growth, even though by definition, those types of small companies by reaching to a specific rate of turnover (see SME definition in section 3.1) are no longer considered to be a SME, the vast majority of SMEs rather seek to maintain their current size and level of business activity (Schuh et al., 2018).

Statistics tell us that SMEs fail at an extremely great rate. For instance, the European Statistical Office (Eurostat, 2018) reveals that about 20% of European SMEs fail in their first year, and only 45% of small businesses survive in their fifth year (Figure 3.1). Surprisingly, these rates are consistent over time, and year-over-year economic factors do not have an impact on how many SMEs survive(Business Employment Dynamics, 2019). These are hard statistics to digest, knowing that the SME sector employs millions of employees and contributes significantly to the global economy. A reduction in the failure rate of SMEs would lead to tremendous economic benefits.

3.2.1 Business model innovation and SMEs

Although there are many reasons for the failure rate of SMEs, observations have confirmed that there is little or no awareness in SMEs on how to systematically approach BMI (Marolt et al., 2016a). Most of the research has focussed on BMI in large enterprises, and only recent studies have started to focus on SMEs (Pucihar et al., 2019). A significant amount of research has clearly stated that SMEs markedly differ from larger businesses in many aspects such as management style and process, environmental

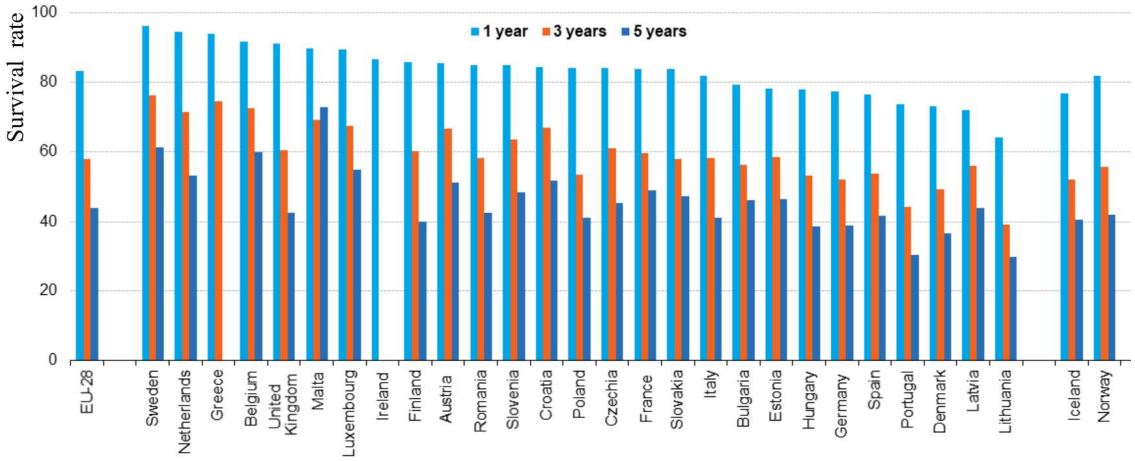

Figure 3.1: One, three and five-year survival rates of SMEs in EU countries in 2017 (Eurostat, 2018b)

context, and strategy making process (Mambula, 2002; Oughton et al., 2013), as discussed before. However, large enterprise experiences are not replicable for the SME sector, where the common experience is to learn from the large scale enterprise sector and then attempt to downsize it for the SME sector (Zulfiqar & Azra Batool, 2013). Because of a different set of problems, such as financial constraints, human resource issues, and the emergent nature of their planning in SMEs, the solutions are different (Bell et al., 2004). Therefore, there is a growing recognition that the SME sector in itself should be treated separately in its own right (Renner et al., 2008). So, in light of the significance of BMI for SMEs in terms of competitiveness and innovativeness, further investigation is needed. Even though BMI has acquired extensive recognition in the academic and industry (Baden-Fuller and Morgan, 2010), few studies have thus far focused specifically on the innovation of business models of SMEs (Heikilla, 2018). BMI can serve as a key concept through which SMEs are enabled to benefit of the business opportunities they face and improve their performance (Guo et al.,2017). Yet, it is relatively unclear how SMEs actually innovate their BMs (Barjak et al., 2014; Foss and Saebi, 2017).

3.3 SMEs in the European context

According to the Annual report on European SMEs (2017/2018), SMEs form about 99.8% of organizations and provide 66.4% of the jobs in EU countries (about 95 million people). Regardless of the degree of development and standard of living of the population of a country, SMEs are the biggest contributors to the gross domestic product (GDP). SMEs generate 57% of the value-added GDP, and are the greatest contributors to the European economy. Although in countries like Japan or China, 60% of GDP comes from SMEs, in the USA, that percentage goes up to 65% (Figure 3.2). The low level of European SMEs' contribution to GDP highlights the fact that the policy-makers in European Commission and at the national level have to develop more incentive regulations to empower SMEs to increase their performance.

Micro SMEs (less than ten employees) are by far the most common type of SMEs. Although micro SMEs account for 93% of all enterprises throughout Europe (Table 3.2), they account for only 29.7 % of total employment. Small-sized and medium-sized SMEs accounted for 19.4% and 16.8% respectively of total employment. In contrast to the uneven distribution of the number of enterprises

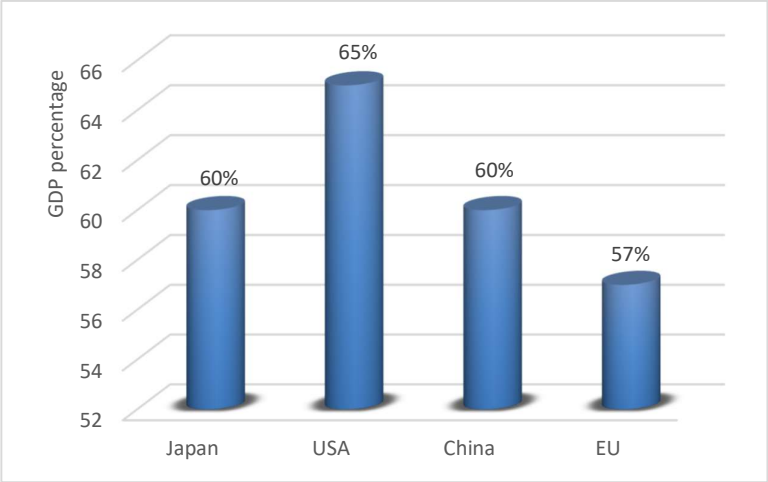

Figure 3.2: Contribution of SMEs to GDP of Japan, USA, China, and EU (Robu, 2013)

and employment across the three SME size classes, their contribution is broadly equal in terms of value-added (Table 3.2).

Table 3.2: SMEs and large enterprises in the EU in 2018 (Eurostat, 2018b)

EU	**Enterprises**		**Value Added**		**Employment**	
	Number	%	Value in € (trillion)	%	Number (in 000)	%
Micro SMEs	23,323,938	93%	1,610	20.8%	43,527,668	29.7%
Small SMEs	1,472,402	5.9%	1,358	17.6%	28,541,260	19.4%
Medium-Sized SMEs	235,668	0.9%	1,388	18%	24,670,024	16.8%
All SMEs	25,032,008	99.8%	4,357	56.4%	97,738,952	66.6%
Large Enterprises	47,299	0.2%	3,367	43.6%	49,045,644	33.4%
All Enterprises	25,079,312	100%	7,723	100%	146,784,596	100%

Although Table 3.2 gives us an overall view of European SMEs, the contribution of SMEs to the economies of the EU countries varies greatly, ranging from 42% to 70%. In terms of employment, SMEs in Malta, Cyprus and Greece accounted for 80% or more of total employment in 2017, while in five countries (Denmark, France, Netherlands, and UK), the SME employment share was less than 65%.

In terms of innovativeness, defined as the ability to generate new ideas or a combination of existing elements for the creation of new sources of value (Hurley & Hult, 1998, p:44), SMEs in European countries are, on average, less innovative than large enterprises (OECD, 2018).

The European Community Innovation Survey (CIS, 2010) defined four types of innovations, e.g., product/service, process, organisational, and marketing innovation. Different sizes of SMEs are not equal in different types of innovations. Figure 3.3 shows that for most innovation types, the larger the size of SMEs, the more innovations they have, although the share of marketing innovations was larger in micro SMEs (Muller et al., 2019).

Apart from innovation in product/service, process, organisational, and marketing innovation, business model innovation is different and can be considered as a new object of analysis and requires to be

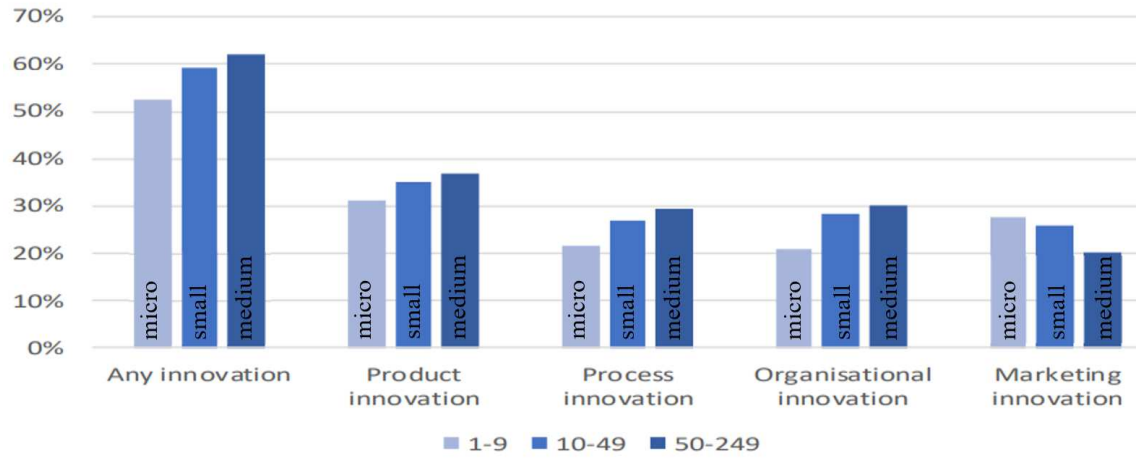

Figure 3.3: Share of innovating SMEs be employment size class – 2009-2018 (Patrice Muller et al., 2019)

measured and treated separately. One of the first research projects to take specific consideration into BM innovation in European SMEs is the ENVISION project. The project, as part of the Horizon 2020 research program, was funded by European Commission to empower European SMEs to improve their performance and innovativeness, through innovating their BM. In the next section, we will present the objectives and key findings of the ENVISION project.

3.3.1 General insights into BM innovation in European SMEs from ENVISION Project

The Envision project, which this research is a part, has been funded by the European Commission to enhance the innovative capacity of European SMEs by understanding how SMEs conduct business model innovation. The Envision project was carried out between 2016 and 2018 and its key objectives were:

1- Develop BM tooling that empowers SMEs to define, evaluate and plan the implementation of new BMs
2- Develop a self-service platform that helps SMEs to access BM tooling tailored to their market, industry and competences
3- Increase awareness of BMI and advance the use of BM tooling to support BMI for at least 15% of all types of SMEs across Europe
4- Examine quantitatively how and to what degree BM ontologies and tools as used by SMEs contribute to their innovativeness and competitiveness
5- Analyse 40 small cases and 20 longitudinal cases of BMI by SMEs to elicit best practices and examples, as well as develop a rule-based decision tree to select BM tooling

The project consists of nine partners, namely Delft University of Technology (The Netherlands), University of Turku (Finland), University of Maribor (Slovenia), University of Murcia (Spain), Kauno Technologijos Universitetas (Lithuania), Innovalor (The Netherlands), Evolaris (Austria), AcrossLimits (Malta), and Bgator (Finland).

The generic findings of the Envision project provide contextual information about BMI efforts of SMEs in European countries. Its key findings will be presented in the following paragraphs. The Envision project conducted three surveys, one in each year, from 2016 to 2018, and a large number of SMEs from various sectors and different European regions participated in the research (SMEs that were engaged in BMI and were sampled for the quantitative research were 586, 560, and 451, respectively).

The most important insight gained from the quantitative part was that approximately 37% of SMEs are engaged in innovating their BM. The findings also showed that the majority of the SMEs did not employ a formal method for changing their BM. Only 19% use a formal method, i.e., 7% use Canvas, 3% use Lean Canvas, and 9% another method. SWOT is the most mentioned alternative method. Other BM-specific tools, like roadmaps (De Reuver et al., 2013), stress-testing (Haaker et al., 2017), or other ontologies than Canvas, like Stof, Visor, are incidentally mentioned (Heikilla et al., 2018).

When considering the BM changes in SMEs, the Envision research findings revealed that the changes were related to all components of BM. Although changes in product or service introduction as value proposition occur more frequently (Table 3.3), they found that ICT has played an increasing role in enabling SMEs in their BMI (90%). Fixed and variable costs components are also affected considerably (87%, 89%), and did lead to changes in pricing mechanisms (69%), new revenue streams (81%) and profitability (91%).

Table 3.3: Components affected by BMI in SMEs in ENVISION's quantitative studies (N=1597, collective samples of 2016 to 2018)
(adapted from Heikillaet al, 2018)

Components of BM	Components affected in BMI
Key Partners	81% started working with new partners
	65% shared new responsibilities with new business partners
Key Activities	80% made changes that did lead to new tasks and/or processes
Key resources	90% of product/service offering is enabled by ICT
Value propositions	76% introduced new services
	80% introduced new products
Channels	68% introduced new distribution channels
	73% introduced a new way to transact with customers
Customer segments	62% focused on complete new market segments
Customer relationships	82% introduced new ways of organizing relations with customers
Cost structure	87% introduced new ways to reduce fixed costs
	89% introduced new ways to reduce variable costs
Revenue structure	69% introduced a new pricing mechanism
	81% created new revenue streams
	91% introduced new ways to be profitable

Quantitative analysis shows that BMI affects almost all components of a BM, but to know how BMI support SME's different strategic objectives, qualitative research has been carried out. Therefore, to advance knowledge on BMI in a real context, such as best practices of BMI and evaluation of the BM tooling and platform, a study analysing 122 case companies was conducted in ENVISION project. The

case companies were chosen from seventeen European countries, which were distributed over all European regions.

SMEs were asked about their strategic goal of developing a BMI by choosing either (1) start a new business, (2) grow, or (3) become more profitable. Forty-one SMEs (34%) considered themselves as starting up a new business, thirty-five (30%) aimed primarily at improving profitability, while growth was the strategic target in forty-six cases (37%). Table 3.4 illustrates that most cases from Southern Europe wish to improve profitability, while many cases from Northern and Western Europe are interested in growth.

Table 3.4: Strategic goals that drive BMI in 122 case studies
(adapted from Heikilla et al., 2018)

		Start a new business	**To grow**	**To be more profitable**	**Total**
Geographical Location in Europe	South	3	4	8	15
	West	16	18	10	44
	North	13	12	6	31
	East	3	8	7	18
	Central	6	4	4	14
Total		*41*	*46*	*35*	*122*
%		*34%*	*37%*	*30%*	*100%*

While SMEs were asked to indicate which BM components they wanted to change, on average, each SME mentioned 2 to 3 specific components to focus on in their BM innovation effort. Figure 3.4 shows the percentage of case SMEs that tend to change specific components of their business model based on their strategic goals.

Figure 3.4 reflects a clear trend among the cases with different strategic goals. SMEs which are focused on growth mostly concentrate on customer relationship, value proposition and customer segmentation, while SMEs with profitability concerns are mainly focused on key activities, costs and revenues. The SMEs which aim to start a new business broadly focus on the value proposition, key resources as well as key partners. The research conducted in Envision project also provides some insights on what the key internal and external drivers of European SMEs are to engage in business model innovation, what parts of the business model are considered crucial to change, and how they can use tools to design, test, and measure their BMI efforts.

However, to gain more insight on how SMEs implement their business model innovation, especially the human and organisational factors which are more related to managing people within the company, this thesis aims to go deeper into exploring the phenomenon. Therefore we also conducted a multiple case study approach. Due to accessibility reasons, the SMEs were chosen from The Netherlands. In the next section, the background information on SMEs in the Dutch economy will be presented. Afterward, four specific sectors, namely manufacturing, healthcare, printing and publication industries, will be discussed in more detail to contextualize the quantitative findings in the qualitative chapter (Chapter 7).

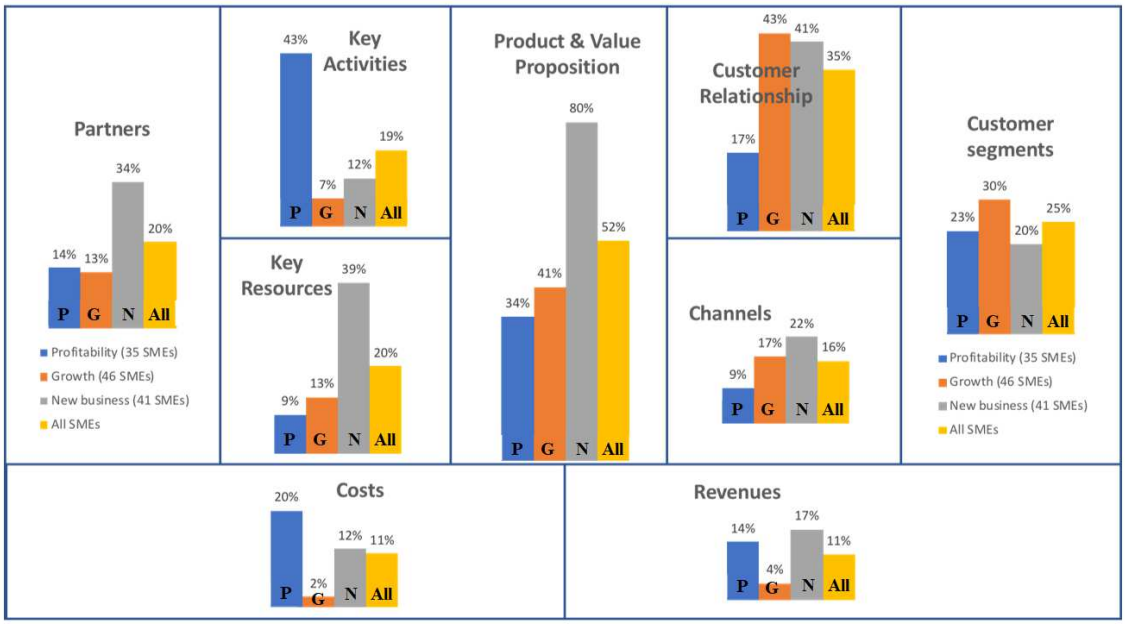

Figure 3.4: Components affected by BMI based on their strategic goal in qualitative studies (N=122) (Heikilla et al., 2018)

3.4 Research Domain: Case Descriptions

3.4.1 SMEs in Dutch Economy

Like in Europe, SMEs play an important role in the Dutch economy. SMEs generate 62 % of overall value-added - higher than the EU average of 57 % - and account for 64 % of overall employment - slightly less than the EU average of 66 % (Table 3.5). SMEs have generated healthy growth in recent years and contributed to the development of the Dutch economy. In 2013-2017, SME value-added and employment increased by 17 % and 6 %, respectively. Dutch SMEs' growth is predicted to continue (European Union, 2020). In 2017-2019, SME employment continued to grow moderately, increasing by 2 %. SME value added is predicted to rise more dramatically, by 8 % in the same period.

Table 3.5: Dutch SMEs basic figures (European Union, 2020)

Class size	Number of enterprises			Number of persons employed			Value added		
	Netherlands		EU-28	Netherlands		EU-28	Netherlands		EU-28
	Number	Share	*Share*	Number	Share	*Share*	Billion €	Share	*Share*
Micro	1,137,686	95.6%	93.0%	1,660,985	28.0%	*29.7%*	78.0	20.2%	*20.8%*
Small	41,997	3.5%	5.9%	1,061,186	17.9%	*20.1%*	67.9	17.6%	*17.6%*
Medium-sized	9,103	0.8%	0.9%	1,070,443	18.0%	*16.8%*	94.2	24.4%	*18.0%*
SMEs	**1,188,786**	**99.8%**	**99.8%**	**3,792,614**	**63.8%**	***66.6%***	**240.1**	**62.3%**	***56.4%***
Large	1,824	0.2%	0.2%	2,148,445	36.2%	*33.4%*	145.3	37.7%	*43.6%*
Total	**1,190,610**	**100%**	**100%**	**5,941,059**	**100%**	***100%***	**385.4**	**100%**	***100%***

Dutch SMEs, on average, perform better than SMEs in other EU countries in terms of profitability and employment rate (European Union, 2020). According to the Small Business Act (SBA[1]) the Netherlands has a strong profile when compared to other EU countries (Figure 3.5). It scored the highest on "entrepreneurship", the second-highest on "second chance,[2]" and the third highest on "responsive administration." The country's score on the "single market," "skills & innovation," "environment," and "internationalization" were also above the EU average. On "state aid & public procurement," the Netherlands scores significantly below average, with the third-lowest score in the EU. During the reference period of 2018 and the first quarter of 2019, the Netherlands implemented a number of measures promoting SME development on a national and international scale. Innovation and skills development have been priorities of the Dutch government to enable the application of new technologies and make the most of the potential of educating for innovation.

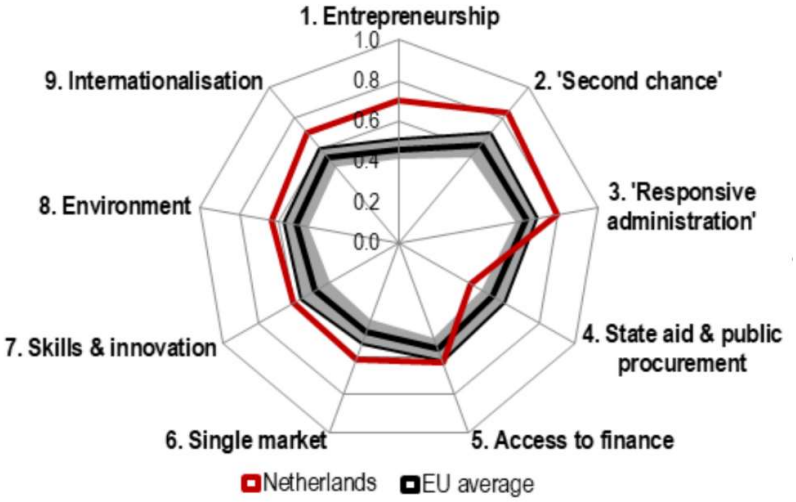

Figure 3.5: Comparing Dutch SMEs' SBA profile to EU avarage in 2019 (European Union, 2020)

Innovation is a major challenge that SMEs in the Netherlands faces. Almost 34% of SMEs in the country have trouble with implementing innovation (Clark, 2019). In 2018, the Dutch government put specific policy instruments in place to focus on "skills & innovation" in order to enable SMEs to apply new technologies and make the most of the potential of implementing innovation (European Union, 2020).

Although, in general, the picture for innovation by SMEs in the Netherlands looks positive, a more in-depth analysis of how SMEs implement their BMI efforts based on four case companies was executed. As we are interested in studying the top management role and leadership style, motivation and empowerment of employees and communication through stakeholders, the cases are selected so that we

[1] Small Business Act (SBA) is a policy initiative in EU that fosters the development of SMEs based on nine principles; Entrepreneurship, Second chance, Responsive administration, State aid & public procurement, Access to finance, Single market, Skills & innovation, Environment, Internationalisation.

[2] Second chance' refers to ensuring that honest entrepreneurs who have gone bankrupt get a second chance quickly.

could gain insight into the human and organisational part of implementing the BMI. The cases were, therefore, selected based on content (theoretical) and practical considerations.

The four cases are selected from the Envision case sample by considering the following set of criteria. All selected companies were (1) considered as small and medium-sized enterprises, (2) recently involved in BMI and experienced the implementation of business model innovation, and (3) Located in The Netherlands (easy to access and not different social norms and beliefs). Firm size (number of employees) and firm age (number of years since the firm was founded) are used as control variables since they could impact the relationship between BMI and a firm's overall performance. The four cases are clustered based on the two control variables which considered in the quantitative phase of research, i.e., firm size and firm age, since prior studies have highlighted the impact of a firm's size and age on performance (Hartmann et al., 2013; Zott and Amit, 2007; Gronum et al., 2016; Heij et al., 2014). Figure 3.6 shows our four selected cases based on two dimensions of firm size and age.

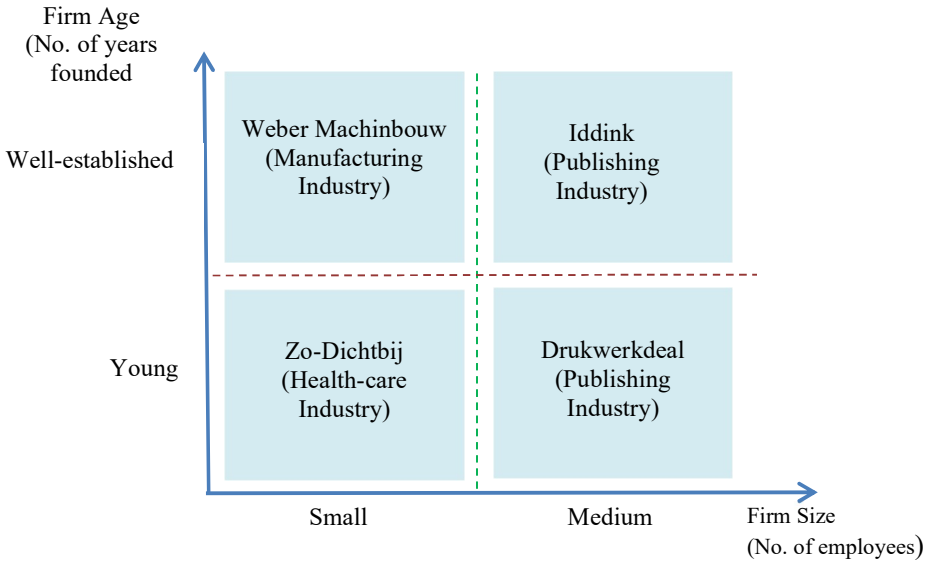

Figure 3.6: The case study selection based on two criteria of firm size and age

The next section discusses the general information related to the positioning of the case studies. Although within and cross-case analyses will be presented in chapter 7, here, we provide background information for each case which is structured as follows:

1) A general description of the relevant Dutch industrial sector, its past and future perspective. Although the industry sector was not a criterion to select the research cases, this will provide a general overview of the external business environment.
2) Brief history and development of the case company over time
3) The company's key products and services
4) The business strategy which guides the business model innovation
5) Describing the company's old business model
6) Explaining the reasons for changes in the old BM
7) Describing the company's new business model

Having the above-mentioned case description aims to contextualize the findings in the qualitative chapter and provide basic knowledge about the research domain in the case study analysis and justify the interpretation of findings.

3.4.2 Manufacturing industry with a focus on Case 1 "Weber Machinbouw"

Dutch Manufacturing Industry

The manufacturing industry is crucial to the Dutch economy. Manufacturing has one of the highest multiplier effects of all industry sectors, driving technological innovation and providing skilled and well-paid jobs (Hamming-Bluemink, 2020). International Standard Industrial Classification (ISIC) defines the manufacturing industry as a branch of trade based on the fabrication, processing, or preparation of products from raw materials and commodities (United Nations, 2008). Since it has a wide range, business services and other non-industry sectors strongly benefit from demand generated by Industry. For every Euro of EU manufacturing output, 34 cents of input comes from other supply sectors. The influence of manufacturing goes far beyond the direct contribution to GDP (13%) and employment (10% total workforce). Manufacturing is a highly global business underpinning all economic activity. Industrial goods now make up around one-third of all Dutch exports, more than any other exported service or good (Hamming-Bluemink, 2020).

The added value of the Dutch manufacturing industry increases more rapidly than the industry as a whole, due in part to world-class performance in the Machine Building sector. Although still modest in size compared to some of its European counterparts, the Dutch manufacturing industry now ranks third behind Germany and Austria in terms of growth (ING, 2018). SMEs in manufacturing have also been growth generators. SME value-added and employment rose by 14.7 % and 2.2 %, respectively in 2013-2017. The main growth driver was increased demand, particularly in terms of exports, which grew by 10 % in 2016-2017. Dutch manufacturing is highly export-dependent, with 70 % of value-added coming from exports in 2015 (Eurostat, 2018a).

The Netherlands earns the most from the export of machinery and machine parts. In 2018, the value-added generated due to exports of machinery such as machinery for the food processing industry and chip manufacturing equipment amounted to almost 16 billion euros. Back in 1995, 2005, and 2015, machinery also took up first place on the list of top export products; it has played an increasingly large role in Dutch exports since then (Figure 3.7).

Keeping up with global economic trends and fast-growing manufacturing industries, particularly in Asia, need effort on the part of the Dutch industry in order to maintain its competitiveness. Joining the global smart industrial revolution will entail overcoming some formidable obstacles. With competition heating up in Europe, the United States, and Asia, Dutch manufacturing must rise to the occasion, seizing new chances while building on existing strengths (Hamming-Bluemink, 2020).

The smart industry revolution of today is governed by no one technology or technical domain. Machine-to-machine (M2M) communication is being revolutionized by ICTs that first facilitated human-to-human and human-to-machine communication, making machines more intelligent and giving them with a rich vocabulary. Sensor technology will enable gadgets to be aware of their surroundings and other devices. Embedded technology will provide them with a "brain" that will allow them to process and convey their findings (Hamming-Bluemink, 2020). The huge volumes of data sensed and sent by

billions of devices will be collected, processed, transported, and stored using cloud technology and Big Data solutions. In parallel to or as a result of the ICT-related developments, we are witnessing important advances in manufacturing techniques such as the rise of additive manufacturing (known as 3D printing), practical applications of which are enabled to a large extent by ICT developments. Additive

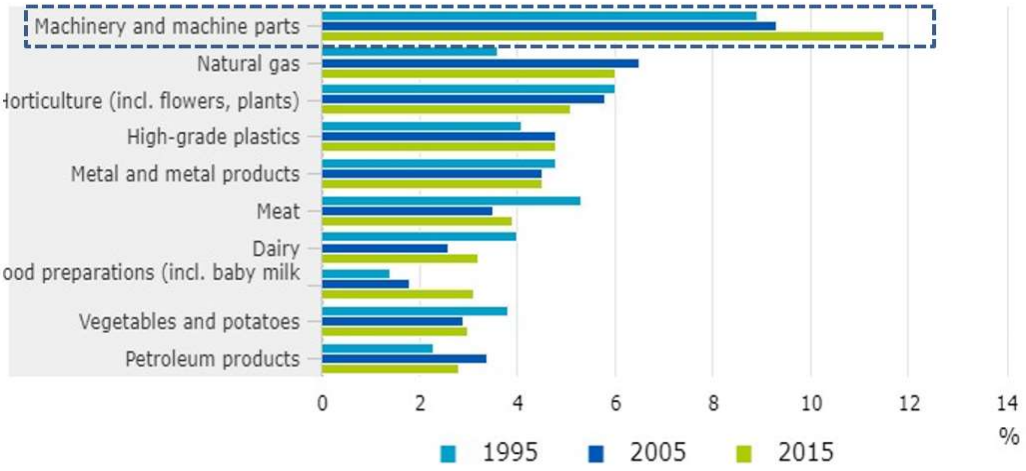

Figure 3.7: SMEs' export revenue share in total export revenues from Dutch domestic products, in 1995, 2005, and 2015 (CBS, 2017)

manufacturing techniques require no moulds, which makes a single additive manufacturing machine suitable for creating a wide variety of products (reducing the costly process of reconfiguration).

Experience shows that the implementation of technologies for the purpose of benefiting from its opportunities takes special expertise and an innovative attitude. Besides having an innovative attitude in using advanced technology to innovate a BM, companies need to consider customer preferences and acceptance as well as collaboration with other stakeholders. The technologies can facilitate value creation, but the implementation of BMI is quite tough. Implementation of BMI necessitates customer focus, strategic alignment of actions, an evidence-based focus, managing attitudes, behaviors, expectations and potential conflicts and requires entrepreneurship and out-of-the-box thinking.

Our first case Case 1 Weber operates in the Dutch manufacturing industry and aims at incorporating state-of-the-art technologies into the manufacturing process. In the following section, a description of Case 1 Weber, including its background, products and services, its old and new business strategy and business model, and the reason for this change, is presented. The description is based on the findings from desk research, company documents, previously done case studies on the company, as well as the inputs obtained from interviews.

Brief History and Development in Case 1 Weber

Weber Machinebouw was founded in 1959 and is located in Zwaag, The Netherlands. Weber started as a toolmaker, manufacturer of standard punching tools that are still being sold under the brand name NORM. In the course of years, Weber started specializing in customer-specific tools, from simple stamps to complete automated production lines. Since the early 90's Weber has delivered tailor-made solutions, stand-alone or fully automated production lines, even no standard solutions are available in the market. From 2017, Weber entered the hospital bed disinfection business. Weber Hospital System provides a robotic solution for cleaning and thermal disinfection hospital beds, mattresses and medical

aids such as wheelchairs, drip piles, and material carts. Typical of Weber's approach is that all projects are carried out entirely in-house and turnkey. They take care of everything from engineering to production and from commissioning to service and maintenance (Weber Company Website, 2019). In addition to the machine-building branch, they still have a tool shop (since 1959) for custom stamps, presses, punching tools and repair & maintenance. Weber focuses on business-to-business sales within the industrial market sector, mostly inside the Netherlands. Weber is a small and medium-sized enterprise and has 35 employees. The company has its own engineering department and production facility.

The Dutch metalworking industry has flourished since the 50s and 60s, and many companies have been operating in the sector ever since. According to the company's CEO:

> "*Although the Dutch metalworking industry and metal processing business is well known in the world, it runs in such an old-fashioned manner and embracing new technologies such as Internet of Things, is slow and still in early stages. Shareholders have been working for the companies for a long time and the average age is high. <Weber CEO>*"

Products and Services in Case 1 Weber

The products and services that Case 1 Weber delivers have evolved over the last decades. Case 1 Weber currently designs and produces various products and services ranging from standard components to tailored end-products in different fields; mechanics, pneumatics, hydraulics, automation, servo-drive technology, and robotics. The main value they deliver is tailored-made products, which help customers address their specific industry problems or needs.

Case 1 Weber's products and services can be divided into two categories. The first group of products and services is related to Case 1 Weber traditional business of metalworking machinery manufacturing. As products, Case 1 Weber offers customized production solutions for punching, pressing, milling, sawing and product handling machines (such as cranes and conveyor belts) and as a service, Case 1 Weber provides service technicians in the unplanned event of malfunctions or technical problems or to carry out periodic preventive maintenance not only for their products but also for the machines that are not developed by Case 1 Weber.

The second group of products and services is new to the firm and is related to introducing the "hospital disinfection systems" business. As a product, Case 1 Weber intends to play a key role as an international provider of hospital bed disinfection systems. The hospital bed disinfection system is a robotic solution for thermal cleaning and disinfection of hospital beds, mattresses and medical aids. The product is still under development and several prototypes were made. As a service, Case 1 Weber offers regular professional maintenance schemes that allow customers' installation to perform optimally and safely during its entire operational life. Customers can choose from three tailored maintenance packages: (1) Inspection plan, (2) Prevention plan, and (3) Life-cycle plan (Weber Company Website, 2019)

Business Strategy of Case _1_Weber

Weber focuses on business-to-business sales within the industrial market sector. The previous study on Weber company (Pompo and Weel, 2016) expressed that the majority of the company's customers are operating in the metal, construction and automotive industry. The size of the companies varies from micro to medium-sized enterprises. The majority of Weber's customers are located in The Netherlands. For some of its products, Weber has competitors, but for the majority of its products, mainly for the larger sized products, it has no direct competitors. Researchers (Pompo, D. & Weel, J., 2016) could not

find a formal or written strategy in the company documents and website, however from their interviews, they concluded that Weber follows two different strategies; First, customer intimacy strategy for machine production products and services, since Weber did not have any performance measurements, except for customer satisfaction. Second, growth strategy; Weber's former CEO believed that machine production products and services were focused on the Dutch market and the Dutch market is not large. Therefore to fulfill the growth strategy, Weber shifted into diversifying its products and getting into international markets.

The Weber strategy underwent fundamental changes when the new CEO joined the company in 2017.

> *"We are going to focus more on technology, on the niche markets, modular and standardised products, utilizing everything done in the past, but also going toward more digitalized and smart equipment <Weber CEO>."*

The new CEO defined three new strategic themes. First, instead of manufacturing a wide range of metal machinery (punching, moulding, soldering, drilling), the focus should be on the company's core specialty, e.g., punching machines. Second, growth strategy, because the Dutch market is not big enough for a single type of product, Weber should go across borders to find international customers. They can also provide services alongside delivering the products to their clients. As the third theme, Weber has to focus on cutting-edge technologies and combine them with the current products, technologies such as robotics, the Internet of Things, and modular manufacturing of the machines, to be specific and competitive. Based on these strategic themes and building on the company's available capabilities, Weber entered into a new business of manufacturing the hospital disinfection system.

Old Business Model of Case 1 Weber

Weber works for decades with its old business model. The main value they delivered was tailored-made products manufactured with high-quality materials by experienced engineers, which allows Weber to deliver high-performing machinery. Weber focuses on business-to-business sales within the industrial market sector. The majority of its customers are operating in the metal, construction and automotive industry inside The Netherlands. The key activities consist of Engineering and Design, Buying and Outsourcing, Production and Sales. Sales were mainly focused on maintaining customer relationships and reaching (potential) customers through various channels. In the old business model, Weber's revenues came only from product sales. Usually, Weber does not deliver additional services after designing, producing and installing their product. Figure 3.8 shows the old business model in the business model Canvas template.

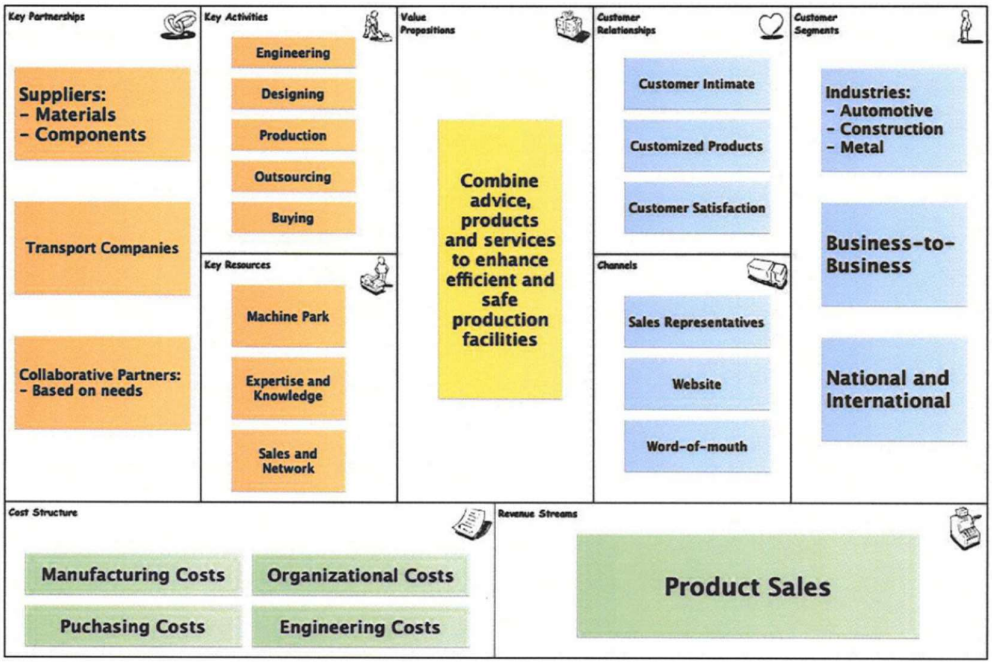

Figure 3.8: Old business model of Case 1 Weber (Pombo & Weel, 2016)

Reason for the change in BM of Case 1 Weber

Case 1 Weber's old business model suffers from many drawbacks. First, One-off projects are very risky. Prices for one-off projects are offered based on a pre-engineered design, but products must be delivered that can produce a specific output. Sometimes pre-engineering design does not work and the calculation should be revised. This recalculation, in most cases, leads to a more expensive solution. Second, because of the diversity in types and scale of each one-off project, it is not possible to make a manufacturing plan. Always there are big ups and downs for managing the workforce in the company. Third, focusing on manufacturing metal machines for Dutch customers prevents significant revenue growth.

Based on the above-mentioned reasons, Weber revised its business strategy. The change in strategy leads to introducing a new way of doing business (business model). By combining the first (differentiation) and second strategic themes (growth), as discussed in the Business Strategy of Case 1 Weber section, Weber improved its existed manufacturing of metalworking machinery business model. To improve the existed business model, Weber focused only on the manufacturing of a specific type of machine, namely punching machines, aimed to make it modular as much as possible, consisting standardised components and pointed towards international markets. Merging second (growth) and third (deploying cute-edge technology) strategic themes, Weber moved toward developing new challenging products and services in hospital disinfection systems. With the current experience of manufacturing industrial machines combined with using high-tech knowledge, Weber can produce a modern hospital disinfection system. Although, according to the CEO, they were involved in the manufacturing of the hospital disinfection system unintentionally, afterward, they grasped the opportunity and started a new business in hospital disinfection systems.

Although a service business model is different from a product business model, the required key resources were available within the Weber company. So Weber decided to develop a troubleshooting service business model for both its traditional products and hospital disinfection system. The service business model is originated from the second strategic theme, "growth strategy." By providing services, they could respond to their customer's needs and also create a new revenue stream for the future.

New Business Model in Case 1 Weber

The two new business models, namely the "Hospital Disinfection System" business model and the "Service" business model, were developed alongside the old/improved business model. In other words, Weber's old business model is still working, and the two new business models were implemented as a total new parallel BMs with the old business model.

The "Hospital Disinfection System" business model proposes a unique value. Since most hospital disinfection systems and bed washing machines clean the bed using chemicals and hot water, the Weber machine makes disinfection possible by steam. This novel approach not only consumes a smaller amount of water and energy, which is beneficial for the environment but also is not affected by the resistance of bacteria to chemicals. By using robotic technology, the machine can wash and disinfect all kinds of beds and wheelchairs automatically. To create a prototype, Weber engaged in several collaborations with industry and academia. Although the "Hospital Disinfection System" needs some manufacturing facilities to produce its major mechanical and electrical components, they can be produced in the same location as the traditional metalworking machines environment.

The "Service" business model, which provides complimentary services to the old business model, was implemented within the old business model. Because the customer segment, channel, customer relationship, and key resources are almost the same. People from the production line can provide troubleshooting services at client sites. A troubleshooting account manager can be assigned for this new task. Pricing policies and service level contract terms can be added to the key activities. For this thesis, the "Service" business model has not been studied and scrutinized. We investigate the implementation of the old business model and the "Hospital Disinfection System" business model.

Figure 3.9 provides an overview of the changes in Case 1 Weber's business strategy and business model. The human and organisational factors that influence or are influenced by these changes will be discussed in chapter 7.

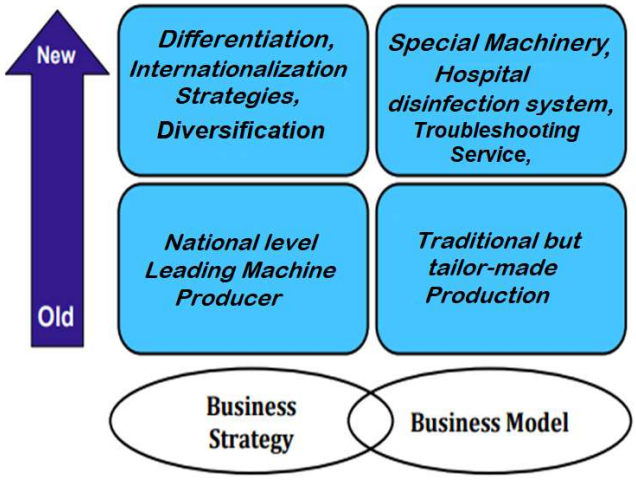

Figure 3.9: Relationship between old and new business strategy & business model Case 1 Weber

Our second case Case 2 ZoDichtbij operates in Dutch Healthcare Industry and aims at implementing new to the country platform-based services in elderly care. After a brief explanation of the healthcare industry in the Netherlands, Case 2 ZoDichtbij will be described.

3.4.3 Healthcare Industry with a focus on Case 2 "Zo-Dichtbij"

Healthcare in the Netherlands

Healthcare in the Netherlands is of high quality and constantly listed in the top-three of the Euro Health Consumer Index (Wammes et al., 2017). Although life expectancy is high and healthcare services in the Netherlands are accessible and affordable, it imposes a high cost on the government. In 2018, the expenditure of the health care system was around 87 billion euros, which was 13% of the GDP. The steady growth of healthcare expenditure in the last two decades and its share of GDP are shown in Figure 3.10a and Figure 3.10b.

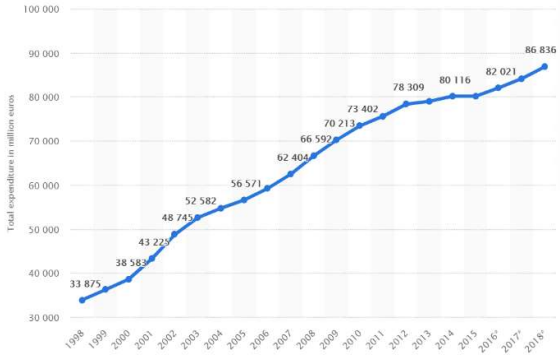

Figure 3.10a: Total national healthcare expenditure in the Netherlands from 1998 to 2018(in million euros)

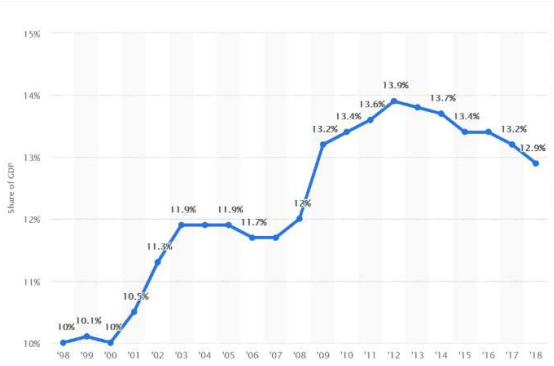

Figure 3.10b: Total health expenditure as share of GDP in the Netherlands from 1998 to 2018 (statista.com)

Similar to many developed countries, the Netherlands deal with demographical changes with an impact on the healthcare system. These demographical changes are (1) Increasing population: by 2018 the Dutch population is estimated to have grown to 17.2 million inhabitants, (2) Increasing age: it is expected that the number of citizens with age above 65 will increase from 19% to 26% by 2040 (Figure 3.11), (3) Increasing falling accidents: Every 4th minute someone with age above 65 years needs first aid treatment, with a total of 109.000 accidents in 2019 (VeiligheidNL, 2019). In 2018, approximately 4 persons every day with age above 65 years passed away after a falling accident, and (4) Increasing chronic diseases: In 2018, 53% of the inhabitants were diagnosed with a chronic disease. It is expected to increase to around 55% by 2040. Multimorbidity is estimated to increase from 13,7% in 2015 to 18,3 in 2040. Diabetes, arthrosis and neck- and back complaints are expected to be the most common chronic diseases. As a result, there will be an increasing demand for healthcare in the coming years and the costs for health care are expected to rise.

According to figures from information center Vektis, half of the money reserved for healthcare in the Netherlands under the Healthcare Insurance Act (Zvw) and Long-term Care Act (Wlz) is used to care for the elderly. In order to keep the healthcare system affordable and accessible innovative, digital health implementations are needed (Keijzer-Broers, 2016). Innovation, research and business could help to

confront the challenges. Case 2 ZoDichtbij implement an ICT platform to connect relevant stakeholders to elderly care in its networked-enterprises configuration (Figure 3.13). Following description on Case 2 ZoDichtbij is based on the findings from desk research, company documents, previously done case studies on the company, as well as the inputs obtained from the interviews.

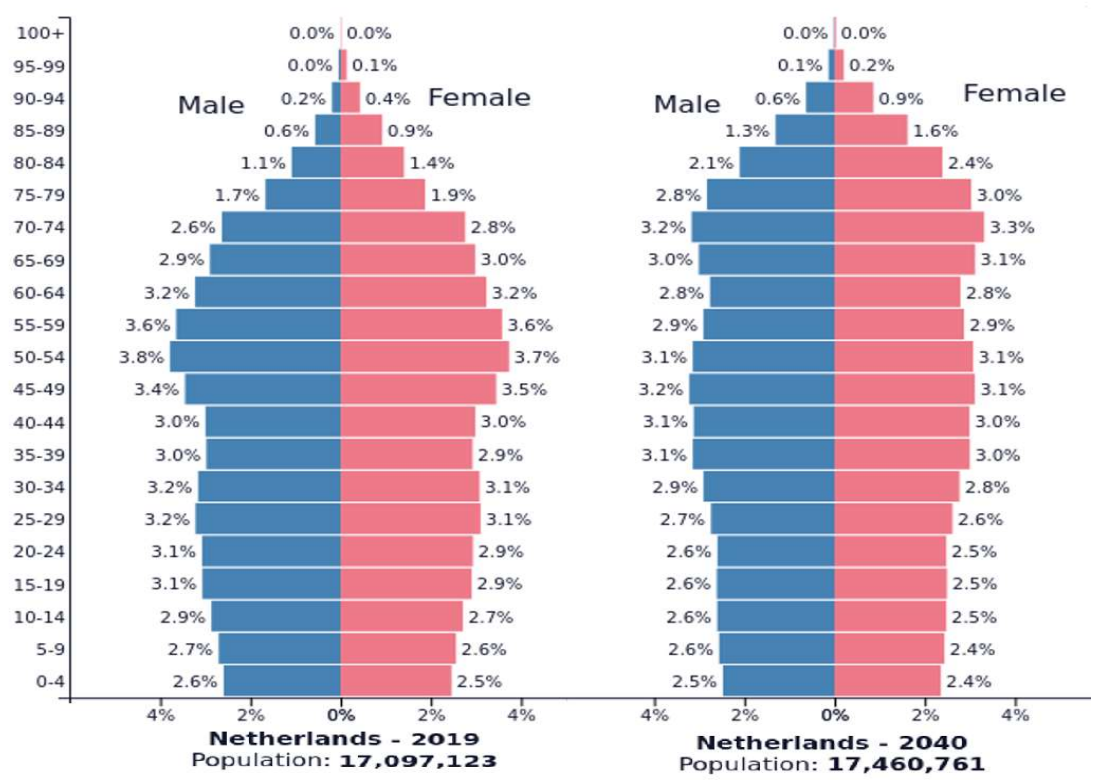

Figure 3.11: Age composition in the Netherlands 2019 and 2040 (forcast) (PopulationPyramid.Net, 2019)

Brief History and Development in Case 2 ZoDichtbij

Case 2 ZoDichtbij is a new established company that currently has an ANBI (Public Benefit Organisation) status (2020). Foundation Case 2 ZoDichtbij spinning-off from a university research project in 2017 to develop a health and well-being platform to support people age-in-place in the Netherlands. Case 2 ZoDichtbij's platform makes matches between (1) end-users looking for products and services, (2) product and service providers to market their products and services, and (3) government authorities to coordinate and control the quality of care in elderlies (Keijzer-Broers et al. 2015). Acting as a brokering platform, older adults and their informal caretakers can easily search for the products and services they require without experiencing overloaded confusing information in a fragmented marketplace. Case 2 ZoDichtbij improves information exchange and interaction between end-users, service providers, and government contributing to independent living, and healthy aging. Case 2 ZoDichtbij facilitates a digital safe, a secure digital profile for each elderly about his/her health and well-being to match the supply and demand components, and the concept is in line with a number of government themes. The foundation has no profit motive, and the platform is system independent

(no vendor lock-in). Case 2 ZoDichtbij is in the implementation phase in various municipalities, including Alkmaar, Leiden, Rotterdam, Delft, and Midden Delfland.

Products and Services Case 2 ZoDichtbij

The emphasis of the all-in-one health and well-being platform of the case company is on products and services in the field of housing, care, and welfare and making contact in the immediate vicinity of the end-users. The services offered in the platform are presented in Table 3.6.

Table 3.6: Services provided in the Case 2 ZoDichtbij platform

Target group	Platform Services
Elderly People	Social contacts, Agenda, Diary, and Profile information with local activities and lock-in features, feedback reviews.
Informal Caretakers (close relatives)	Required product and services related to health and well-being
Municipality	Information and Advisory services to communicate with their citizens. Profiles to advisors, and direct involvement with their citizens via their profiles. Data-collection (anonymized) from their citizens
Providers	Marketplace, advertisement, and interactions with their customers by the profile agenda, and/or diaries.

Business Strategy of Case 2 ZoDichtbij

As a social entrepreneurs organization, Case 2 ZoDichtbij does not aim at selling commercial products and services but more on creating a positive impact on society.

> "*Of course, we need to earn money; otherwise, we cannot stay in the world, but it is not our focus. The focus is creating impact first, and then if we do it in the right way, the profit will come. In the scale-up, not very quick, but we have faith that it is going to happen <Keijzer>".*

The changes in rules and regulations introduced by the Dutch government in the health care system and shift from a welfare society towards a participatory society, alongside the other factors such as the increasing number of older adults in the society, well-developing of IT infrastructure, the popularity of using IT services in every range of people age, as well as sharply raising the expenditure for taking care of elderlies in institutions or hospitals, encouraged the co-founders to establish a social innovation. With the support of an online health and well-being platform, the company can help citizens to live comfortably and independently in their homes. Instead of moving out to an institution, the platform can help older citizens to age-in-place in a smart way. Case 2 ZoDichtbij targeted a niche market in serving older people in the Netherlands. The case organization follows a low-end disruption strategy to introduce affordable services and products. A low-end strategy means offering services with lesser performance or functionality than its competitors, which then lowers the price. The Case 2 ZoDichtbij platform intends to serve a broad base of customers with different revenue models for a sustainable business.

Business Model Innovation Process in Case 2 ZoDichtbij

The process of designing, prototyping, implementing, and evaluating the business model related to the digital service platform for health and well-being to support people age-in-place, was part of a Ph.D.

research at Delft University of Technology, Faculty of Technology, Policy, and Management by one of the co-founders. Although the Ph.D. project was completed in 2016, the research continued. By collaboration between the university, business, and society, there was a high degree of co-creation from all partners (21 partners). Case 2 ZoDichtbij pays attention to BM almost weekly, mainly for restructuring its activities to follow up on its progress and iterate its BM. The disruptive BM element of Case 2 ZoDichtbij is switching the business from the present, expensive service channels to an online platform with only a fraction of operating and transaction costs for all the parties. As said by one of the co-founders:

> "*There are no comparable parties that can deliver a similar platform on short notice.* <Keijzer>"

The relationship between traditional business strategy and business model of competitors and new business strategy and business model of Case 2 ZoDichtbij is shown in Figure 3.12. The content of Figure 3.12 differs from the other three cases since the business model of Case 2 ZoDichtbij was a radical innovation at the national level, and there was no old strategy and business model that could be presented. However, the figure compared the existing traditional businesses, which mostly offered a limited number of products and services at a high price in their portals or physical shopping store.

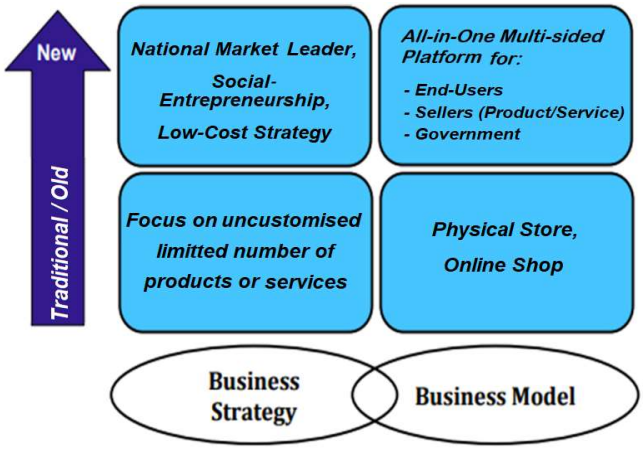

Figure 3.12: Relationship between traditional business strategy and BM of competitors and new one of Case 2 ZoDichtbij

The following sections are based on the researcher's interpretation of the business model innovation in Case 2 ZoDichtbij built on desk research, company documents, as well as previously done case studies on the company.

Old Business Model of Case 2 ZoDichtbij

The business model of Case 2 ZoDichtbij was developed from scratch. By seeing a social problem and sensing a business opportunity, the business model developed as part of a Ph.D. research. Therefore, before launching the digital service platform for the health and well-being of elderlies by Case 2 ZoDichtbij, there was no business done by the company.

However, the competitors had a variety of business models to address the customers' needs. The existing businesses mostly offered a limited number of products and services at a high price in their portals. For instance, some firms provide caretaking services, some supply armchairs. There were also

several IT artifacts that supported independent living for older adults (Keijzer, 2016) include medical applications (e.g., remote diagnosis, telemedicine), care applications (e.g., fall detection, medication dispensers) and safety applications (e.g., alarm systems, monitoring systems). However, maybe there was sufficient supply, but that the information is difficult to find. The situation worsens for people who are not digitally skilled or do not really speak the language. However, Case 2 ZoDichtbij aimed at changing the social practices in which elderly care becomes more organized.

Reason for the change in Case 2 ZoDichtbij

As mentioned before, since 2015, the Dutch government has emphasized the shift from a welfare society towards a participatory society. In other words, the responsibility and the execution of health care in the Netherlands were shifted towards the municipalities. Therefore, local authorities, for instance, municipalities, become (a) responsible for supporting citizens so that they can actively participate in society, (b) free to decide for themselves how they meet these targets, and (c) accountable at a local level for their performance. New legislation in the Netherlands means new ways for municipalities to collaborate, but at the same time, it is vital to A) balance between financial costs and benefits, B) spread risks, C) ensure service quality, and D) manage and safeguard the social system. Therefore, local governments were actively searching for solutions to mitigate the transition phase. Together with the support of a Dutch metropolitan city, the foundation established a Living Lab setting to explore the practicality of an online health and well-being platform, which could support elderly people to age-in-place (Keijzer-Broers, 2016).

New Business Model in Case 2 ZoDichtbij

The new business model introduced by Case 2 ZoDichtbij is a shift from the traditional product and service providers in stores or online portals to an all-in-one multi-sided platform aiming to serve stakeholders to help people age-in-place (Figure 3.13). The digitalized business model of Case 2 ZoDichtbij has three target customers: (i) End-users, e.g., elderlies and caretakers, (ii) Sellers or providers of elderly support products or services, and (iii) local government, e.g., municipalities. Each target group will be offered a specific value proposition. For the older citizens, Case 2 ZoDichtbij provides support with better communication to stay and live at home independently as much as possible by offering social contacts, agenda, profile information with local activities. Case 2 ZoDichtbij offers to unburden the informal caretakers and lighten the healthcare load with support and guidelines to the elderly to be informed in one place at home. The platforms offer providers access to customers and coordination to promote and deliver services in a marketplace (Keijzer-Broers, 2016). The value proposition for local government and municipalities provides information and advisory services to communicate with their citizens and data-collection (anonymized) from the residents.

The key activities of Case 2 ZoDichtbij can be categorised into three groups: (1) communicating with all partners to keep them on board, (2) Developing and maintaining the all-in-one platform, and (3) Data analytics and recommendation system. The key resources of Case 2 ZoDichtbij are its networks and the established platform. Regarding customer relationships, there is no physical contact with customers. The platform can be used as a tool to communicate with customers.

Despite the emphasis on simplicity, the platform has a high initial investment. The primary source of expenditure is developing and maintaining IT infrastructure. Since Case 2 ZoDichtbij is a non-profit entity, they are still working on the revenue streams. They have a mixture of revenue streams; (1) Freemium model for elderly people and informal caretakers, (2) Advertisements to providers, and (3) Annual fee to municipalities.

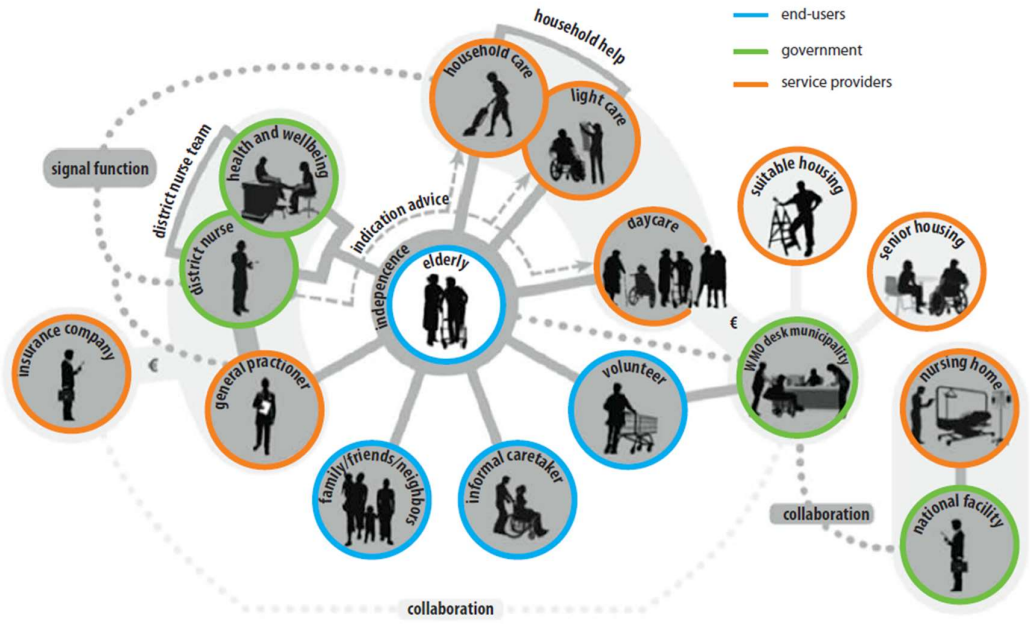

Figure 3.13: Stakeholders surrounding disabled and elderly people, based on the sketch from ANBO 2015 (Keijzer-Broers, 2016)

At the time of research data collection, Case 2 ZoDichtbij was in the implementation stage. The phase of "proof of concept" and also "minimum viable product" was passed successfully. Although the testing steps took quite a long time, the management team emphasized being prepared well for the launching stage.

"That 'proving the BM' is something that took quite a long time, but the preparation has to be very thorough and good. We only can do it once in the right way. If we pick too early and it is not safe or secure or everything that you need around platforms, then we won't pass the bar. So, that's why we had a lot of preparation time.<Keijzer>"

The platform was initially implemented in a single region. By getting feedback from stakeholders, the platform was modified. The improved version of the platform was implemented in another region on a step-by-step approach. Currently, Zo-Dichtbij is implementing its platform in various municipalities, including Alkmaar, Leiden, Rotterdam, Delft, and Midden Delfland.

Another issue that led to the long delay was building trust between the parties and ensuring the proper functioning of the BM. After testing and implementing the platform in three regions, Case 2 ZoDichtbij acquired its first funded project in the fourth region. The partners are now confident that they can trust the novel BM.

3.4.4 Publishing industry with a focus on Case 3 "Iddink"

Publishing industry

The Dutch printing industry is Europe's sixth-biggest industry (Eurostat, 2018). In 2018, digital publishing revenues amounted to 10% of the total revenues in the Netherlands, and this figure is expected to rise in the future (PWC, 2019). Some of the benefits that incumbents should investigate and

re-consider to make the most of digital platforms include the increased ability to share global content, access to content anytime and anywhere, and the ability to reduce or completely eliminate printing itself, which can effectively cut production and supply chain costs (Hess and Constantiou, 2018). Furthermore, one of the benefits of digital platforms is to provide interactive learning and digital teaching methods to increase the flexibility of the educational system. Different stakeholders, such as instructors, parents, students, publishers, and distributors of learning materials, might benefit from such digital platforms. According to the Dutch educational publisher organization, measures are being taken to combine IT-based applications into learning techniques to support individualized e-learning and the transition to digital education. To stay competitive and protect their position in the market, traditional printing and publishing firms, as well as incumbents, will have to face the current digital transformation of products, services, processes, and management structures and rethink their business models.

Printing industry revenues for the Netherlands fell from €4.7 billion in 2009 for several years. Despite being less affected by the euro crisis than other nations, the Netherlands had one of the fastest declines in Europe. However, since 2015, it has been relatively stable at €3.4 billion. Figure 3.14 shows the Netherlands' print and related services production value. The change in customer preferences and popularity of digital products and services might be seen as the most significant reason for the decline

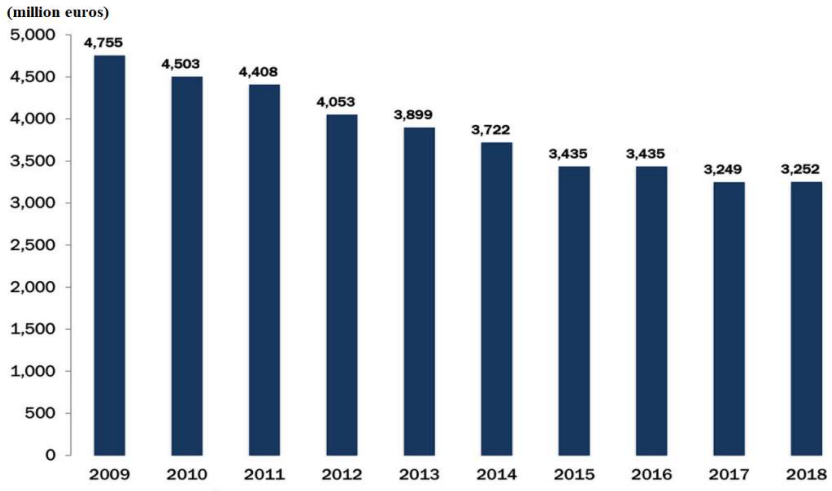

Figure 3.14: Print and related services production value in The Netherlands
(*Eurostat, digitalprintexpert.de*)

of the printing industry; however, digitalization can bring benefits to the industry. Compared to other industries, the printing and publishing business has been subjected to various digital disruptions for over fifteen years and has led to valuable insights to new entrants and investors. Because of its user-centric feature, the value of digital platforms for both publishers and readers is critical to consider when organizations design competitive strategies. Furthermore, digital platforms provide new means of generating and disseminating content. From a financial standpoint, this would be a big challenge for traditional distributors of physical copies of books, especially if all contents are digitized and distributed via electronic devices. Although, the trend towards the use of digital textbooks shows slow growth in the last decade (Figure 3.15).

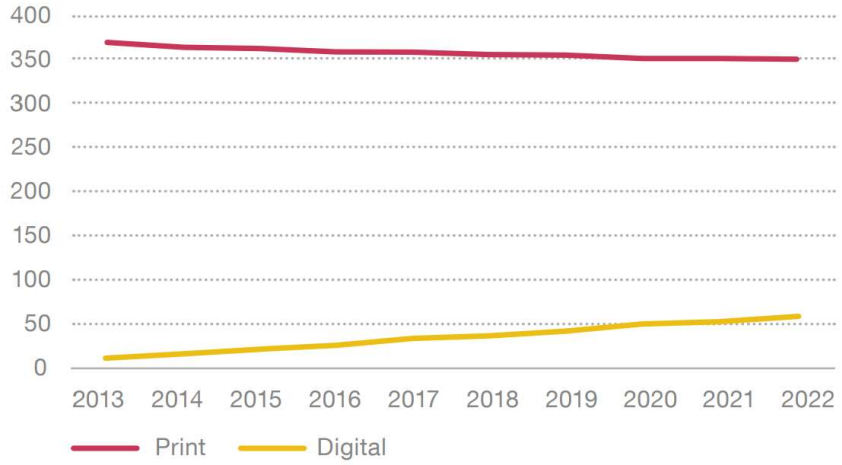

Figure 3.15: The Dutch educational book publishing market (million €) *(PWC, 2018)*

Competition, in the shape of new technology, market upheavals, and the digital revolution's wave, has created new opportunities and challenged the traditional printing and publishing processes. Because of the move towards the online, downloading piracy, and other e-solutions that have diminished the print market, the printing and publishing business was one of the first to "collapse" (Faeste et al., 2015). The idea of printing on demand was made practical by digitizing the whole value chain. Books are no longer read on paper but rather on tablets, laptops, and e-readers as e-books, which have significantly influenced the publishing business. Indeed, digital transformation has had a significant impact on producing and disseminating content in the print and publishing industries (Hess & Constantiou, 2018).

The third and fourth cases, e.g., Case 3 Iddink and Case 4 Drukwerkdeal, operate in the printing and publishing industry. Both take advantage of digital transformation to compete with rivals, one in the educational sector and the other one in the advertising and B2B sector. In the next section, background information for both case studies is presented.

Brief History & Development of Case 3 Iddink

Case 3 Iddink, with headquarters in Ede, the Netherlands, provides educational services throughout the Netherlands, Belgium, and Spain. Case 3 Iddink began as an office supply and book store in 1922. The firm began distributing educational (text) books to the secondary education market in the 1980s. In the 2000s, it launched the first online ordering website for students. It eventually rose to the top of the Netherlands' secondary education market. Currently, Case 3 Iddink has more than 55 permanent employees in the Netherlands, in addition to the many temporary workers who carry out warehouse work every year during the summer holidays. In the Netherlands, Case 3 Iddink is a market-leading educational service provider specializing in secondary and vocational education. Case 3 Iddink currently sells and rents books and digital teaching materials to more than 300,000 students in the Netherlands in more than 10,000 titles. The company expanded its operations in Belgium in 2004. In Flanders, The Belgium branch currently supplies books and digital teaching materials to nearly 120,000 students. The Spanish branch was founded in 2009. The Spanish branch has grown to supply 270 schools and more than 80,000 students.

Products & Services of Case 3 Iddink

The old BM of Case 3 Iddink is based on the traditional distribution of printed materials to Dutch schools. Case 3 Iddink currently sells books (around 6 million every year) and rents (about 2.2 million) books to more than 300,000 students in the Netherlands. This distribution of learning materials takes place through two models: External Book Fund (EBF) and Internal Book Fund (IBF) service models. Schools can use the EBF model to outsource not only learning materials such as textbooks and workbooks but also services such as packaging, billing, administration, information management, and home delivery. Schools serve as intermediaries between book distributors and students in the IBF service model. Schools purchase educational materials in quantity from distributors at a discount, then sell or rent them to students. Case 3 Iddink focuses on the EBF model since it relieves schools of the time and effort required to organize and distribute books to pupils.

In addition to selling and renting books as products and services, in recent years, Case 3 Iddink, by developing the company's IT applications, offers digital education solutions such as a student monitoring system and a virtual learning environment. Case 3 Iddink provides three different service platforms for their three different customer segments:

1) Magister as a service for secondary education,
2) Eduarte as a service for MBO, and
3) Alluris as a service for higher education.

In addition to providing services for educational regular school activities, Case 3 Iddink offers supplementary learning materials to help the student's understanding of the subject matter through various platforms such as:

4) Online Portal Toets (providing personal and secure test environment to practice)
5) WinToets (creating and managing item banks and tests, printing tests, offline and online use)
6) Quayn (test and exam system in the Cloud)
7) Bloqs (supplies fully digital learning resources for high school students)

As a new way of business, Case 3 Iddink provided a platform to offer a well-rounded educational service in its all-in-one education platform in 2014 (See Figure 3.16).

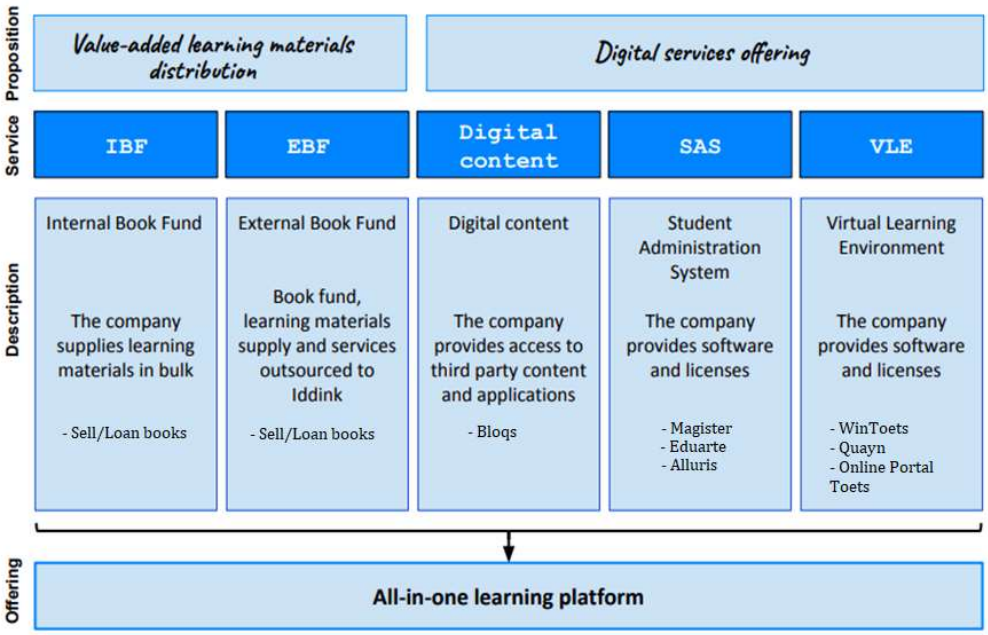

Figure 3.16: The service offering of Case 3 Iddink
(adapted from Raguraman (2019))

Business Strategy of Case 3 Iddink

While the firm continues to improve its service offering by developing new features for each product individually, the company's first step to implement its strategy was to integrate all of its products and services onto a single platform. Using its aptitude for IT, the firm rethought its strategy and decided to expand in two directions. The two strategic paths (Figure 3.17) are as follows:

A) Digitization: Increasing the company's digital presence.

B) Internationalization: Establishing a presence in other European countries.

The digitalization strategy began in 2014 with the integration of the SAS (student administration system) and VLE (virtual learning environment), followed by the addition of digital learning materials and third-party content to the digital platform. Consequently, Case 3 Iddink was able to provide its target users—parents, students, schools, and teachers—with an integrated solution that enables flexibility, customised learning, and improves efficiency and collaboration. The company's existing knowledge and a leading position in the Dutch market were leveraged into the European market through the internationalization strategy. As a first step, they expand their business in the Dutch-speaking part of Belgium and then in Spain. In 2018, Case 3 Iddink served books and digital teaching materials to around 120,000 students in Belgium and more than 80,000 students.

To achieve these strategic goals, the company plans to deploy the all-in-one platform that can be used in other countries and is willing to incorporate and align this integrated digital service and the internationalization strategy to its new business model.

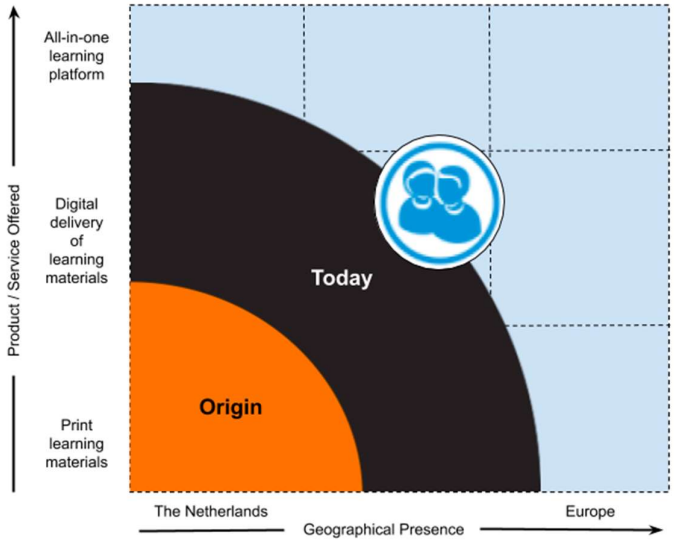

Figure 3.17: Business Strategy of Case 3 Iddink

Business Model Innovation Process in Case 3 Iddink

Because this study focuses on exploring the role of human and organisational factors during the BMI process, particularly the implementation phase, it is critical to understand the differences between the old and new business models of Case 3 Iddink. Therefore, based on the findings from desk research and the data collected from interviews, this section describes the BMI in Case 3 Iddink. The changes in the company's business strategy and model are depicted in Figure 3.18.

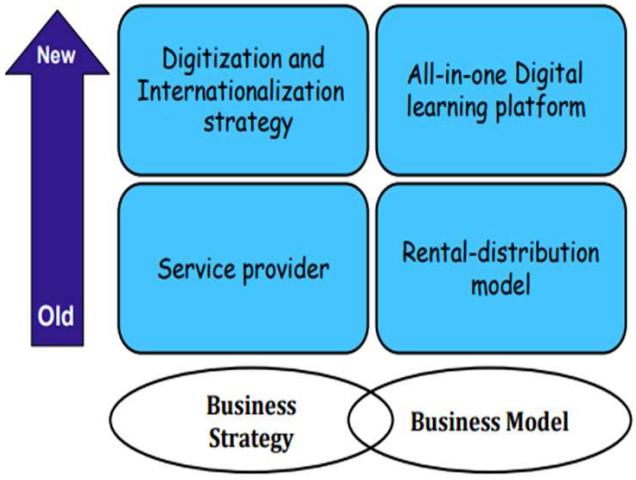

Figure 3.18: Relationship between old and new business strategy & business model Case 3 Iddink (Adapted form (Raguraman, 2019))

The following sections are based on the researcher's interpretation of the business model innovation in Case 3 Iddink based on desk research, company documents as well as previously done case studies on the company.

Old Business Model of Case 3 Iddink

The old BM of Case 3 Iddink represents a logistical service provider that solely serves the Netherlands, distributing printed learning materials to schools, students, and parents. The old BM also provides a one-stop shop that includes an educational platform as well as an online book purchase facility. With this service, every student gets access to the appropriate educational content at the right place and right time. As a result, all of the books were delivered on schedule, and the student had access to digital learning materials through the virtual learning environment. The key resources of the old business model included warehouse employees for logistics, IT developers and designers, learning material specialists, and non-technical staff in the sales and marketing departments. The key partners were supply chain partners of educational content. In the old business model, the key resources were the company's skilled employees, in both logistic operations as warehouse employees, and skilled IT developers to design and maintain the platform and its digital services. To interact with customers, the company communicates with schools through training, workshops, and consultancy conversation via phone or in a face-to-face setting.

Case 3 Iddink's cost structure was simple. Personnel expenditures, which included staff compensation, as well as partnership costs and other IT development and web-hosting costs, were the most significant expenses. The revenue streams were categorised into three groups: (i) selling books with a profit margin, (ii) renting books, and (iii) consulting and training fees paid by schools to operationalize the service and solve issues.

Reasons for changing the business model in Case 3 Iddink

The educational industry employs a wide range of learning materials. Given the rapid rate of technology advancement and digitalization, schools are required to keep up with current trends and present their students with the most up-to-date and effective learning methods. Case 3 Iddink, a key player in the educational services sector, updated its strategy and business model to meet this market need by combining its products and services into an integrated solution.

Through its EBF (external book fund) and IBF (internal book fund) service models, the company's traditional BM (national level service model) is centered on the delivery of printed educational materials. Despite the fact that these service models remain the firm's main strength and account for the majority of revenues, the company recognized that its future success hinged on its capacity to adapt, innovate, and globalize. As a consequence of a strategic discussion with partners, the firm has shifted its focus to a digital strategy and globalization. Figure 3.19 depicts the changes between the old and new business models in Case 3 Iddink.

Using its Dutch market position as a foundation, the firm planned to globalize and integrate its product and service offering into a one-stop shop platform. This integrated platform includes (1) Learning material distribution (textbooks, workbooks, exam material), (2) Digital learning content distribution (e-books, published content), (3) The student administration system and virtual learning environment, and (4) Third-party application and tools. Furthermore, the information management system offers a

single sign-on feature that allows schools, instructors, and parents to monitor a student's progress. For various course modules, students can access digital learning materials.

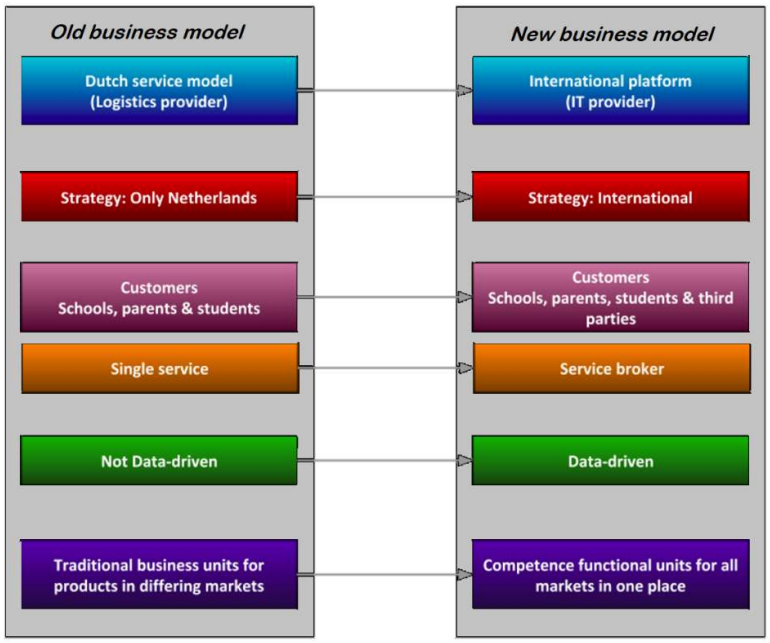

Figure 3.19: The business model change - old to new Case 3 Iddink
(adapted from Raguraman (2019))

New Business Model of Case 3 Iddink

The new BM represents a transition away from traditional logistical services and toward a worldwide cloud service provider, which aligns with the company's digital focus and globalization strategy. Case 3 Iddink has three target customers in its digitalized business model: (i) schools, (ii) students and parents, and (iii) third-party providers. A unique value proposition will be offered to each target group. Case 3 Iddink provides a one-stop shop for schools, consisting of a platform and learning material content. While the purpose for outsourcing this service remains the same, the new platform includes a recommendation system and allows for the preselection of effective learning techniques. Students may use the platform to receive an efficient and tailored learning process through recommendations and data analytics, in addition to receiving learning materials. The platform allows third parties to offer value to schools, students, instructors, and parents by allowing them to extend their products and services.

The key activities of Case 3 Iddink can be categorised into three groups: (1) The distribution of textbooks, workbooks, and other materials, (2) Managing all in one Platform, and (3) Data analytics and recommendation system. The key resources of Case 3 Iddink are its employees and the established platform. In comparison to the old BM, the new business model requires greater IT resources to be implemented. Data scientists, developers, designers, and IT partners should be included. In terms of customer relationship management, there would be less physical contact and more personal engagement through the new platform in the new BM. The new platform fosters and stimulates a continual flow of learning material purchases by providing a high level of self-service offered by third parties.

The cost centers would stay the same as the old BM; however, developing and maintaining the IT infrastructure required a great share of financial resources. The new revenue streams, on the other hand, can be divided into six categories: (1) selling books with a profit margin, (2) renting books, (3) one-stop shop platform services for schools, (4) consulting and training fees paid by schools to optimise usage of the service and solve issues, (5) additional learning material for students, and (6) broker fees from third parties.

The next section provides a description of Case 4 Drukwerkdeal, which also is active in the printing and publishing industry.

3.4.5 Printing industry with a focus on Case 4 'Drukwerkdeal'

Brief History & Development Case 4 Drukwerkdeal

Case 4 Drukwerkdeal was founded in 2005 as an Internet-based printing company that developed a more efficient and cost-effective way of printing by combining multiple print orders onto one sheet, a process known as ganging, which entailed combining multiple orders from customers into a single order to share the initial and operating costs. In 2007, the firm established an e-commerce platform that allowed numerous stakeholders engaged in the printing process, such as customers, shipping companies, print outsourcing companies, to be integrated. The platform allows partners to automate key processes while also providing customers with a more efficient and straightforward ordering procedure. By 2009, the firm had grown so quickly, with a turnover of 9 million euros, that most of the operational activities were insourced to make improvements as quickly as possible.

However, the unique way of doing business by Case 4 Drukwerkdeal became popular in 2010, and the market was flooded with internet farmers who all did the same trick. There were between 200 and 300 internet printing companies that competed on price. Then Case 4 Drukwerkdeal made a strategic choice to profile themselves more as a quality printer with a personal customer approach. Case 4 Drukwerkdeal new platform of one-stop shop for printing orders launched in 2013. In the new platform, the focus changed from price competition to providing companies with a reliable and approachable partner. One of the distinctive features of Case 4 Drukwerkdeal is that it allows customers to choose the delivery time for their print orders, providing them exactly what they want, when they need it, at an affordable price and with fast delivery timeframes. Therefore, the company's business model has shifted from a low-cost provider to a service-oriented business model. Furthermore, due to Case 4 Drukwerkdeal's rapid growth, the firm switched from a functional organisational structure to a Spotify (Matrix) structure to facilitate an agile approach and foster employee innovation. Each team (also known as a 'squad') in the Spotify model works autonomously and only communicates with other teams when there is a dependence. Similar products were grouped and assigned to the same squad. Each squad team has its own web developer, product manager, designer, and sales representative. The fundamental advantage of a Spotify model is that it incorporates flexibility, autonomy, creativity, and entrepreneurial spirit between employees.

With the print industry's competition growing quickly, Case 4 Drukwerkdeal's CEO felt that the firm needed to grow or merge with a larger competitor to survive in the long term. Thus, by the end of 2014, Case 4 Drukwerkdeal had been acquired by Vistaprint, a French business with a US stock market listing and an official Dutch headquarters. Vistaprint is an international online marketing and printing firm specialized in customizable products for small businesses and consumers. Case 4 Drukwerkdeal was able to increase its service offering in both the business-to-business (B2B) and business-to-customer (B2C) segments as a result of this merger and acquisition (M&A).

Products and Services Case 4 Drukwerkdeal

The company's core business is to provide a one stop shop for printed content by streamlining the print ordering process and bringing all of the stakeholders together on one platform. As the core products, Case 4 Drukwerkdeal provides custom printed matter in more than 10,000 printed products and materials (Drukwerkdeal website) categorised into twelve groups, i.e., photo products, stickers, business gifts, promotion, corporate identity, catering industry, presentation, outdoor advertising, clothing and textile, bags, packaging, inspiration, and advice. In addition, they offer several added-value services to their customers, such as design service, advice on materials and techniques, and personal service. Customers may, for example, use their branding solutions to have their promotional materials distributed in certain locations without having to establish separate arrangements with distributors.

Business Strategy of Case 4 Drukwerkdeal

Case 4 Drukwerkdeal's strategy was to become a one-stop printing solution with an emphasis on customer satisfaction. However, rising rivalry in the printing business has compelled the company to innovate and focus on product quality and service. In 2007, the approach shifted from a low-cost, limited product offering to a somewhat higher-priced, broad-variety, service-oriented strategy.

To compete and focus on consumer needs, the firm raised the number of product offers. This covers not just standard printing items such as photos, stickers, posters, and clothes but also value-added services such as branding and corporate identity solutions. Aside from that, the corporation expanded its market reach by building a reseller program and franchise to capitalize on its brand. The firm switched from a functional organisational structure to a Spotify model to be more automated and boost the entrepreneurial spirit of the teams by expanding the product lines. As a result, the BMI shifted from a low-cost leader to a service-oriented printing business model.

Business Model Innovation Process in Case 4 Drukwerkdeal

Case 4 Drukwerkdeal has innovated twice in its business model throughout its short lifespan: (i) the commencement of an e-commerce platform in printing company in 2007 and (ii) the shift in strategy from a low-cost, narrow product offering to a wide product and service offering in 2013. The second business model innovation, in which the company likewise shifted from a traditional organisational structure to a matrix organisational structure, will be the subject of this study. The old and new changes in the company strategy and business model are depicted in Figure 3.20.

To understand and analyse the BMI process, the researcher used data from desk research, company documents, and previously completed case studies on Case 4 Drukwerkdeal, which were also validated via interviews.

Old Business Model of Case 4 Drukwerkdeal

The former business model of Case 4 Drukwerkdeal is a low-cost, limited product-oriented model that provides a one-stop shop for high-quality printing at low rates, user-friendly and error-free ordering process, and short delivery times. Having 'Ganging technique' and maintaining 'E-commerce Platform' as key activities, the B2B and B2C markets, which comprise the graphics industry both SMEs, large enterprises, as well as individuals, are the key target customers. To maintain the relationship with customers, Case 4 Drukwerkdeal uses the platform as a self-service portal via different channels like chat, email, and phone.

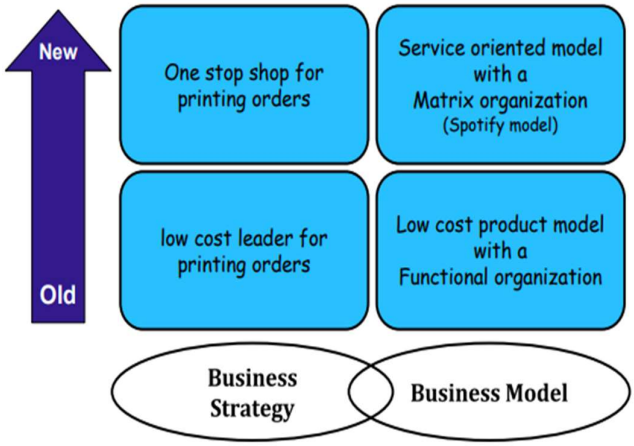

Figure 3.20: Relationship between old and new business strategy & business model Case 4 Drukwerkdeal

Because the company performs all of its IT functions in-house, the company's key partners are (i) print outsourcing firms - external companies that produce products and services, (ii) nearshore communities - a type of multi-sourcing company or community that benefits from the scalability of resources when needed, and (iii) shipping companies that deliver finished goods from printing facilities to customers. Case 4 Drukwerkdeal has a cost structure that includes printing expenses from partner firms, staff costs, and operating expenditures. Case 4 Drukwerkdeal's old BM relied only on selling its products and services to clients via the e-commerce platform as a revenue stream.

Reason for the Change - against fierce competition Case 4 Drukwerkdeal

Many printing companies have expanded their businesses online as a result of the emergence of the internet and its popularity, which led to increased competition in the industry. Many printing firms began selling their products online not just as a result of the burgeoning e-commerce sector but also because it was simple to implement.

As the market leader in low-cost printing in the Netherlands, the firm realized that competitors might easily copy its approach of bundling orders (i.e., "ganging") and placing product information online. Case 4 Drukwerkdeal was forced to innovate its BM due to increased competition in the print sector. The firm intended to create a unique platform that would allow consumers to design and track their print orders while also increasing order processing speed (e.g., automated invoicing). At the moment, Case 4 Drukwerkdeal is concentrating on expanding its product line and streamlining the ordering procedure in order to become a one-stop shop for printing supplies.

Case 4 Drukwerkdeal was rapidly expanding and wanted to sustain the entrepreneurial mindsets of its employees in addition to expanding the product portfolio. As a solution, the firm switched from a functional to a matrix organisational structure, which the managers refer to as the "Spotify" model. Each team (also known as a 'squad') in the Spotify model works autonomously and only interacts with other teams when there is a dependence. Products that were similar were grouped together and assigned to the same squad. Each squad has its own web developer, product leader, designer, and sales specialist in Case 4 Drukwerkdeal. The fundamental advantage of a Spotify model is that it encourages employee

flexibility, autonomy, and entrepreneurial behavior. Figure 3.21 depicts the changes between the old and new business models.

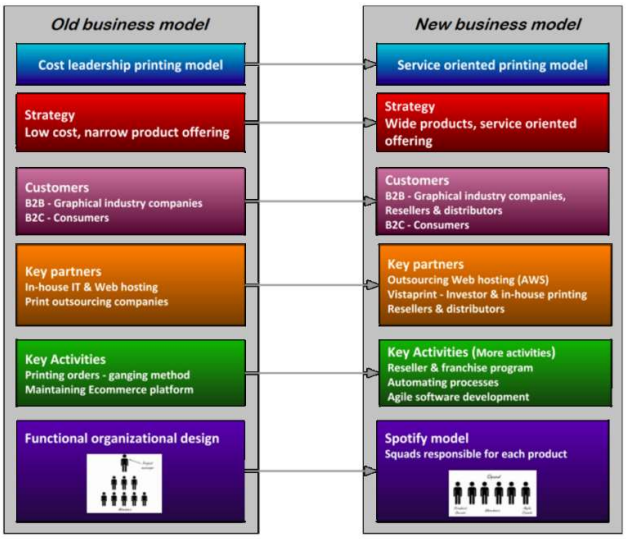

Figure 3.21: The business model change - old to new Case 4 Drukwerkdeal

New Business Model of Case 4 Drukwerkdeal

In the new business model of Case 4 Drukwerkdeal, there are seven components that have been updated. When compared to the old model, only the channels and customer relationship management are nearly the same.

They preserved their core propositions, such as a simple and error-free ordering process, a wide choice of high-quality goods, a competitive pricing, and quick delivery, based on the company's one-stop shop for printing products (24 hours delivery option). Case 4 Drukwerkdeal provides value-added services such as corporate identity and branding solutions in addition to the traditional business model. Aside from that, third parties and resellers can use Case 4 Drukwerkdeal's resources through their shop. Those value-added services made Case 4 Drukwerkdeal a reliable partner who cares about customer needs and helps them to bring their novel ideas into reality.

In addition to printing orders using the ganging process and managing the e-commerce platform, Case 4 Drukwerkdeal has launched a franchise and reseller program, which includes the white-labeling of its items. An international company (Vistaprint) and a web hosting provider (Amazon) have been added to the key partners of the new business model, in addition to the existing partners.

Case 4 Drukwerkdeal needed to acquire talented individuals who knew how to work in squads as key resources in order to successfully implement the new business model. Each team has its own web developer, product manager, designer, and sales representative. In terms of the customer segment, in addition to graphics industry firms and consumers, reseller companies who use Case 4 Drukwerkdeal's white-label store through APIs have been added.

Financially, Case 4 Drukwerkdeal has the same cost structure as the old BM, namely, printing costs, personnel costs, and operating costs. However, when the quality of printed items varies from one supplier to the next, or when product delivery becomes a subject of complaints, the new business model

becomes more risky and complicated. Through the e-commerce platform, the revenue stream of the company is by (i) selling its products and services to clients and (ii) running a reseller and franchise program.

3.5 Summary

The chapter started with the definition of SMEs and then discussed the distinct difference between SMEs and large enterprises. The internal organisational factors, e.g., ownership and business legal structure, organisational structure, strategic focus, financing, human resources, organisational culture, and innovation management together with external environmental factors, e.g., industry sector, financial support, market niche, dependency on global or local economics and ability to communicate with external stakeholders cause a significant difference in the performance of SMEs and large enterprises. SMEs provide 66% of the jobs in EU countries; however, SMEs, on average, are less innovative than large enterprises (OECD, 2018). To empower European SMEs to improve their performance and innovativeness, European Commission defined several research projects. One of the first research projects to consider BM innovation in European SMEs was the ENVISION project. The key findings of the ENVISION project were presented in this chapter to provide contextual information to BM innovation in European SMEs. To explore the human and organisational factors in implementing a BMI in SMEs, an in-depth study of four cases was carried out, and the context and basic information of the cases were provided in this chapter. Case 1 Weber ran a new BM by implementing advanced technology in hospital beds in parallel with its old business of metalworking machines. Case 2 ZoDichtbij developed a health and well-being platform to make matches between (1) people age-in-place looking for products and services, (2) product and service providers to market their products and services, and (3) government authorities to coordinate and control the quality of care in elderlies. Case 3 Iddink, as a traditional educational service provider, made a shift towards more digital educational services in the Netherlands, Belgium, and Spain. Case 4 Drukwerkdeal, as an Internet-based printing company, shifted from a low-cost provider model to a service-oriented business model. To do so, Case 4 Drukwerkdeal changed its functional organisational structure to a Spotify (Matrix) model in order to become agile and encourage innovative behavior amongst employees. Those changes in BMs created several human and organisational-related issues. Although detailed within and cross-case analyses will be performed and presented in chapter 7, general information about each case, including the industrial sector, brief history, key products and services, business strategy, old and new business model, and reasons for the change in BM were presented in this chapter. So, this chapter provides background information on the research domain as well as contextual information to the specific case studies.

The next chapter will present the research design and how we aim to quantitatively examine our proposed hypotheses (section 2.9) and qualitatively explore the implementation of BMI (section 3.4). Then we discuss the intersection point of quantitative and qualitative parts for interpretation of results and building theories.

Chapter 4: Research Method

A mixed-methods approach indicated in chapter 1 (section 1.5) looks to be an appropriate research technique for exploring the conceptual gap on human and organisational factors between business model innovation and firm performance. This chapter focuses on the rationale for a mixed-methods approach and describes how the mixed-methods approach was used in practice.

4.1 Mixed-Method Approach

For more than a century, quantitative and qualitative research paradigms have been disputed (R. B. Johnson & Onwuegbuzie, 2004). Scholars have made a choice between the positivist scientific model of research associated with quantitative methods and the interpretative model associated with qualitative ones (Howe, 1985). Positivism argues that there is a single reality and seeks to identify causal relationships through objective measurement and quantitative analysis (Firestone, 1987). Traditional *quantitative* research focuses on theory/hypothesis testing, deduction, falsification, explanation, and prediction, making use of standardized data collection methods and statistical analysis.

Constructivism or qualitative research emerged as an alternative to the positivist form of inquiry as researchers sought to examine the context of human experience (Schwandt, 2000), with a focus on inductive theory generation. The qualitative paradigm has been receiving greater attention in the last decade (Creswell & Poth, 2018). Researchers who work within the constructivist paradigm seek to illuminate the reality of others through the process of detailed descriptions of their experiences (Appleton & King, 2002). In the interpretative paradigm, the researcher has a focus directed at a deeper understanding of what is happening and makes use of direct observations and a smaller sample, for instance, by researching a single case. The major characteristics of traditional *qualitative* research are induction, discovery, exploration, theory/hypothesis generation, with the researcher as the primary "instrument" of data collection, and qualitative, text-based analysis.

The field of mixed-methods is relatively new (Ngulube & Ngulube, 2015). According to Sale et al., (2002) and Stevenson (2005), competition between paradigms is not helpful, and focus on ways in which traditional rivalries may be usefully combined. It is proposed that mixed-methods may be the third paradigm, capable of bridging the gap between the quantitative and qualitative positions (Johnson and Onwuegbuzie, 2004). Gaining an understanding of the strengths and weaknesses of quantitative and qualitative research (summarised in Table 4.1) puts a researcher in a position to mix or combine strategies and to make the best use of them (Johnson et al., 2003).

In order to fulfill the research objectives and address the research questions, this research adapted a mixed-method approach (Tashakkori and Teddlie, 2003). A mixed-method approach enables us to capture the unexplored complexity of human and organisational phenomena (Sandelowski, 2001) during changing process of a BM in SMEs, in particular, the employees' role and the way it can be managed to enhance BM performance.

Table 4.1: Strengths and Weaknesses of Mixed Research (Johnson and Onwuegbuzie, 2004)

Strengths

- Words, pictures, and narratives can be used to add meaning to numbers.
- Numbers can be used to add precision to words, pictures, and narratives.
- Can provide quantitative and qualitative research strengths
- Researchers can generate and test a grounded theory.
- Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.
- A researcher can use the strengths of an additional method to overcome the weaknesses in another method by using both in a research study.
- Can provide stronger evidence for a conclusion through convergence and corroboration of findings.
- Can add insights and understanding that might be missed when only a single method is used.
- Can be used to increase the generalizability of the results.
- Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice.

Weaknesses

- Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
- Researchers have to learn about multiple methods and approaches and understand how to mix them appropriately.
- Methodological purists contend that one should always work within either a qualitative or a quantitative paradigm.
- More expensive.
- More time-consuming.
- Some of the details of mixed research remain to be worked out fully by research methodologists (problems of paradigm mixing, how to qualitatively analyze quantitative data, how to interpret conflicting results).

In the next section, the principles related to how to design a mixed-methods research that is appropriate for this research are discussed. To design a mixed-method study, researchers must understand and carefully consider each dimension of mixed-methods design. Therefore seven major design dimensions of a mixed-method approach are discussed.

4.1.1 Mixed-Method Design Selection

To illustrate the method used in this research, the step-wise design of a mixed-method approach introduced by Schoonenboom and Johnson (2017) is applied. Seven major design dimensions, including purpose, theoretical drive, timing, point of integration, and design complexity, are discussed to identify the appropriate type of mixed-method design for this research.

Purpose of doing mixed-method research: The number of possible purposes for mixing is very large (Schoonenboom & Johnson, 2017) and multiple research questions of different nature can appropriately be answered using different approaches. In this research, to investigate the mediation and moderation effects on the relationship between BMI and firm overall performance (RQ3 & RQ4), there is quite enough literature but not integrated into one model and specified towards European SMEs, we carry out two surveys to test research hypotheses developed (chapter 2). The qualitative analysis in the multiple case study takes the outcomes of the quantitative components and aims at providing an

"*Explanation*" for results of the quantitative analysis by relating them to the contextual circumstances. Using a case study approach assists us in gaining an in-depth understanding of the human and organisational factors in implementing BM innovation, which, in turn, helps to explore and evaluate the model developed in the quantitative stage furthure. Therefore, the qualitative research is used for "*Complementarity purpose"* and seeks elaboration, enhancement, illustration, clarification of the outcomes of the quantitative components and might explore new dimensions. We sought convergence and corroboration of results based on different methods; to cheive broader validity (Greene et al., 1989). So, the purposes of applying a mixed-method approach in this research are "*Complementarity"*, and "*Explanation*".

Theoretical drives: Although in the phases three and four, see Figure 4.1 for more detail) of the research, quantitative approaches were used to test research hypotheses and provide a ground for further analysis in the SME domain, the qualitative part of the study in phase five was also crucial to investigate and develop new ideas in a real context. The case study leads to exploring key moderation factors which affect the implementation of BMI, which were not clearly discussed in the literature. In that sense, this study is neither qualitative, nor quantitative dominant, and both are of equal value and weight. So this research is an *Equal-status mixed-methods research*.

Sequential vs. concurrent designs: Since the case study research in phase five (qualitative component) was conducted to elaborate, enhance, illustrate, clarify outcomes of the quantitative components and in terms of timing of the components of the research approach, the method used in this research are sequential.

Dependent vs. independent designs: The case study research in phase five (qualitative component) was conducted to find new perspectives, and discovery of paradox and additional explanation; therefore, the qualitative component builds on the outcomes of previous component (quantitative). Hence the components of the research method are dependent.

Point of interaction: Determining where the point of integration at which the qualitative and quantitative components are brought together (Morse & Niehaus, 2009; Guest et al., 2013) is an important, if not the most important decision in the design of mixed-methods research. Tashakkori and Teddlie (2009) distinguish four different stages of an investigation: the conceptualization stage, the methodological experimental stage (data collection), the analytical experimental stage (data analysis), and the inferential stage. According to these authors, in all four stages, mixing is possible, and thus all four stages are potential points or integration. Having one or more points of integration is the distinguishing feature of a design based on multiple components. In this research, there are two points of integration. First, in the data analysis stage in which the results of two surveys are used to develop interview guidelines and questions for the case study. Second, in the *inferential* stage in which the findings of both surveys, together with case study results are integrated and used to answer research questions and draw conclusions.

Dimension of complexity: The quantitative and qualitative components have multiple points of integration, so our mixed-method approach is not simple[1]. The research design, not only contains

[1] In the literature, simple and complex designs are distinguished in various ways. A common distinction is between simple investigations with a single point of integration versus complex investigations with multiple points of integration (Guest 2013).

multiple points of integration but also integrates data that are originating from different sources and existing at different levels, for instance, at the firm level and individual level. According to Teddlie and Tashakkori's (2009), our research design can, therfore, be considered as a fully integrated mixed[1] design. The outline of the mixed-methods research which applied in this research shown in Figure 1.2, represented here in Figure 4.1.

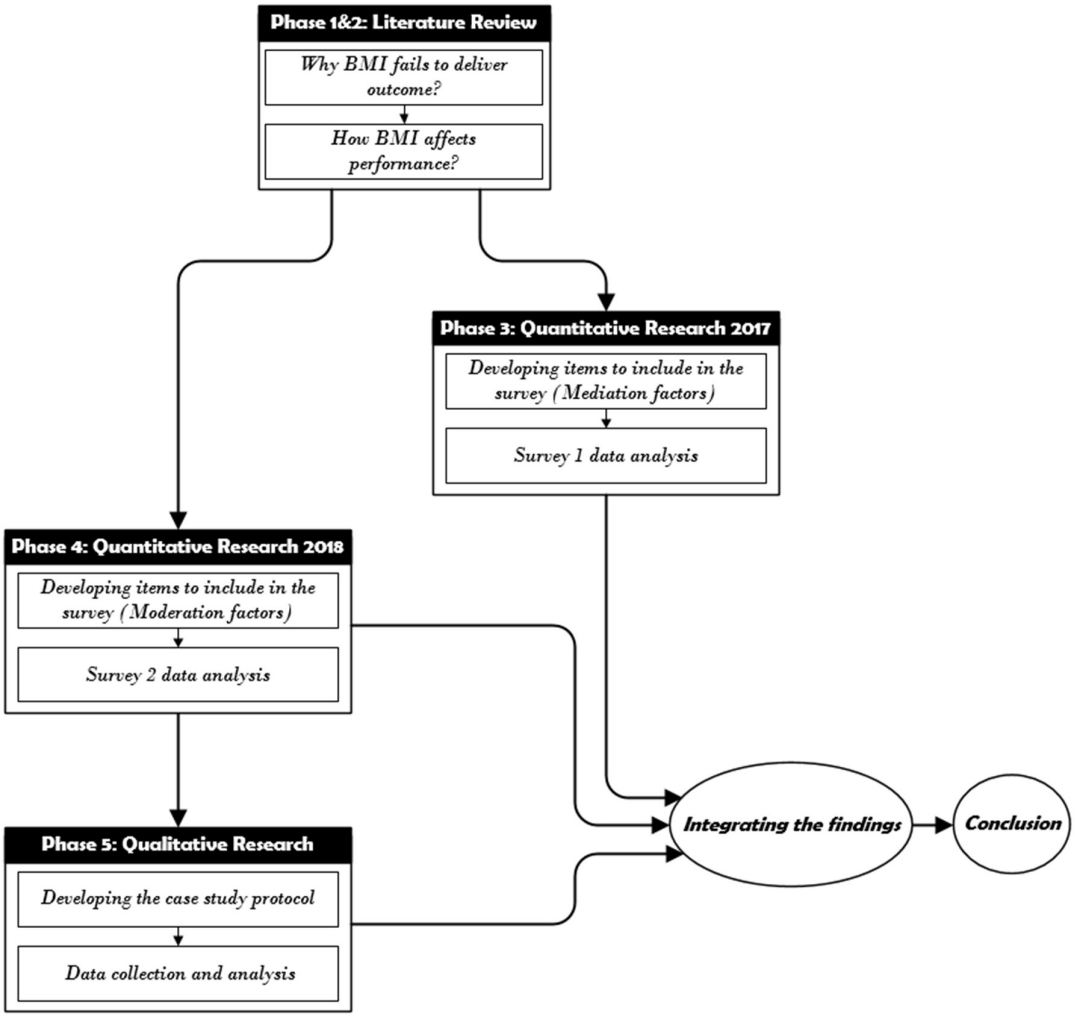

Figure 4.1: Exploratory sequential mixed-methods research design

[1] According to Teddlie and Tashakkori's (2009), there is two types of complex design for mixed-method approach. (1) The *multilevel mixed design* which involves multiple levels of reality. For example, data might be collected both at the levels of schools and students, or medical practices and patients (Yin, 2013). Integration of these data does not only involve the integration of qualitative and quantitative data, but also the integration of data originating from different sources and existing at different levels. (2) *The fully-integrated mixed design* which is more complex because it contains multiple points of integration.

In this research, quantitative as well as qualitative methodologies are combined in order to obtain a clear picture of the phenomenon and to provide an insight into how to boost the firm's overall performance through implementing BMI. In order to do so, it is highly relevant to describe how quantitative and qualitative components are designed and implemented. So in the following sections, we will explain those components in more detail.

4.2 Quantitative research (2017)

The current study made use of quantitative data as collected in two separate stages as conducted in the year 2017 and 2018. To understand the human and organisational factors in the BMI implementation process, in the first stage, we focused on how BMI can lead to the superior performance of the firm. Therefore, quantitative research (survey) is conducted to understand how innovating business model can develop firms' dynamic capabilities, i.e., innovativeness, opportunity-seeking ability, organisational learning and how employees' attitudes and behaviour moderate relationship business model innovation and SMEs' overall performance. Since the topic was almost new to the SME domain, the model proposed for the first quantitative research was developed based on the literature on BMI along with other related fields of strategic management, entrepreneurship and innovation management as discussed in chapter two. Survey one was used to examine the hypotheses H1 to H6, as developed in the theoretical background chapter (section 2.9). Next, survey two was used to understand the human and organisational factors in the BMI implementation process and to test hypotheses H7 to H20, which were developed in the theoretical background chapter (section 2.9).

The quantitative research makes use of questionnaires and representative samples for doing research on internal and external drivers of BMI, BM practices, mediation and moderation effects, as well as firm's overall performance as the outcome of BMI.

4.2.1 Unit of analysis and observation

The unit of analysis is the organization, while the unit of observation is the owners/managers of the companies. In medium-sized enterprises, managers involved in BM innovation, business development, or innovation were asked to participate in the research.

4.2.2 Sample selection

The population of the research (as part of Envision[1] project) are European SMEs engaged in BMI. A representative sample of the population of SMEs in Europe was selected with an eye on the external validity of the results. Based on selection criteria, only businesses involved in BMI were extensively researched. The sample SMEs across industries and European regions were taken from a Dun and

[1] The ENVISION project aims at activating small and medium sized enterprises (SME) across Europe to re-think and transform their business models with the help of an easy-to-use, open-access web platform to support European competitiveness and job creation. ENVISION has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 645791. ENVISION gathers nine partners and their European wide networks from seven countries: Delft University of Technology (The Netherlands), University of Turku (Finland), Innovalor Ltd (The Netherlands), Evolaris Next Level Ltd (Austria), University of Maribor (Slovenia), University of Murcia (Spain), AcrossLimits Ltd (Malta), Bgator Ltd (Finland), Kaunas University of Technology (Lithuania).

Bradstreet's database and used quota for micro, small and medium-sized enterprises. Firms were randomly selected from the database. A net sample of about 500 SMEs per each of the five regions (North, East, South, West, and Central of Europe) were chosen to assure representativeness and to make it possible to compare results across the regions. Hence, in total the net sample contained 5 x 500 = 2500 SMEs. However, data collection on SMEs that are actually involved in BMI was difficult due to the low response rate and incidence rate.

4.2.3 Data collection

Data were collected via computer-assisted telephone interview (CATI) in January of 2017. The questionnaire contains several concepts related to BMI, firm overall performance, and three mediators, i.e., revenue growth, efficiency growth, and organisational dynamic capabilities (Figure 5.1). The questionnaire starts with a generic question and four specific selection questions, asking if the company under study has changed its BM in the previous 24 months. These questions were included to ensure that firms were actually involved in BMI (Langerak et al., 2004). Next, the key respondent in each firm had to demonstrate that he/she was knowledgeable about his/her firm's BMI practices (Atuahene-Gima, 2005). The questionnaire was based on existing scales, and it had been iterated and pretested, and read aloud to managers and academics to improve the clarity of the questions and to prevent any potential ambiguous expressions. The questionnaire was developed in English, translated into Dutch, French, Finnish, German, Italian, Lithuanian, Polish, Portuguese, Slovenian, Spanish and Swedish, and then back-translated to ensure that translation did not introduce any bias in the measures. The questionnaire was pretested in the thirteen countries involved in this research project. To collect data, a professional research agency that uses native speakers and computer-aided telephone interviewing was conducted.

After collecting data and before conducting statistical analyses, the data have to be screened. The screening process ensures the researcher that data is useable, reliable, and valid for testing causal theory. In the next, the several steps taken to screen the quality of the survey data are presented.

4.2.4 Data Screening

Before entering the collected data into computer statistical software programs (i.e., SPSS 25.0 and Smart-PLS 3) to summarise data, examine the research questions, and obtain descriptive and inferential statistical analyses, data have to be cleaned (Manning & Munro, 2007; Tabachnick & Fidell, 2001). So the first step after collecting data was to purify the data so that they provide meaningful and reliable results (Tabachnick & Fidell, 2012; Hair et al., 2011). Subsequently, the process of cleaning and screening data needs to be consistent and checked for (1) missing values, (2) normality test, (3) test of non-response bias, and (4) omitting outlier data (Fidell & Tabachnick, 2012; Hair et al., 2011; Manning & Munro, 2007).

4.2.5 Data analysis

Descriptive analysis was conducted in order to obtain a preliminary view of the data (see also 3.4). Research hypotheses (section 2.9) were examined by means of advanced techniques that enable the analysis of several relationships at the same time based on multiple variables as well as testing multiple simultaneously relationships between constructs. Structural equation modelling software (Smart PLS 3) was used to analyse the data. As the model incorporated multiple mediation variables, the multiple

mediation technique outlined by Preacher and Hayes (2008) based on the likelihood ratio to confirm or reject the mediating variables are incorporated in the statistical testing.

Several multi-group analyses are conducted to test for differences between subsamples like the size of firms (micro, small, and medium), age of firms (new-established, young, well-established). The procedure to test for these differences based on the approach by Dayan and Di-Benedetto (2010) and Di-Benedetto (2010), which uses chi-square differences between constrained and unconstrained models.

To evaluate the degree to which our questionnaire produces stable and consistent results, the reliability, and how well the questionnaire measures what it is purposed to measure, the validity of the questionnaire are checked. In the next section, different tools to assess the reliability and validity of research constructs are presented.

4.2.6 Assessment of Measurement Model

Cronbach's alpha is a common test for the internal reliability of the latent constructs (Bryman and Bell, 2011), and it is recommended to be 0.70 or higher (Hair et al., 2011). All constructs used in this study satisfied the recommended threshold. Hair et al. (2014) argue that composite reliability (CR) provides a far better assessment of internal consistency, as Cronbach's alpha tends to undermine internal consistency reliability. The CR examines the internal consistency and reliability of the latent constructs. The CR threshold is 0.70 or higher. Table 4.2 shows that all constructs satisfied the recommended value; the highest value is 0.91 for the firm's overall performance, and the lowest is 0.73 for the BMI.

Convergent Validity: Convergent validity is represented by the average variance extracted (AVE), which is recommended to be at least 0.50 (Hair et al., 2011). As Table 4.2 shows, all constructs pass the threshold and have sufficient convergent validity: the lowest AVE is 0.51 for the BMI, and the highest value is 0.67 for the revenue growth. Factor loading accounts for the unidimensionality of the measured items (Awang, 2012).

Discriminant Validity: Assessing discriminant validity is a building block of model evaluation (Hair et al., 2010). Discriminant validity guarantees the uniqueness of a measuring construct and indicates that the phenomenon of interest is not captured in other measures (latent variables) within the research model (Hair et al., 2010).

Table 4.2: Descriptive statistics, convergent validity, and internal consistency and reliability of items

Constructs	Items	Factor Loadings	t-statistics	α	CR	AVE
Overall performance	The sales growth of the enterprise	0.82	48.40	0.91	0.93	0.62
	The profit growth of the enterprise	0.83	53.41			
	Market share	0.75	26.16			
	Speed to market	0.71	26.37			
	Penetration rate	0.77	33.73			
	Market value	0.79	42.02			
	Net income	0.81	37.51			
	Return on Investment (ROI)	0.79	34.67			
Business model innovation	Introduced new products as a new value proposition	0.67	16.52	0.73	0.81	0.51
	Introduced new services as a new value proposition	0.70	21.80			
	Started to collaborate with new business partners	0.58	15.80			
	Shared new responsibilities with business partners	0.56	13.37			
	Created new revenue streams	0.71	26.61			
	Introduced a new pricing mechanism	0.52	12.43			
	Focused on a completely new market segment	0.65	21.42			
Revenue growth	Introduced new ways to transact with customers	0.70	25.47	0.74	0.83	0.67
	Introduced new ways of organising relations with customers	0.73	30.14			
	Advertising products and services in a new way	0.69	26.26			
	Scale-up your business	0.70	30.14			
	Focus your product offering	0.72	18.40			
Efficiency growth	Introduced new ways to reduce fixed costs	0.69	13.71	0.71	0.82	0.53
	Introduced new ways to reduce variable costs	0.66	14.85			
	Business processes standardisation	0.82	29.99			
	Business processes integration	0.83	34.42			
Organisational capabilities	Managers encourage employees to think outside the box	0.69	21.41	0.87	0.90	0.53
	Our corporate culture is focused on constant innovation	0.79	33.96			
	Our enterprise shows perseverance in turning ideas into reality	0.74	28.08			
	Our enterprise ability to identify new opportunities	0.75	34.13			
	Our enterprise aims to create multiple innovations annually	0.78	37.25			
	Our enterprise introduces innovations that are completely new to the market	0.74	36.67			
	Creating more than one innovation at the same time is common practice in our enterprise	0.73	31.11			

Note: CR = Composite reliability; AVE = Average variance extracted

Table 4.3 shows the results of the Fornell–Larcker assessment. As can be seen, all the AVE values satisfy the requirement and show that the constructs are adequately discriminated.

An alternative approach for assessing discriminant validity is HTMT, namely the average heterotrait–heteromethod correlations measuring the relative to the average monotrait–heteromethod correlations. Monotrait–heteromethod is the correlation of indicators measuring the same construct, and heterotrait–heteromethod is the correlation of indicators across constructs measuring different phenomena.

Table 4.3: Correlation among constructs and square root of the AVE

Constructs	BMI	EG	OCAP	OP	RG
Business model innovation (BMI)	0.615				
Efficiency growth (EG)	0.486	0.727			
Organisational capabilities (OC)	0.518	0.381	0.744		
Overall performance (OP)	0.405	0.381	0.437	0.784	
Revenue growth (RG)	0.607	0.486	0.531	0.457	0.701

An HTMT value close to 1 indicates a lack of discriminant validity; however, some authors (e.g., Henseler et al., 2015, p. 129) use a more conservative threshold and suggest the value of 0.85 for HTMT. A more liberal value is suggested to be 0.90. Table 4.4 shows the HTMT values that are lower than 0.85. We, therefore, conclude that discriminant validity is not an issue.

Table 4.4: Heterotrait–monotrait ratio of correlations (HTMT)

Constructs	BMI	EG	OCAP	OP	RG
Business model innovation (BMI)					
Efficiency growth (EG)	0.685				
Organisational capabilities (OC)	0.647	0.462			
Overall performance (OCAP)	0.494	0.449	0.483		
Revenue growth (RG)	0.821	0.653	0.655	0.549	

Common Method Bias: We also test the common method bias in our analysis. Kock (2015, p.7) argued that if the variance inflation factor (VIF) at the factor levels is greater than 3.3, then it can be considered as an indication of pathological collinearity, and also as an indication that a model may be suffering from a common method bias. In the full collinearity test, at the factor levels, all the VIFs' values were lower than 3.3. Therefore, the model in this study is considered to be free of common method bias.

4.2.7 Assessment of Structural model

In this research, to analyse multivariate statistical analyses, the SEM method is applied. This technique has been employed by many researchers in different fields such as biologists, economists, business, marketing, medical and a variety of other social and behavioural scientists (Anderson and Gerbing, 1988). In fact, SEM can be seen as a statistical procedure that takes a confirmatory method (i.e., hypothesis-testing) to the analysis of a structural theory on a given phenomenon (Byrne, 2013). Usually, SEM can be seen as a theory that reveals "causal" techniques that present observations on multiple variables (Gefen et al., 2000; Hair et al., 2011). Since the purpose of the quantitative study in phase two of this research is to understand and test the causal relationship between business model innovation and firm's overall performance, the SEM technique is appropriate. Because the research variables (BMI, efficiency growth, revenue growth, developing organisational capabilities and firm overall performance) are hard-to-measure and unobservable, using latent variables in SEM makes it possible to tackle the research problems (Wong, 2013).

There are several approaches to SEM. The two approaches which are widely applied in social science are Covariance-based SEM (CB-SEM) and Partial Least Squares (PLS). CB-SEM is the first approach

that is broadly used, and software packages such as AMOS, LISREL, and MPlus use CB-SEM. The PLS-SEM focuses on the analysis of variance and can be carried out using PLS-Graph, VisualPLS, SmartPLS (Wong, 2013).

Although CB-SEM is still the preferred data analysis method for confirming or rejecting theories through the testing of hypotheses in social science and business research, it has some limitations. For instance, the sample size should be large, the data should be normally distributed, and in particular, the model should be correctly specified (Wong, 2013). However, many industry experts and scholars notice that, in reality, it is often difficult to find a data set that meets these requirements.

Although the sample size is large enough (>500) in this study, to be able to test the research model in the sub-samples (micro, small, and medium-sized firms) and to avoid making assumptions about the normal distribution of data, in this research PLS-SEM approach was applied using Smart-PLS software. However, we are aware that PLS-SEM has its own weaknesses (Wong, 2013), including:

1. If the sample size is small, high-valued structural path coefficients are needed.
2. The problem of multicollinearity will occur if not handled well.
3. Undirected correlation cannot be modelled since arrows are always single-headed.
4. A potential lack of complete consistency in scores on latent variables may result in biased component estimation, loadings and path coefficients.
5. It may create large mean square errors in the estimation of path coefficient loading.

PLS-SEM, however, as mentioned by Wong (2013), has been deployed in many fields, such as behavioral sciences (e.g., Bass et al., 2003), marketing (e.g., Henseler et al., 2009), organization (e.g., Sosik et al., 2009), management information system (e.g., Chin et al., 2003), and business strategy (e.g., Hulland, 1999).

A standard well-reported PLS-SEM result consists of the following evaluations to assess the structural model (Hair et al., 2017):

- Collinearity issues of the structural models;
- Coefficient of determination (R^2);
- Path coefficient estimates;
- The effect size of f^2 ;
- The predictive relevance Q^2 effect size;
- Standardized root means square residual (SRMR).

In the assessment of structural models, the assessment of collinearity issues of the structural model, calculation of the coefficient of determination, the effect size of f^2, and standardized root mean square residual (SRMR) were carried out by PLS Algorithm in SmartPLS by path weighting scheme, the maximum number of iterations of 300, and stop criterion of 10^-7. Path coefficient significance was estimated using bootstrapping Algorithm in 5000 subsamples mode, bias-corrected and accelerated bootstrap as the method of confidence interval, and one-side significance test at 0.05 significance level. The predictive relevance Q^2 effect size was calculated by the blindfolding procedure in Smart-PLS.

Assessing the collinearity issues of the structural model: In the full collinearity test, at the factor levels, all the VIFs' values were lower than the threshold level of 5 (Hair et al., 2017). Therefore, the model in this study is considered to be free of collinearity problems.

Coefficient of determination (R^2): The coefficient of determination, R^2, is used to analyze how differences in one variable can be explained by a difference in a second variable. Firms' overall

performance is explained by a variance of 29% and the three mediators, efficiency growth, organisational capabilities, and revenue growth, are explained by a variance of 26%, 27% and 43%, respectively, in the model.

***The effect size of f^2*:** In addition to assessing the R^2, the change in R^2 value when a specified exogenous construct is omitted from the model can be used to evaluate whether the omitted construct has a substantive impact on the endogenous constructs (Hair et al., 2014). Guidelines for assessing f^2 are that values of 0.02, 0.15, and 0.35, respectively, present small, medium, and large effects (Cohen, 1988) of the exogenous latent variable. The f^2 effect size less than 0.02 shows a no effect. Running Blindfolding procedure in SmartPLS shows that BMI has a large f^2 effect size on organisational capabilities (0.37), and medium effect on revenue growth (0.26) and proficiency growth (0.16). However, organisational capabilities, revenue growth, and proficiency growth have a small f^2 effect size on firm overall performance with values of 0.045, 0.033, and 0.022, respectively.

The predictive relevance Q^2 effect size: The predictive relevance Q^2 effect size calculated by running blindfolding procedure in Smart-PLS showed that Q^2 had values larger than zero indicate that the research mediating constructs had predictive relevance for the endogenous construct under consideration (here, the firm's overall performance). More precisely, the revenue growth had the highest (Q2=0.21) and efficiency growth the lowest one (Q2=0.13).

Standardized root mean square residual (SRMR): The value of standardized root mean square residual (SRMR), which assesses the model fit when PLS-SEM is used, was .078, indicating a good model fit (Henseler et al., (2014).

4.3 Quantitative research (2018)

The second survey, conducted in 2018, sought to determine whether and under what conditions BMI can help SMEs improve their performance. Based on a systematic literature review (Chapter 2.9), a conceptual model was developed to explore the relevant contingency factors. In survey 1, the mediating effects of organisational capabilities and a focus on efficiency and/or revenue growth between BMI and a firm's overall performance are explored. The objective of this part of the research is to investigate the moderation factors that influence the relationship between BMI and SME's overall performance. The questionnaire was administrated and data were collected according to ENVISION project procedures and protocols. The second survey was implemented by the same research team using the same protocol. Therefore, except for introducing new items regarding human and organisational factors in the questionnaire and some minor modifications, the quantitative approach had the same design as in 2017. In other words, the same unit of analysis and observation (4.2.1), sampling techniques (as described in 4.2.2), data collection method (4.2.3), data screening (4.2.4) were applied in the second survey as executed in 2017. The data of 439 SMEs were analysed in the second quantitative research phase. The results of data analysis and test of moderation effects will be presented in chapter 7.

4.3.1 Data analysis

Descriptive analysis was conducted in order to obtain a preliminary view of the data (see also 3.3). Mean, standard deviation and normal distribution of variables have been checked and demographic characteristics of respondents and sample SMEs which are considered to be relevant for the research, will be elaborated in tables and figures.

We employ structural equation modeling (SEM) using SmartPLS v.3.3.3 software to test the hypotheses (see 2.9) and path analysis. Among 14 moderating variables testing via hypotheses, eleven moderating factors had a continuous measurement scale (Employees Motivation, Employees Development, Effective Communication, Resistance to Change, Culture of Innovation, BM-Experimentation, Degree of Novelty, Speed of Change, Scope of Change), and three moderating factors had a categorical scale (Using BM Tooling, Firm Age, and Firm Size). We use SmartPLS built-in moderating effect analysis for testing the continuous moderators and applied multi-group analysis (MGA) for categorical moderators.

To evaluate the degree to which our questionnaire produces stable and consistent results, the reliability, and how well the questionnaire measures what it is purposed to measure, the validity of the questionnaire are checked. In the next section, different tools to assess the reliability and validity of research constructs are presented.

4.3.2 Assessment of Measurement Model

Prior to entering data into computer statistical software programs (i.e., Smart-PLS 3) to obtain descriptive and inferential statistical analyses, and to examine the research hypotheses, the raw data were subjected to editing in order to discover any errors and omissions and to correct them if possible. Therefore the data were checked for missing values, a test of non-response bias, and omitting the outlier data.

SmartPLS 3.3.3 software was employed to analyse the path model. The result of the PLS algorithm calculation is shown in Table 4.5 with independent variables, dependent variables, the relationship among variables, and all indicators of variables. Factor loading values for indicators of constructs are also shown.

For the assessments of measurement models, which all were reflective, the following evaluations were performed:

- Outer model loadings and their significance;
- Composite reliability to evaluate internal consistency;
- Average Variance Extracted (AVE) to evaluate convergent validity;
- Fornell-Larcker criterion and HTMT test to assess discriminant validity.

Factor loadings and significance: Factor loadings for indicators of constructs show individual indicators' reliability. Table 4.6 shows that the factor loadings of all indicators are more than the minimum acceptable value (0.7) except indicators of business model innovation, which were higher than 0.58. Since the indicators supported by literature and our effort to drop some of them did not lead to a substantial improvement, all indicators of BMI construct were kept in the model.

Composite Reliability: Cronbach's alpha is a common test for the internal reliability of the latent constructs (Bryman and Bell, 2011), and it is recommended to be 0.70 or higher (Hair et al., 2011). All constructs used in this study satisfied the recommended threshold. Hair et al. (2014) argue that composite reliability (CR) provides a far better assessment of internal consistency, as Cronbach's alpha tends to undermine internal consistency reliability. The CR examines the internal consistency and reliability of the latent constructs. The CR threshold is 0.70 or higher. Table 4.5 shows that all constructs satisfied the recommended value; the highest value is 0.92 for the firm's overall performance, and the lowest is 0.83 for the BMI.

Convergent Validity: Convergent validity is represented by the average variance extracted (AVE), which is recommended to be at least 0.50 (Hair et al., 2011). As Table 4.5 shows, all constructs pass the threshold and have sufficient convergent validity: the lowest AVE is 0.51 for the BMI, and the highest value is 0.78 for effective communication. Factor loading accounts for the unidimensionality of the measured items (Awang, 2012).

Discriminant Validity: Assessing discriminant validity is a building block for model evaluation (Hair et al., 2010). Discriminant validity guarantees the uniqueness of a measuring construct and indicates that the phenomenon of interest is not captured in other measures (latent variables) within the research model (Hair et al., 2010). The Fornell-Larcker criterion and heterotrait-monotrait (HTMT) ratio of correlations were used be to examine discriminant validity. Since the square root of each construct's AVE of each construct is higher than its correlation with other constructs in the model, it was found that all data compiled the criteria. (The Fornell-Larker Criterion for all tested models are presented in Table B-1 in Appendix B).

Table 4.5: Descriptive statistics, convergent validity, and internal consistency and reliability of items

Type	Constructs	Item Description	Factor Loadings	Cronbach's α	CR	AVE
Dependent variable	Overall performance	The sales growth of the enterprise	0.802	0.897	0.918	0.585
		The profit growth of the enterprise	0.854			
		Market share	0.753			
		Speed to market	0.612			
		Penetration rate	0.758			
		Market value	0.780			
		Net income	0.811			
		Return on Investment (ROI)	0.727			
Independent variable	Business model innovation	Introduced new products as a new value proposition	0.722	0.773	0.834	0.51
		Introduced new services as a new value proposition	0.674			
		Started to collaborate with new business partners	0.583			
		Shared new responsibilities with business partners	0.577			
		Created new revenue streams	0.791			
		Introduced a new pricing mechanism	0.579			
		Focused on a completely new market segment	0.615			
Moderators in BM Implementation group	Employees Motivation	We involve employees in the planning of the BMI	0.828	0.855	0.9	0.692
		We ask key persons in our firm what their concerns are with regard to the BM innovation process.	0.811			
		Most people working for this company feel satisfied with the BMI.	0.86			
		We encourage employees to be involved in the BM process	0.828			
	Employees Development	Employees opinions are taken into account in decisions on the new BM.	0.834	0.794	0.878	0.706
		Our employees have the right skills to innovate BM.	0.844			
		Our employees are well trained for the change in BM.	0.843			

Table 4.: Continued

Type	Constructs	Item Description	Factor Loadings	Cronbach's α	CR	AVE
Moderators in BM Implementation group (continued)	Communication	Our employees know why we want to innovate the BM in detail.	0.926	0.737	0.881	0.787
		Everyone understands his or her role in the implementation of BMI.	0.847			
	Resistance to change	There was no resistance to change the BM	single item	single item	single item	single item
	Culture of Innovation	Our corporate culture is focused on constant innovation	0.837	0.849	0.892	0.623
		Our enterprise shows perseverance in turning ideas into reality	0.779			
		Our enterprise ability to identify new opportunities	0.808			
		Our enterprise aims to create multiple innovations annually	0.806			
		Our enterprise introduce innovations that are completely new to the market	0.712			
		Creating more than one innovation at the same time is common practice in our enterprise	0.837			
BM Practices	Degree of Novelty	In the business model that are new to the world	0.665	0.822	0.883	0.657
		Were new to your industry	0.842			
		Have never been implemented by competitors before	0.856			
		Cannot be found in the dominant business models of your industry	0.862			
	Scope of Change	Changing the entire BM	single item	single item	single item	single item
	Speed of Change	Trying out new BMs in practice first, before making final changes	0.822	0.724	0.844	0.73
		In-depth analyses before starting to change the BM	0.886			
	Use of BM Tooling	Business models can be analysed by using methods, such as the Canvas model, STOF, etc. Have you ever used such business model method? (Multi-group analysis; 1 Yes/ 2 No)	single item	single item	single item	single item
Firm characteristic	Firm Age	In what year was your enterprise founded? (Multi-group analysis; New, Young , and Well established)	single item	single item	single item	single item
	Firm Size	How many employees does your enterprise have? (Multi-group analysis; Micro, Small , and Medium-sized)	single item	single item	single item	single item
Industry characteristic	Competitive Intensity	Competitors starting to offer similar products/services	0.697	0.724	0.827	0.544
		Competitor's reactions to your initiatives	0.783			
		Frequently changing customer preferences	0.723			
		Customer needs different from traditional customer needs	0.745			
	Technology Turbulence	Rapid changing technology	0.943	0.881	0.944	0.894
		Rapid increasing technological development	0.947			

Additionally, the HTMT assessment using the PLS algorithm shows that all HTMT values for research models 1 to 15 are smaller than 0.72. Therefore, we conclude that discriminant validity is not an issue

since having a value less than 0.85 for HTMT indicates a lack of discriminant validity. (The HTMT assessment results for all tested models are presented in Table B-2 in Appendix B).

Once we have confirmed that the construct measures are reliable and valid, the next step addresses the assessment of the structural model.

4.3.3 Assessment of Structural model

For the assessment of structural model in the second quantitative study, we used the same approach as applied in first quantitative study as discussed in 4.2.7. The assessment results are presented in the hereafter.

Assessing the collinearity issues of the structural model: In the full collinearity test, at the factor levels, all the VIFs' values were lower than the threshold level of 5 (Hair et al., 2017). Therefore, the model in this study is considered to be free of collinearity problem.

Coefficient of determination (R^2): Since the research objective is to test the different moderating effects on the relationship between BMI and overall firms' performance, each hypothesis was tested separately, including one independent (BMI), one dependant (overall performance), and one moderating variable in each run. Therefore, the firms' overall performance was explained by variance in a range of 13% to 24% in models 1 to 11 (R^2 values for all tested models are presented in Table B-3 in Appendix B). The relatively small values for R^2 can be explained by; first, it makes sense if a complex construct such as the firm's overall performance, which is per se subject to several internal and external factors, cannot be well explained by only two variables (BMI and one moderator). Second, although we explicitly used a time frame of 24 months to grab possible lag in the effect of BMI on performance, maybe companies could not recognize the effect within this period. Therefore, since the research objective in this cross-sectional study is not to test the causality and prediction, the correlation coefficient is more important than the coefficient of determination.

The effect size of f^2: The results show that employees' motivation, degree of novelty, and culture of innovation had a large effect size by f^2 values of 0.066, 0.050, and 0.035, respectively. Moreover, employee development, effective communication, resistance to change, and speed of change by f^2 effect size of 0.022, 0.015, 0.013, and 0.008, respectively, had a moderate contribution to the explanation of the firm's overall performance. The f^2 values for all tested models are presented in Table F-1 in Appendix F.

The predictive relevance Q^2 effect size: The predictive relevance Q^2 in all eleven models had values larger than zero indicate that the research moderating constructs had predictive relevance for the endogenous construct under consideration (here, the firm's overall performance). More precisely, except for the moderating effect of the culture of innovation, which has a higher Q^2 value (0.127), the other moderating constructs have a Q^2 around 0.08. (Q^2 values for all tested models are presented in Table F-2 in Appendix F).

Standardized root mean square residual (SRMR): Model fit indices for all fifteen models range from 0.064 to 0.070 and are less than the threshold value of 0.08, the model fits are considered as a good fit. (Standardized root mean square residual (SRMR) values for all tested models are presented in Table F-3 in Appendix F).

4.4 Qualitative research (multiple case study)

As stated at the start of this chapter, when discussing the mixed-method approach, we enrich the interpretation of the quantitative research by conducting qualitative case studies. Here we will explain our case study approach.

4.4.1 Case study purpose

To accomplish the research objective, a multiple case study approach is used to explain and clarify the outcomes of the quantitative component and possibly explore new dimensions in human and organisational factors of implementing BMI in SMEs. In that sense, the qualitative analysis in the multiple case study takes the outcomes of the quantitative component and aims at providing an explanation for that result by relating them to the contextual circumstances in which the quantitative outcomes are produced. A case study is a useful research approach when researchers need to understand better how a given phenomenon happens and to build new theories or to obtain new insights based on the deep analysis (Eisenhardt and Graebner, 2007; Yin, 2009). The case study method is suitable for addressing questions of 'why' and 'how' and understanding an intended contemporary phenomenon, particularly when the phenomenon is un-researched and theoretical knowledge on the phenomenon is inadequate or limited (Cavaye, 1996; Eisenhardt, 1989; Yin, 2009). To do so, we require insights into the context (e.g., social, political, organisational and economic surroundings) organisational relationships, knowledge, and experiences of informants and practitioners in the field.

Although existing cases in Envision project provides basic and general information about case organizations, their service(s) or product(s), and business model, the Envision cases have limited information on human and organisational factors in BMI and their impact on overall performance. Therefore, four cases were chosen from the available cases which met our selection criteria (section 4.4.4).

4.4.2 Case study design

Since the case study method receives criticism in terms of its lack of robustness as a research tool, crafting the design of case studies is of paramount importance (Zainal, 2007). Figure 4.2 presents the research design of our qualitative study, adapted from Diehl et al. (2013). We followed an in-depth case study research approach applying principles of case study research as described by Yin (2009) and Eisenhardt (1989). We organised our research in three phases: preparation & design, data collection and analysis (as shown in Figure 4.2).

To assure a certain extent of external validity, a multiple case study design (Stake, 1995; Yin, 2003) was used for collecting and analyzing the data in the qualitative phase. In the design phase, we identified a sample of four companies that were willing to collaborate and who had implemented the BMI in the last 3 years.

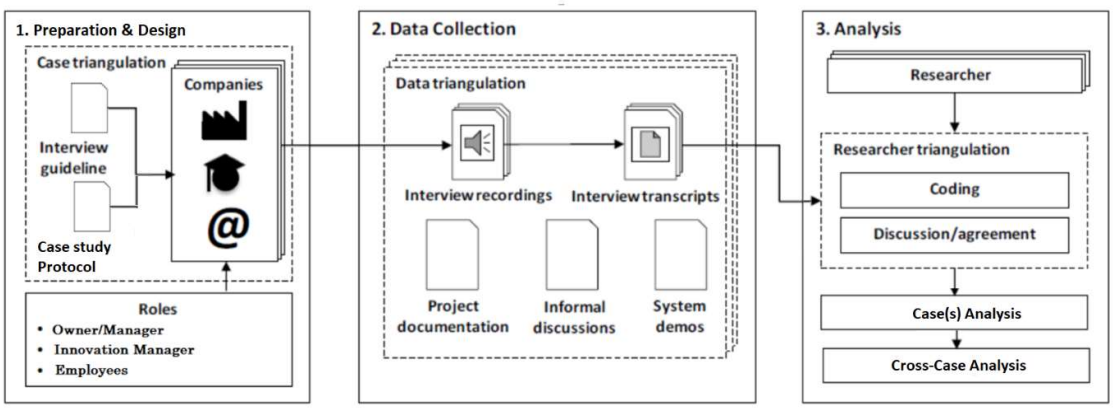

Figure 4.2: Case study research design

Since the objective of this multiple case study is to enrich our findings in quantitative surveys and also explore the new phenomenon, e.g., implementing the business model innovation and the role of employees, the case study research can be considered as both explanatory and exploratory research.

4.4.3 Preparation for case studies

Researchers performed the general preparation as described by Yin (2009). The first step involved gathering preliminary information on each case via desk research, i.e., collecting, reading and analyzing all the available information on the cases. This includes data present in existing public sources such as websites, scientific publications, case descriptions from other researchers and news clippings. Moreover, the preliminary data gathered in this step, helped in preparing for the interviews and developing relevant questions regarding the business model and the BMI process for each company. Although the cases were selected from 122 SMEs available in Envision case repository, and the basic information about the history of firms and their products, services, and BM were available in ENVISION project, they lack information on the human and organisational side of BMI and the role of employees in the BMI process.

The second step involved preparing for the interviews. According to Eisenhardt and Graebner (2007) "*Interviews are a highly efficient way to gather rich, empirical data, especially when the phenomenon of interest is highly episodic and infrequent*" (p. 28). The interviews for this study were semi-structured and followed the case study protocol and interview guidelines (See appendix A), as adapted and executed based on the ENVISION protocol, to address topics and pre-set questions. The case study protocol is a major component in asserting the reliability of the case study research (Yin, 2009). The protocol helps the researcher to collect data in a systematic way to increase the reliability of the research, especially in a multiple-case study. Additionally, the content of the interview guideline was grounded in the quantitative results from the previous phase of the study. Because the goal of the qualitative phase was to explore and elaborate on the results of the statistical tests (Creswell et al., 2003), we would like to understand why certain behaviour and characteristics of employees contributed to BMI performance. Three groups of open-ended questions were used to gain in-depth insight into cases. The first set of questions was formulated to acclimate the interviewee and gain a better understanding of their function at the organization during the BMI and explanation on previous and current business model innovation of the firm. The second set of questions focused on the BMI procedure, including the initiative taken, challenges faced in the implementation of BMI, and BMI outcome. The third set of questions were

aimed at exploring the role of employees in the BMI implementation process. Employee motivation, development, and readiness to change, as well as their dimensions, were discussed. Before concluding the interview, the candidate was asked an open question about how the BM implementation may have gone better with respect to the employees. The interview protocol was pilot tested on one firm. As a result, the order of the protocol questions was revised slightly and additional probing questions were developed.

As this research has a clear objective, semi-structured interviews were the most appropriate method as it enables addressing and gathering information on specific issues (Bryman and Bell, 2011). The main goal of the interviews with the participating companies was to analyze their business model, how they implemented BMI, the outcome and the role of employees in the process.

The third step involved preparing to conduct and document the interviews. Before proceeding with interviewing step, the researchers ensured to have (i) good knowledge of the research area, (ii) the skills for case study investigation, and (iii) a thorough background of the four companies taking part in the study (Yin, 2009; Bryman and Bell, 2011). Since there is a lack of a commonly accepted definition of BM and BMI, the researchers ensured to familiarize the interviewees with relevant definitions and topics that will be addressed in the interviews. For this reason, the interviews with the companies were scheduled well in advance by sending an invitation letter and an explanation of the study as well as the participant consent forms as per TU Delft regulations and Envision protocol. Apart from this, the researcher ensured to conduct the interviews in a setting with minimum distraction and suitable recording software was set up to document the interview (Bryman and Bell, 2011).

4.4.4 Case Selection

Within the already available set of cases in the Envision database, we looked into those cases which fulfil our requirements the best, these requirements were a clear focus on top management role and leadership style, motivation and empowerment of employees and communication through stakeholders, the cases were selected so that we could gain insight on the human and organisational part of implementing the BMI. Therefore, the cases were selected based on content (theoretical) and practical considerations.

The four cases are selectively chosen from the sample by considering the following set of criteria. All selected companies were (1) considered as small and medium-sized enterprises, (2) recently involved in BMI and experienced the implementation of business model innovation, and (3) located in the Netherlands (easy to access and no difference in social norms and belief). Firm size (number of employees) and firm age (number of years since the firm was founded) are used as “control variables”, since they could impact the relationship between BMI and a firm’s overall performance. Many prior studies have highlighted the impact of a firm’s size and age on performance (Hartmann et al., 2013; Latifi et al., 2021b; Zott and Amit, 2007; Gronum et al., 2016; Heij et al., 2014). The four cases are clustered based on these two of above mentioned “control variables”, i.e., firm size and firm age. Figure 4.3 shows four selected cases based on two dimensions of firm size and age.

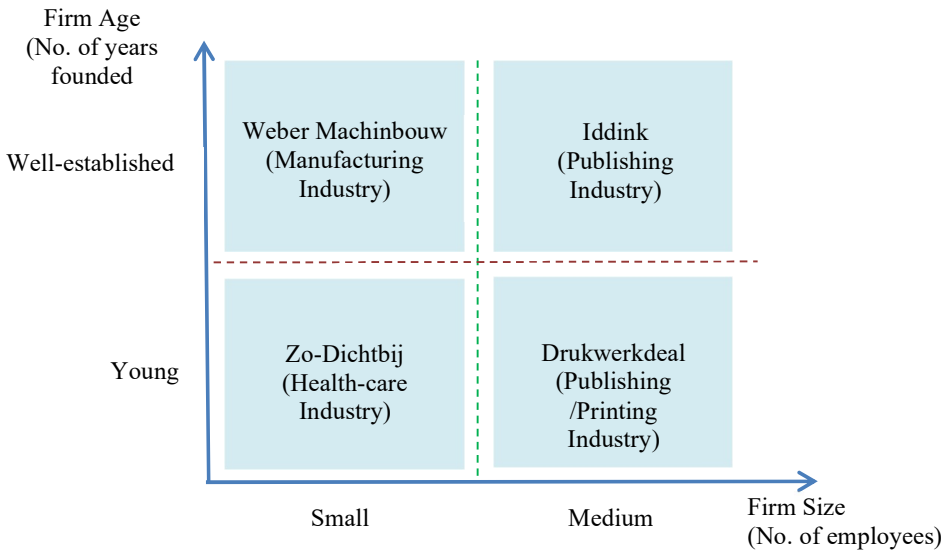

Figure 4.3: The case study selection based on two criteria of firm size and age

4.4.5 Data Collection

According to Yin (2009), data for case study research can be derived from a variety of sources, including interviews, observations, company documents, videotapes, newspapers, letters, and books. It is the investigator's responsibility to follow a systematic procedure for collecting and analyzing data to ensure credibility and avoid bias. As a result, the primary source of data for each case study in this study came from a combination of desk research, company documentation, and interviews with personnel who were involved in BMI implementation. While the organization was the unit of analysis for this study, employees in the organization were the unit of data collection, which included top managers, middle managers, and other employees in operational levels who were involved in the BMI process.

The interviews were conducted using the data collected from the desk research in the previous step. It was equally vital to choose the best candidate for the interviews besides asking the right questions (Yin, 2009). So, employees who played a critical role in the implementation of the BM at the firms were chosen. Because there is no widely agreed definition of BM and BMI in the existing literature, it was critical to ensure that the interviewees had an understanding of these concepts. The interviewees were given the chance to familiarize themselves with the subjects and questions that would be covered during the interview before scheduling the interviews, allowing them to prepare and deliver relevant responses. This also facilitated the acquisition of relevant data for this study.

Interviews

Before beginning the interview, the respondents were reminded of the aim of the research and the purpose of the interview. Following that, participants signed (or verbally agreed) participation consent forms, and permission to record the interview was obtained. Because the primary goal of the study was to test/refine propositions and understand the human and organisational factors that influenced BM implementation, it was critical to keep on track and focused during the interviews. Therefore, data collection through semi-structured interviews necessitated the preparation of certain guidelines prior to

the interview (Bryman & Bell, 2011). The interview questions (Appendix A) were derived from the conceptual model, which was based on a thorough literature review, material obtained through desk research, and the previously conducted research in quantitative parts (Raguraman, 2019). The questions were framed in order to have a better understanding of the actions that took place throughout the BM implementation phase (see 4.4.3). Because the interview was semi-structured, there was leeway for flexibility in how it was conducted; that is, the order of questioning was random and dependent on the responses gained in order to elicit more relevant data from the respondent. Each interview lasted approximately 60-90 minutes. Some interviews were performed using video conferencing software (Skype), while others were conducted in person. This was owing to the convenience of the interviewees and restrictions imposed due to the prevalence of the COVID-19 virus during the research period. There was no discrepancy found in the respondent's replies or behavior between the two modes of interviewing. Transcripts of the interviews were created as soon as the interview was finished to reproduce the respondent's statements and structure the data collected. At the conclusion of each interview, the researcher asked the respondent to name other employees from the company who would be interested in participating in the study. While some of the contacts consented to be interviewed, others were unable to find a suitable time to collaborate. Table 4.6 summarizes the details of the interview.

Usually, the search for new interviews and other data sources only stops after saturation has been reached (Glaser & Strauss, 1967). Since our data collection was carried out at the time of the first wave of spreading the COVID-19 (the first half of 2020), many participants rejected our request for conducting an interview. Companies and individuals wishing to return to their normal lifestyle and new normal (virtual world) was not common for every organization. Therefore, we were not able to conduct as many interviews as expected. We believe that we could not test the data saturation in our data collection stage, and it can be considered as one of our research limitations.

Table 4.6: Interviews Details conducted in the research case studies

	CASE 1 **Weber**	**CASE 2** **Zo-Dichtbij**	**CASE 3** **Iddink**	**CASE 4** **Drukwerkdeal**
No. of Interviews	2	2	3	2
Interviewee's Role	Owner-Manager;	Co-Founder; Co-Founder;	Director of innovation; Lead architect; HR manager;	Project Leader; HR manager;
Duration	60-90 minutes each	60-90 minutes each	60-90 minutes each	60-90 minutes each
Means	Face-to-Face interview	Face-to-Face interview	Face-to-Face & Skype interview	Face-to-Face & Skype interview
Documentation Method	Audio recording, transcript	Audio recording, transcript	Audio recording, transcript	Audio recording, transcript

For quality assurance of the collected data, we followed Flick (2008). So, standardized notes and transcription rules were used to achieve procedural reliability. We also used communicative validation, i.e., involving the participants in the research process validation. The interview transcriptions were sent to participants in order to validate and clarify the researcher's interpretations. To improve internal validity, the data was collected from multiple sources to provide the richness and depth of each case description. The interview data were combined and complemented with various data sources (Yin,

2009), including internal documents describing strategic approaches and the BM of each company, company financial statement, market information about companies' business approach, sales presentations, and websites (triangulation of data). We also established a chain of evidence, so an external observer is able to trace back the steps from conclusions back to initial questions or from questions to conclusions. Additionally, we kept track of the key informants' review draft case study report (in the forms of transcripts, case study notes, case study documents, and narratives).

To assure a certain extent of external validity, a multiple case study design (Stake, 1995; Yin, 2003) is used for collecting and analyzing the data in the research qualitative phase. The instrumental multiple cases (Stake, 1995) serve the purpose of "illuminating and explaining a particular issue" (Creswell & Creswell, 2005). We used the replication method in multiple-case studies to increase the generalisability of the research findings. So if results have been replicated in multiple cases, the findings are considered more robust. The researcher examines a single case for the pattern and, if it is found, then looks to see if it is found in subsequent cases. If the pattern is not found, the original hypothesis has to be re-examined. If identical results are predictably obtained over multiple cases, literal replication has been achieved.

4.4.6 Qualitative Analysis

The most challenging phase of a case study research (Yin, 2013; Eisenhardt, 1989) and the most important part of testing or or developing theory from case studies is data analysis (Eisenhardt, 1989). To ensure reliability and validity, it is critical that this phase follows established protocols and documentation. The analysis was performed at two levels: within each case and across the cases (Stake, 1995; Yin, 2003). The qualitative analysis was done in seven steps include (1) preliminary exploration of the data by reading through the transcripts and writing memos; (2) coding the data by segmenting and labeling the text; (3) verifying the codes through inter-coder agreement check; (4) using codes to develop themes by aggregating similar codes together; (5) connecting and interrelating themes; (6) constructing a case study narrative composed of descriptions and themes; and (7) cross-case thematic analysis.

In the case level analysis, the business strategy of each company was discussed. Then, using the business model Canvas (Osterwalder and Pigneur, 2010), the old and new business models were assessed. Following that, the differences between the old and new business models on the Canvas components were tallied. Finally, the impact of the BMI process on employee motivation, development, and change preparedness was examined. This provided a detailed overview of the four case companies, which was necessary for processing the qualitative data acquired during the interviews. The data from the interviews were then transcribed and coded in the following phase. This was the fundamental process of converting raw data into meaningful information, i.e., gaining invaluable insights from the data addressed in the interviews, which influenced the research findings (Strauss and Corbin, 1990). After each interview, the interview transcriptions were made to replicate the conversation of the respondent for further analysis and prepare for the next interview. A copy of the transcription was provided to the respondent for validation after the interviews were transcribed. This was done in order to ensure research ethics as well as the authenticity of the information provided throughout the interviews (Raguraman, 2019). Following that, the coding process was started in order to analyze the data and get insights and interpretations of the phenomena reflected in the data. For this, software Atlas.ti 9 using, e.g., Caqdas techniques as suggested by Miles and Huberman (2019) was used to perform qualitative

data analysis. In a final inter-coder meeting with the research team, results were discussed, and full inter-coder agreement was achieved.

The coding procedure described by Corbin and Strauss (1990) was used to code, rearrange, and categorise the data. A key strategy during data analysis was to follow the propositions developed in Chapter 2.11 while analyzing the data to focus on the object of analysis and arrive at explanations (Yin, 2009). Three types of coding procedures were followed: (i) Open coding, (ii) Axial coding and (iii) Selective coding. The coding procedure started with open coding, where conceptual labels were given to fragments of data. At this stage of coding, the researcher carefully read and went through the transcripts line by line to assign labels to fragments of data. The naming of labels was defined to closely represent the words of the interviewees. After which, these labels were compared to find similarities and differences. This way, conceptually similar labels that were previously identified were merged and then grouped together to form categories and sub-categories. This process is called axial coding and was done by comparing categories with the interview questions. Then, selective coding was done to group all the categories around the "theme" that represented the phenomena under study, which are employee motivation, development, and readiness to change. Finally, all quotations that were categorised with employee motivation, development, and readiness to change were analyzed again for cross-case analysis. Such a detailed analysis helped in identifying attributes that explain the role of employees in the BMI process and their influence on the link between BMI and firm performance, and thus, helped in attesting the propositions.

The analysis and results based on desk research and past documents for the cases have been presented in the research domain chapter (section 3.4). The qualitative analysis findings at the case level and cross-case level are presented in chapter 7.

The credibility of the findings was secured by triangulating different sources of information, member checking, inter-coder agreement, rich and thick descriptions of the cases, reviewing and resolving disconfirming evidence, and academic advisor's auditing (Creswell & Miller, 2000; Stake 1995).

4.4.7 Cross-case analysis

Qualitative data were analyzed through cross-case coding aimed at revealing patterns of commonality or difference between cases of different sizes and ages. Hence, our cross-case analysis does not aim to generalize findings but to explore the human factors engaging in BMI effort and to bring new possible explanations about the role of employees in different levels in the implementation of BMI.

Cross-case analysis provokes the researcher's imagination, prompts new questions, reveals new dimensions, produces alternatives, generates models, and constructs ideals and utopias (Stretton, 1969). By using cross-case analysis we are able to determine the combination of factors that may have contributed to the implementation phase of BMI. It provides to seek or make an explanation as to why one case is different or the same as others, make sense of puzzling or unique findings, or further articulate the concepts, hypotheses, or theories discovered or constructed from the original case. Furthermore, cross-case analysis allows the researcher to compare cases from one or more settings, communities, or groups. This provides opportunities to learn from different cases and gather critical evidence to modify policy.

In this research, to analyse the cross-case analysis, replication was used as an analytic method. The primary focus of the analysis is on the overall pattern of results and the extent to which the observed pattern of variables matches a predicted one (Kohn, 1997). The researcher examines a single case for the pattern and, if it is found, then looks to see if it is found in sub-sequent cases. If the pattern is not found, the original hypothesis has to be re-examined. If identical results are predictably obtained over multiple cases, literal replication has been achieved. If different results are obtained over multiple cases, but for predictable reasons, theoretical replication has been achieved (Yin, 2009). By advancement in Caqdas software (Atlas.ti 9), data have been coded in both single case studies as well as cross-case analysis. The software (Atlas.ti 9) provides various possibilities to compare data within and across cases.

One of the criticisms of qualitative research is that qualitative researchers frequently make quantitative claims in verbal form, using terms such as many, often, typically, sometimes, and so on (Becker, 1970). Simple counts of things in qualitative analysis better support terms such as some, usually, and most. Quantizing the qualitative data allows analysts to discern and to show regularities in data (Maxwell, 2010) and facilitate pattern recognition and extract meaning from qualitative data (Sandelowski et al., 2009). Quantitative data can assist in identifying trends that are not obvious from unquantified qualitative data or even from participants. According to Maxwell (2010), quantitative data allows researchers to appropriately present evidence for his/her interpretations and to rebut assertions that cases were just cherry-picked from data that support these interpretations. Therefore, we quantified our qualitative data to identify patterns and draw conclusions. To do so, we make use of build-in service in Atlas.ti software to see how many times a certain code (or code group) was used in a particular interview document (or document group). Since cases have unequal number of interviewees, the absolute frequency may not be an appropriate measure for cross-case comparison, so we used the normalized frequency (Fr_N). Normalized frequency means that the numbers are automatically adjusted by the software by taking the number of interviews per case into consideration (Kalpokaite & Radivojevic, 2021).

Having introduced the theoretical background in chapter 2, the research domain in chapter 3 and the research method in this chapter, the findings of quantitative research 1 and 2 are presented in Chapters 5 and 6, while the qualitative results are presented in Chapter 7.

Chapter 5: Quantitative Research (2017), mediating factors

5.1 Introduction

In this chapter, firstly, the descriptive analysis of our sample companies (563 European SMEs) in quantitative research conducted in 2017 is briefly presented. Next, the results of examining the mediating effects of organisational capabilities and efficiency growth and revenue growth using a structural equation modelling technique are reported[1]. The conceptual model (Figure 2.10) is presented here again for ease of reference (Figure 5.1).

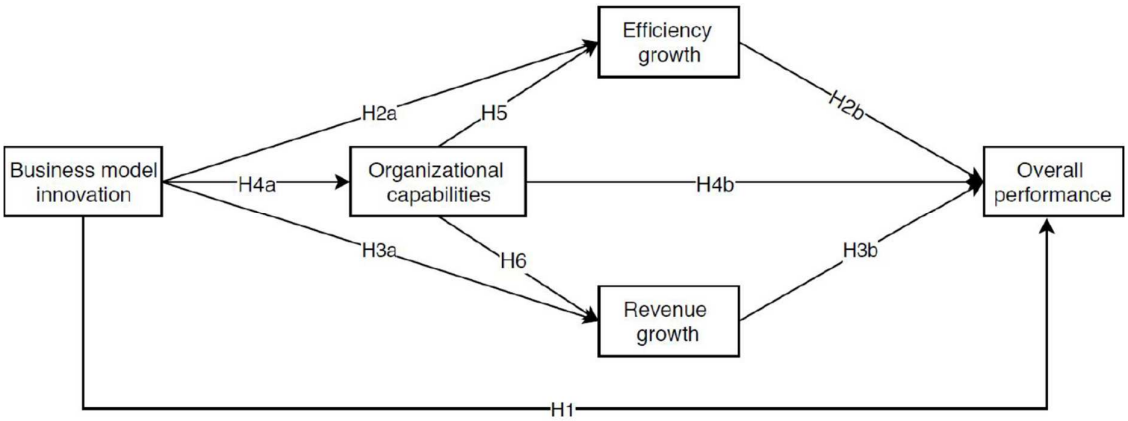

Figure 5.1: Research conceptual model for testing mediation effect between BMI and firm overall performance

5.2 Descriptive Analysis

The population in this study were European SMEs, in any industry, engaged in business model innovation in the previous 24 months. Data were collected in 2017, and from 1686 respondents, 37% answered positively to at least one of the selection questions and were included in the sample. The final dataset contains 563 SMEs in 15 different industries in 13 European countries.

As discussed in the previous chapter (4.2), there were two restrictions upon sampling European SMEs. First, the host countries included in this research need to be spread over Europe (North, East, Central, South, and West). Second, equal quotas for micro-enterprises, small and medium-sized enterprises were

[1] Parts of this chapter are published as "Business Model Innovation and Firm Performance: A Causal Mechanism" co-athured by Nikou. S., and Bouwman, H., , Journal of Technological Innovation, Entrepreneurship and Technology Management - TECHNOVATION, doi:10.1016/j.technovation.2021.102274.

strived for. Figure 5.2 shows that the number of sampled companies in each region is almost equally distributed. Next to confirm the distribution per region, Figure 5.3 illustrates the sample distribution in terms of size. Although Micro-sized SMEs are a little overrepresented, the number of medium-sized companies is slightly less than our expectation. With regard to distribution over the industry sector, there was no quota and SMEs belonged to different industries (See Table D-1 of appendix D for the distribution of the sample companies in seventeen industry sectors).

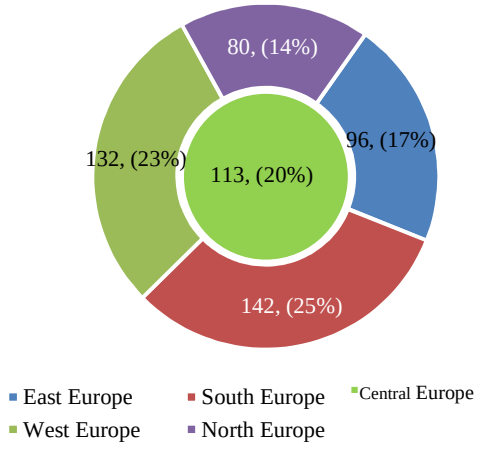

Figure 5.2: Number and distribution of companies per region (2017)

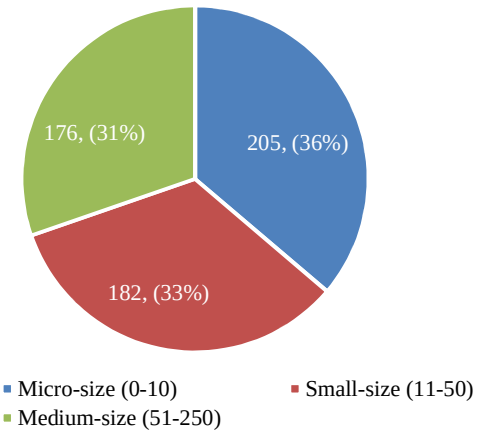

Figure 5.3: Number and distribution of companies per size (2017)

Regarding the age of SMEs, the average age of the SMEs was 33 years. The oldest SME in our sample was founded in 1750, and approximately 18% of SMEs were established in the last ten years and can be considered as start-ups according to the EU definition. Table 5.1 presents the age distribution of SMEs in the data set.

Table 5.1: Age distribution of SMEs in the data-set

Establishes Year	Frequency	Percent
Before 1950	69	12
1951 - 1990	175	31
1991 - 2000	117	21
2001 - 2010	149	26
> 2010	53	9
Total		100

5.3 Model testing

To test the hypotheses, we employed structural equation modelling (SEM) using SmartPLS v.3 software. The mediation test analyses with regard to three variables, i.e., efficiency growth, revenue growth, and the organisational capability were also computed.

5.3.1 Path model analysis

The firms' overall performance is explained by a variance of 32%, and the three mediators – namely efficiency growth, organisational capabilities, and revenue growth – are explained by a variance of 26%, 27% and 43%, respectively. Consistent with our expectations, the direct path between BMI and the firm's overall performance (bivariate correlation) is significant (in the absence of mediators); thus, H1 is supported by the model ($\beta = 0.44$, $t = 12.25$, $p < 0.001$). However, this direct path between BMI and the firm's overall performance is not significant when the three mediators are included in the analysis. The path between BMI and efficiency growth is significant ($\beta = 0.40$, $t = 9.38$, $p < 0.001$); thus, H2a is supported by the model. The path between BMI and revenue growth is significant ($\beta = 0.45$, $t = 11.44$, $p < 0.001$); thus, H3a is also supported by the model. The results also reveal that the path between BMI and organisational capabilities is significant ($\beta = 0.52$, $t = 17.79$, $p < 0.001$); thus, H4a is supported by the model. Moreover, the path between efficiency growth and the firm's overall performance is significant ($\beta = 0.15$, $t = 3.56$, $p < 0.001$); thus, H2b is supported by the model. The path between revenue growth and the firm's overall performance is significant ($\beta = 0.21$, $t = 3.91$, $p < 0.001$), thus H3b is supported by the model. Moreover, the path between organisational capabilities and the firm's overall performance is significant ($\beta = 0.32$, $t = 4.56$, $p < 0.001$); thus, H4b is supported by the model. Finally, the results show that organisational capability has a positive effect on both efficiency growth ($\beta = 0.18$, $t = 4.03$, $p < 0.001$) as well as revenue growth ($\beta = 0.31$, $t = 11.44$, $p < 0.001$), thus both H5 and H6 are supported by the model (see Figure 5.4).

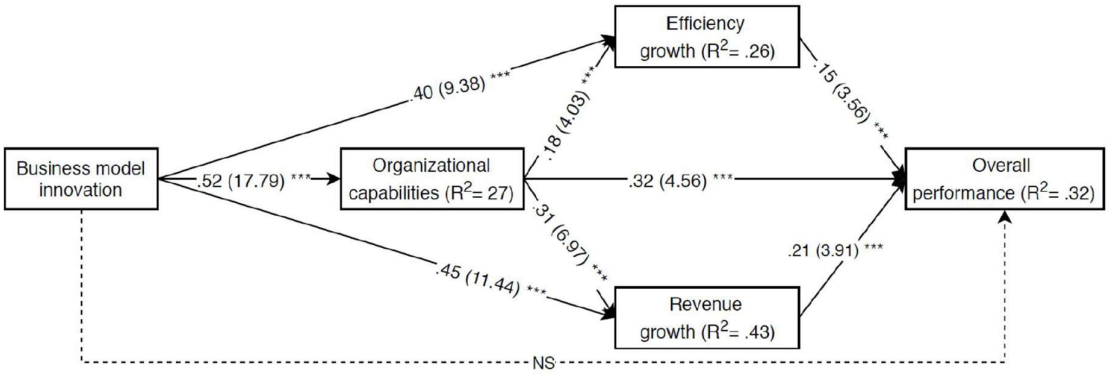

Figure 5.4: Structural model results for mediation model testing

(Significance levels: *** $p < 0.001$, and NS means not significant)

5.3.2 Mediation analysis

Table 5-2 presents the results of our mediation analyses. A significant direct relationship between BMI and the firm's overall performance (H1 is supported) confirms that the independent variable (BMI) is a significant predictor of the dependent variable (firm's overall performance). Satisfying this condition provides the ground to test the mediation relationship between BMI and the firm's overall performance. Based on the SEM results, when the mediators are included in the analysis, the direct path between BMI and overall firm performance is not significant (Figure 5.4). Moreover, as we hypothesised, the

mediation test results show that the path between BMI and the firm's overall performance is fully mediated by three variables (i.e., efficiency growth, revenue growth, and organisational capabilities) in our proposed model. The individual effects of each mediator can be seen in Table 5.2. Thus hypotheses H2, H3, and H4 are supported by the model.

Table 5.2: The mediation results between BMI and a firm's overall performance

Mediation paths	β	*t*-Statistics	*P* values	Mediation
BMI → Efficiency growth → Overall performance	0.07	3.03	0.003	Full mediation
BMI → Revenue growth → Overall performance	0.10	3.76	0.001	Full mediation
BMI → Organisational capabilities → Overall performance	0.16	4.44	0.001	Full mediation

5.4 Multi-group Analysis

When considering the size of firms (micro, small, and medium), we found a significant direct relationship between BMI and overall performance for different sizes. Surprisingly, it did not make a significant difference for the relationship between the BMI and efficiency growth, BMI and revenue growth, BMI and organisational capabilities, or between revenue growth and the firm's overall performance (see Table 5.3). However, we found a significant difference in the relationship between efficiency growth and the firm's overall performance when we take size into account. While the multi-group analysis shows that this path is significant for the micro-sized firms ($\beta = 0.18, t = 2.61, p < 0.001$), it is not significant for the small and medium-sized firms. It means that the larger the number of employees, the weaker the relationship between efficiency growth and the firm's overall performance. Moreover, the results show a significant difference in the path relationship between organisation capabilities and the firm's overall performance for small firms ($\beta = 0.43$, $t = 4.86$, $p < 0.001$) and medium-sized firms ($\beta = 0.40$, $t = 3.56$, $p < 0.001$), but not for micro-sized firms. This implies that developing organisational capabilities in larger firms has more effect on firm performance than in the case of micro-sized firms.

Table 5.3: The effect of firm size on the relationship between research constructs

Paths	All Firms β (T-value)	Contingency factor: Firm Size		
		Micro	Small	Medium
BMI → Overall performance (+)	NS (++)	NS	NS	NS
BMI → Efficiency growth	.49 (15.05) ***	.49 (8.92) ***	.46 (7.84) ***	.53 (9.70) ***
BMI → Revenue growth	.61 (22.05) ***	.60 (12.98) ***	.63 (13.84) ***	.61 (12.43) ***
BMI → Organisational capabilities	.52 (16.69) ***	.51 (9.76) ***	.51 (9.26) ***	.57 (10.81) ***
Efficiency growth → Overall performance	.15 (3.29) ***	.18 (2.61) *	NS	NS
Revenue growth → Overall performance	.22 (3.86) ***	.30 (2.98) **	.21 (2.43) ***	.22 (2.19) ***
Org. capabilities → Overall performance	.23 (4.55) ***	NS	.40 (5.07) **	.32 (3.56) *

(+): at the presence of three mediating factors; (++) NS = Not Significant;
Significance levels: *** p < 0.001 ** p < 0.005 * p < 0.01;

Regarding mediation effects, Table 5.4 shows that firm size has no significant effect on the mediation of revenue growth; therefore, revenue growth mediates between BMI and performance in firms of all sizes. However, the mediation effect of efficiency growth is significant only for micro-sized firms, and organisational capabilities mediates the relationship between BMI and the overall performance of both small and medium-sized firms. Despite the difference in the number of employees in small and medium-sized companies (i.e., from 10 to 250 employees), our results show that they present similar behaviour in contrast to micro-sized companies.

Table 5.4: The effect of firm size on the mediating relationships

Paths	All Firms β (T-value)	Contingency factor: Firm Size		
		Micro	Small	Medium
BMI → Efficiency growth → Overall performance	0.07 (3.13) ***	0.09 (2.47) **	NS	NS
BMI → Revenue growth → Overall performance	0.13 (4.31) ***	0.17 (3.31) ***	0.11 (2.54) **	0.92 (2.05) *
BMI → Organisational capabilities → Overall performance	0.12 (4.24) ***	NS	0.19 (3.91) ***	.14 (3.07) ***

(Significance levels: *** p < 0.001 ** p < 0.005 * p < 0.01, and NS means not significant)

Multi-group analysis results (Table 5.5) with respect to the firm's age revealed that there are no significant differences between the paths from BMI to efficiency growth and BMI to organisational capabilities, while for the other path relationships, significant differences were found. For example, while the path between BMI and revenue growth is not significant for newly-established firms, it is significant for both the well-established firms (β = 0.61, t = 18.43, p < 0.001) and the young firms (β = 0.66, t = 12.95, p < 0.001). The same finding applies to the path between efficiency growth and the firm's overall performance: while the path is not significant for the newly-established firms, it is significant for the well-established firms (β = 0.15, t = 2.70, p < 0.001) and the young firms (β = 0.28, t = 3.16, p < 0.001). Moreover, the path between revenue growth and the firm's overall performance is not significant for the young firms, whereas it is significant for the newly-established firms (β = 0.45, t = 2.11, p < 0.001) and the well-established firms (β = 0.18, t = 2.90, p < 0.001). Finally, the path between organisation capability and the firm's overall performance is significant only for the well-established firms (β = 0.25, t = 2.29, p < 0.001). We also found a significant direct relationship between BMI and

firm performance in firms of all ages when excluding the three mediator variables (i.e., efficiency growth, revenue growth, and organisational capabilities).

Table 5.5: The effect of firm age on the relationship between research constructs

Paths	All Firms β (T-value)	Contingency factor: Firm Age		
		Newly-established	Young	Well-established
BMI → Overall performance (+)	NS (++)	NS	NS	NS
BMI → Efficiency growth	.49 (15.05) ***	.52 (2.66) *	.40 (5.08) *	.52 (14.58) ***
BMI → Revenue growth	.61 (22.05) ***	NS	.66 (12.95) ***	.61 (18.43) ***
BMI → Organisational capabilities	.52 (16.69) ***	.43 (2.03) **	.51 (7.33) ***	.53 (14.84) ***
Efficiency growth → Overall performance	.15 (3.29) ***	NS	.28 (3.16) ***	.15 (2.70) **
Revenue growth → Overall performance	.22 (3.86) ***	.45 (2.11) **	NS	.18 (2.90) ***
Org. capabilities → Overall performance	.23 (4.55) ***	NS	NS	.25 (4.29) ***

(+): at the presence of three mediating factors; (++) NS = Not Significant;
Significance levels: *** p < 0.001 ** p < 0.005 * p < 0.01;

Regarding mediation effects, Table 5.6 shows that when taking the firm age into account as a moderator, none of the three factors mediate the relationship between BMI and the firm's overall performance in newly-established firms. While efficiency and revenue growth mediate the path between BMI and firm's overall performance for young and well-established firms, the organisational capabilities mediate this relationship solely in well-established firms.

Table 5.6: The effect of firm age on mediating relationships

Paths	All Firms β (T-value)	Contingency factor: Firm Age		
		Newly-established	Young	Well-established
BMI → Efficiency growth → performance	.07 (3.13) ***	NS	.10 (2.57) *	.07 (2.47) **
BMI → Revenue growth → Performance	.13 (4.31) ***	NS	.11 (1.97) *	.09 (3.12) ***
BMI → Organisational capabilities → Performance	.12 (4.24) ***	NS	NS	.12 (4.14) ***

(Significance levels: *** p < 0.001 ** p < 0.005 * p < 0.01, and NS means not significant)

5.5 Discussion

5.5.1 Direct relationship between BMI and overall performance (bivariate correlation)

Although literature presents examples of successful BMI, in reality, the failure rate is higher than the success rate (Christensen et al., 2016). As the literature suggests, the causal relationship between BMI and superior firm performance remains unclear (Knab and Rohrbeck, 2014). Therefore it forces scholars and practitioners to investigate how BMI can improve a firm's performance. Recent studies produced inconclusive results when testing the strength of the relation between BMI and firms' performance. Some strong correlations (>0.50) have been found (Ladib and Lakhal, 2015; Huang et al., 2012; Kumar

et al., 2018), as well as some moderate (0.30–0.50) (e.g., Brettel et al., 2012; Guo et al., 2017; Liu and Han, 2013; Waldner et al., 2015) and weak correlations (< 0.30) (e.g., Gronum et al., 2015; Hartmann et al., 2013; Karimi and Walter, 2016; Wei et al., 2017). A limited number of researchers have also reported that they could not find any significant relationship between BMI and firm performance under certain assumptions. For instance, Liu and Han (2013) revealed that for newly-established firms, there is no significant relationship between BMI and corporate performance. Velu (2015) demonstrated that there is a non-linear relationship between BMI and firm performance, and that the relationship between a firm's survival time and the degree of BMI is U-shaped. Furthermore, Kumar et al. (2018) showed that there was no significant relationship between efficiency-focused BMI and SMEs' performance.

Consistent with the findings of Ladib and Lakhal (2015), Brettel et al. (2012), Huang et al. (2012), Guo et al. (2017) and Waldner et al. (2015), this study found a direct relationship between BMI and the firm's overall performance for the sample of SMEs ($\beta = 0.44$, $t = 12.25$, $p < 0.001$). This relationship was also significant in sub-samples when considering size and age as control variables. The results showed that BMI attempts lead to the superior performance of the firms, no matter how small or large they are or for how many years they have been in business (Latifi et al., 2021a). This is in contrast to the findings of Liu and Han (2013), Velu (2015) and Kumar et al. (2018).

5.5.2 Mediation relationships between BMI and overall performance

Contrary to Pucci et al. (2017), who found a negative effect of operational efficiency-centered BM on firm performance, our results are in line with previous findings of scholars (Ladib and Lakhal, 2015; Brettel et al., 2012; Chesbrough, 2007; Heikkilä et al., 2018) showing that an efficiency growth focus positively mediates the relation between BMI and the firm's overall performance and, and as such, predicates the mediatory effect of efficiency.

Also, the implementation of a revenue growth strategy in a BM, with a focus on attracting new customers and expanding the firm's markets, can act as a mediator, as also suggested by Heikkilä et al. (2018). This result is also in line with findings reported by Ladib and Lakhal (2015), Brettel et al. (2012), Gronum et al. (2015), Migol et al. (2018), Wei et al. (2017), and Zott and Amit (2007). Revenue growth is a better mediator than efficiency growth in SMEs since the revenue growth mediation effect is 0.10 compared to 0.07 for efficiency growth, which is consistent with Zott and Amit (2007).

Our study is consistent with previous studies that confirm the significant mediation effect of organisational capabilities between BMI and a firm's overall performance (e.g., Anning-Dorson, 2017; Bock et al., 2012; Hult et al., 2004; Mahmood and Hanafi, 2013). However, these studies are usually focussed on one specific capability — for example, entrepreneurial orientation, organisational culture, and market orientation – whereas in this study, we incorporated several organisational capabilities as a mediator. Developing organisational capabilities has the same effect as revenue growth to improve the overall performance of the firm. However, our results stress that SMEs' owners/managers, instead of focusing on growth in efficiency or revenue, can gain considerable benefits by investing in their organisational capabilities to innovate their BM, for instance, by opportunity recognition, stimulating innovativeness, and promoting active organisational learning.

5.5.3 The influence of SMEs' size and age on mediation effects

At first sight, our study confirms established findings in the literature. However, if we look at moderating effects, our main findings become more nuanced. According to Gooding and Wagner (1985), firm size has been positively related to performance. A positive effect can be derived from economies of scale (e.g., Thompson, 1967), better relationships with and control of external stakeholders and resources (Aldrich and Pfeffer, 1976), or bargaining power (Zott and Amit, 2007). However, smaller organisations have an advantage over larger firms when creating and capturing new opportunities and exploring new markets (Damanpour and Wischnevsky, 2006). Although various research revealed that larger firms are found to be more productive, seeking for efficiency rather than profitability (Majumdar, 1997), our research nuances these findings.

Size has a significant impact on the mediation relationship between BMI and firm overall performance. In contrast to the current literature, we found that efficiency-centred BMI mediated the relation between BMI and overall performance only in micro-sized firms and was not significantly mediate in small and medium-sized firm sub-samples. We expected larger firms to be more productive and to search for Efficiency growth (Majumdar, 1997), rather than a micro-sized one. These contradictory results might be best explained by the decreasing cost of using information technology for micro-companies in recent years. According to transaction cost theory, ICT makes economic exchanges easier and more efficient, reducing search, negotiation and enforcement costs (Cordella, 2006). Cloud technology, for instance, enables micro-firm to be more efficient than before while there is no need to spend a fortune on hardware, software, or licensing fees.

Medium-sized enterprises can better improve their performance through developing organisational capabilities and revenue growth while implementing BMI; however, efficiency growth is not significantly mediating the relationship between BMI and overall firm performance. According to the resource-based view (RBV), having a variety of human capital, a medium-sized firm can better recognise business opportunities and manage the technical and human side of BMI. However, more research needs to be done to explain why efficiency growth does not significantly mediate the relationship between BMI and the overall firm performance for medium-sized ones, while they have access to ample financial resources to make their business processes more efficient.

We found that revenue growth is the only significant mediator to improve firm's overall performance for any size of the firm ($\beta micro = 0.17$, $p < 0.001$; $\beta small = 0.11$, $p < 0.01$; $\beta medium = 0.92$, $p < 0.1$). This generic mediation function effect is not found for the other two mediators, i.e., efficiency growth and organisational capabilities. This could lead us to conclude that in an attempt to BMI in SMEs, the first goal is increasing the profits by finding new customers or markets. This finding is in line with the case study results carried out by Zott (2008) in US companies, and Heikkilä et al. (2018) in European SMEs. Although there is a weak mediation in medium-sized firms, it might be that the larger firms mostly focus on intrapreneurship through developing organisational capabilities of various teams.

Furthermore, the performance difference between younger and older firms is an area of research that attracted a great deal of attention from scholars from a wide range of disciplines. Some scholars believe that older firms are more experienced, have enjoyed the benefits of learning, increasingly focus on efficiency (e.g., through standardisation, formalisation and economies of scale) and hence can enjoy superior performance (Brettel et al., 2012). However, others have suggested that older firms may suffer from inertia and bureaucratic inflexibility, which increases with age; therefore, they are unlikely to have the adaptability to make a rapid change and are likely to lose out to younger and more agile firms

(Majumdar, 1997). We found that organisational capabilities are the sole mediator which works for a well-established firm to improve their overall performance. This generic mediation function effect is not found for the other two mediators, i.e., revenue and efficiency growth. This could lead us to conclude that in an attempt of BMI in SMEs, having more experience in doing business, well-established SMEs are better in creating an innovative culture, entrepreneurial orientation, and willingness to learn as organisational capabilities, as organisational capabilities plays a more important role in well-established firms. This finding is in contrast with earlier research, e.g., Marshall (1920), which revealed that while firms get older, it is more difficult to change their mindset and the way they do the business.

Our multi-group analysis, considering firm ages, did not show any significant mediation relationship for newly-established firms. So there is no dominant way of improving firm's overall performance by conducting BMI in newly-established firms by neither focusing on efficiency and revenue growth nor organisational capabilities. Although this result is in contrast with the prior notion that younger firms are more agile and can adapt to new technology and market change more easily (Marshall, 1920; Zhou & Wu, 2010), it can provide a quantitative confirmation for Heikilla et al. (2018) findings. In their extensive case study research, it was revealed that SMEs which start a new business, appear to be explorative in nature and execute several iterative BMI steps. The BMI processes in newly-established firms are more cyclic and move from efficiency-focused to revenue-focused and vice-versa.

Another interesting finding this study reveals is that well-established SMEs can benefit from efficiency and revenue growth as well as organisational capabilities at the same time to improve their performance. Being mature, firms can conduct their business more efficiently by standardisation, formalisation, and economies of scale, they can also enjoy their experiences - based on path dependency theory - to recognise new business opportunities and manage their innovative culture. However, regarding revenue growth, this result is inconsistent with the literature (Kumar, 2018), which stated that well-established SMEs do not focus on revenue growth. Our finding can be explained by focussing on intangible resources established SMEs possess. Intangible assets such as brand recognition and trademarks require a longer time to develop and can be considered as crucial factors to attract new customers and to enter new markets.

In this chapter, our focus was on examining the mediating factors which are explaining how BMI influences on firm’s overall performance. As the next step to explore those causal relationships between BMI and a firm’s overall performance, in the next chapter, we will investigate the moderating factors that strengthen and/or weaken the relationship between BMI and a firm’s overall performance which are the core of our research objective, i.e., human and organisational factors.

Chapter 6: Quantitative Research (2018), moderating factors

The quantitative research conducted in 2018 aims to understand when and under which condition BMI can enhance SME's performance. Based on a systematic literature review (Chapter 2.8), a conceptual model was developed to explore the relevant contingency aspects related to human and organisational factors. The data collection method, and assessment of measurement models and the structural model were carried out and presented in the method chapter (section 4.3). In this chapter, firstly, the descriptive analysis of our sample companies (439 European SMEs) is briefly presented. Next, the results of path model analysis, moderation interaction analysis, and multi-group analysis to investigate the moderation factors, i.e., hypothesis 7 to hypothesis 20 (section 2.9) that influence the relationship between BMI and SME's overall performance, are reported.

6.1 Descriptive Analysis

The population in this study was the same as in the previous study, however, data was collected in 2018 from 807 respondents, 56% answered positively to at least one of the selection questions and were included in the sample. The final dataset contains 439 SMEs in fifteen different industries in thirteen European countries engaged in BMI.

As discussed in section (4.2) and section 5.2, the same restrictions upon sampling in European SMEs were valid. Figure 6.1 shows that the number of sample companies in each region is almost equally

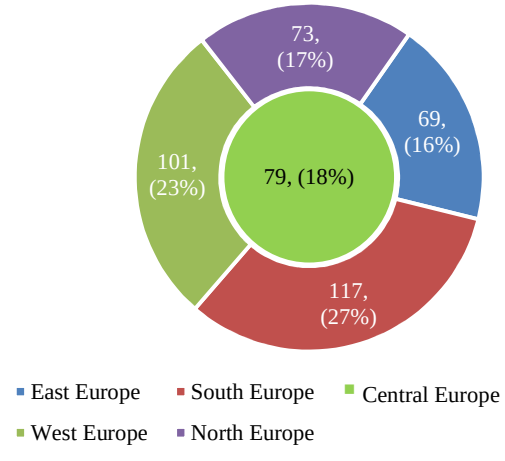

Figure 6.1: Number and distribution of companies per region (2018)

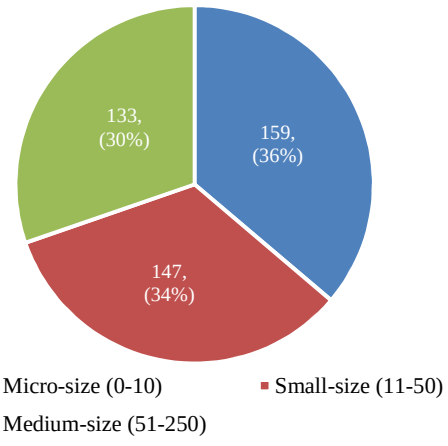

Figure 6.2: Number and distribution of companies per size (2018)

distributed. Next to confirm the distribution per region, Figure 6.2 illustrates the sample distribution in terms of size, as we strive for as the second restriction. Although Micro-sized SMEs are a little overrepresented, the number of medium-sized companies is slightly less than our expectation. With regard to distribution over the industry sector, there was no quota and SMEs belonged to different industries (See Table E-1 in appendix E to see the distribution of the sample companies in seventeen industry sectors).

Regarding the age of SMEs, the average age of SMEs was 35 years. The oldest SME in our sample was founded in 1700, and approximately 15% of SMEs were established in the last ten years and can be considered as start-ups according to the EU definition. Table 6.1 presents the age distribution of SMEs in the data set.

Table 6.1: Age distribution of SMEs in the data-set

Establishes Year	Frequency	Percent
Before 1950	52	12
1951 - 1990	131	30
1991 - 2000	125	28
2001 - 2010	92	21
>2010	39	9
Total		100

6.2 Testing of Moderating Model

We employed structural equation modeling (SEM) using SmartPLS v.3.3.3 software to test the hypotheses and path analysis. Among the fourteen moderating variables that have been tested (hypothesis 7 to hypothesis 20), eleven moderating factors had a continuous measurement scale, i.e., employees motivation, employees development, effective communication, resistance to change, the culture of innovation, degree of novelty, speed of change, the scope of change, competitive intensity, and technology turbulence, and three moderating factors had a categorical scale, i.e., using BM tooling, firm age, and firm size. We used SmartPLS built-in moderating effect analysis for testing the continuous moderators (interaction term), and applied multi-group analysis (MGA) for categorical moderators. Since there are several moderators (14) in the model (see Figure 2-11) and the sample size is not too big, in line with the recommendation of Memon (2019), each moderator was separately analysed. The components of each model, the method to test the hypothesis, and the related hypothesis number are presented in Table 6.2.

By Supporting bootstrapping analysis to generate path coefficient with a minimum subsample protocol of 5,000 samples, eleven separate models were run to test our research hypotheses with a continuous measurement scale. Consistent with our expectations and earlier findings (section 5.3), the direct path between BMI and the firm's overall performance was significant (in the absence of moderators); thus, H1 was supported by the model ($\beta = 0.351$, $t = 9.160$, $p < 0.001$). This direct path between BMI and the firm's overall performance was also significant when the eleven moderators were included in the analysis (separately).

Table 6.2: research models to test hypotheses related to moderating effect

Model No.	Independent variable	Moderating variable	Dependent variable	Analysis method	related to hypothesis No.
Model 01	BMI	-	Firm Performance	Path coefficient	1
Model 02	BMI	Employees Motivation	Firm Performance	Interaction term	7
Model 03	BMI	Employees Development	Firm Performance	Interaction term	8
Model 04	BMI	Effective Communication	Firm Performance	Interaction term	9
Model 05	BMI	Resistance to Change	Firm Performance	Interaction term	10
Model 06	BMI	Culture of Innovation	Firm Performance	Interaction term	11
Model 07	BMI	BM Tooling	Firm Performance	Multi-group	12
Model 08	BMI	BM Exprimentation	Firm Performance	Interaction term	13
Model 09	BMI	Degree of Novelty	Firm Performance	Interaction term	14
Model 10	BMI	Scope of Chage	Firm Performance	Interaction term	15
Model 11	BMI	Speed of Change	Firm Performance	Interaction term	16
Model 12	BMI	Size of Frim	Firm Performance	Multi-group	17
Model 13	BMI	Age of Frim	Firm Performance	Multi-group	18
Model 14	BMI	Competitive Intensity	Firm Performance	Interaction term	19
Model 15	BMI	Technology Turbulance	Firm Performance	Interaction term	20

6.2.1 Interaction effects for moderators with a continuous measurement scale

The analysis of model two showed a significant moderating effect of Employees' Motivation on the relationship between BMI and the firm's overall performance (β = 0.049, t = 2.038, p= 0.021). Thus H7 is supported by the model. The moderating effect of Employees' Development was also significant (β = 0.053, *t* = 2.59, *p* = 0.005); thus, H8 is also supported by the model. However, the results revealed that effective communication barely fails to attain statistical significance at conventional levels (β = 0.04, *t* = 1.62, *p=0.054)*; thus, H9 is not supported by the model. As the tenth hypothesis, the result could not support the mediating effect of resistance to change among employees on the relationship between BMI and the firm's overall performance since it was not statistically significant (β = 0.03, *t* = 1.085, *p*=0.139); thus, H10 is not supported by the model. However, Culture of Innovation has a significant mediating effect (β = 0.042, *t* = 1.772, *p* = 0.038) on the relation between our independent and dependent variables; therefore, H11 is supported by the model.

The result of analysis on moderating variables in the BM practices group revealed that the BM Experimentation has no significant moderating effect between BMI and firm's overall performance (β = 0.021, *t* = 0.763, *p* = 0.226); thus, H13 is not supported by the model. The analysis could not find a significant moderating effect via Degree of Novelty (within the industry) between BMI and firm's overall performance (β = 0.047, *t* = 0.851, *p* = 0.197); thus, H14 is not supported by the model. The moderating effect of Scope of Change (change in the limited elements of BM or entire BM) is also not significant (β = 0.021, *t* = 0.690, *p* = 0.245); thus, H15 is not supported by the model. Finally, the results show that Speed of Change (radical or incremental) has a significant moderating role (β = 0.022, *t* = 0.612, *p* = 0.270) on the relations between BMI and firm's overall performance; thus, H16 is not supported by the model.

The findings on moderating effect in the industry-characteristic group indicated that the Competitive Intensity in the market moderates the relationship between BMI and firm's overall performance (β =

0.036, $t = 1.656$, $p = 0.019$); thus, H19 is supported by the model. However, the Technology turbulence has not a significant moderating effect on the relationship between BMI and a firm's overall performance ($\beta = 0.028$, $t = 1.090$, $p = 0.138$); thus, H20 is not supported by the model. Table 6.7 (page 122) summarises the bootstrapping results for moderator testing.

Interpreting moderating effect

Simple Slope Plot

Recently scholars asked for a simple slope analysis for the visual inspection of the direction and strength of the moderating effect. So we executed the simple slope plot in SmartPLS. Since the interpretation of moderation results is not easy (Hair et al., 2017), graphical illustrations of results can support understanding them and drawing conclusions. A common way to illustrate the results of a moderation analysis is by slope plots. For instance, as discussed in the path coefficient analysis section, the employees' motivation interaction term has a positive effect on the firm's overall performance (0.049), whereas the simple effect of employees' motivation on the firm's overall performance is 0.155. Jointly, these results suggest that the relationship between BMI and the firm's overall performance is 0.155 for an average level of employees motivation. For higher levels of employees motivation (e.g., increased by one standard deviation unit), the relationship between BMI and the firm's overall performance increases by the size of the interaction term (i.e., 0.155 + 0.049 = 0.204). On the contrary, for lower levels of employees motivation (e.g., decreased by one standard deviation point), the relationship between BMI and the firm's overall performance becomes 0.155 - 0.049 = 0.106.

Considering the simple slope plot (Figure 6.3), the relationship between BMI and the firm's overall performance is positive for all three lines, as indicated by their positive slope. Hence, higher levels of BMI go hand in hand with higher levels of the firm's overall performance. In addition, the upper line, which represents a high level of the moderator construct employees motivation, has a steeper slope while the lower line, which represents a low level of the moderator construct employees motivation, has a flatter slope. This makes sense since the interaction effect is positive. Overall, these results provide clear support that employees motivation exerts a significant and positive effect on the relationship between BMI and the firm's overall performance. The higher the employee's motivation, the stronger the relationship between BMI and the firm's overall performance.

Since the simple slope plot for "employees development" and "culture of innovation" present the same trend as employees motivation, their simple slope plot is not shown here.

The effect size of f^2

In the case of interaction effects, the f^2 effect size indicates how much the moderation contributes to explaining the endogenous latent variable (firm's overall performance). According to Kenny and Judd (2019) f^2 effect size 0.005, 0.01, 0.025 constitute for small, medium, and large effect size. The results show that employees' motivation, degree of novelty, and culture of innovation had a large effect size by f^2 values of 0.066, 0.050, and 0.035, respectively. Moreover, employee development, effective communication, (lack of) resistance to change, and speed of change by f^2 effect size of 0.022, 0.015, 0.013, and 0.008, respectively, had a moderate contribution to the explanation of the firm's overall performance. The f^2 values for all tested models are presented in Table F-1 in the appendix.

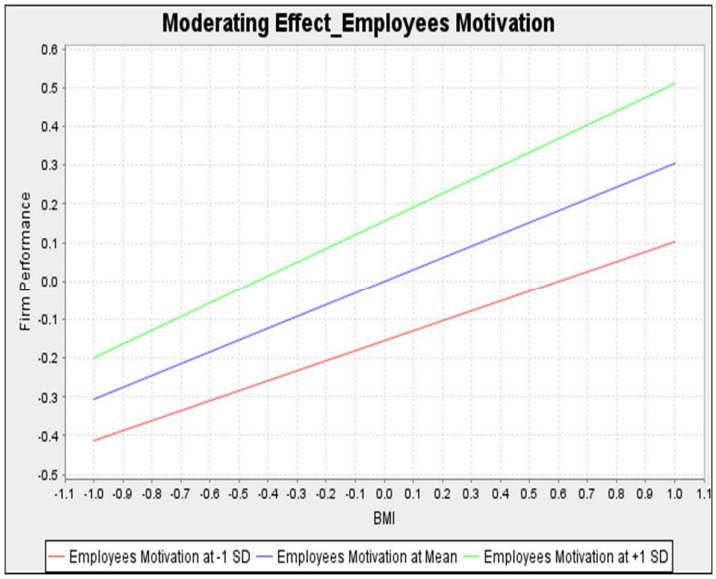

Figure 6.3: Simple Slope Plot in SmartPLS for moderating effect of Employees motivation

The predictive relevance Q^2 effect size

The predictive relevance Q^2 effect size calculated by running blindfolding procedure in Smart-PLS showed that Q^2 in all eleven models had values larger than zero indicate that the research moderating constructs had predictive relevance for the endogenous construct under consideration (here, the firm's overall performance). More precisely, except for the moderating effect of the culture of innovation, which has a higher Q^2 value (0.127), the other moderating constructs have a Q^2 around 0.08. This finding emphasizes the critical importance of culture of innovation in implementing on BMI, and therefore, it will be investigated further in our case study (chapter 7). (Q^2 values for all tested models are presented in Table F-2 in the appendix).

Standardized root mean square residual (SRMR)

Model fit indices enable judging how well a hypothesized model structure fits the empirical data and help identify model misspecifications. The standardized root mean square residual (SRMR) which was introduced by Henseler et al. (2014), was used to validate the model. Since the SRMR values for all eleven models range from 0.064 to 0.070 and are less than the threshold value of 0.08, the models fit are considered a good fit. (Standardized root mean square residual (SRMR) values for all tested models are presented in Table F-3 in the appendix).

6.2.2 Multi-group Analysis for moderators with categorical measurement scale

To investigate the moderating effect of categorical variables (Using of BM-Tooling, Firm Size, and Firm Age) on the relationship between BMI and the firm's overall performance, the multi-group analysis was performed by using the MGA algorithm in SmartPLS software. Multi-group (MGA) or between-group analysis is a means to test predefined data groups to determine the existence of significant differences across group-specific parameter estimates (Hair et al., 2017).

To increase the rigor of the data analysis and to reduce misleading results, the comparison of group-specific outcomes was undertaken in three stages as suggested by Hair et al. (2014), which were:

Stage 1: Data preparation for subgroups,

Stage 2: Test for Measurement invariance including:

- **(i)** Configural invariance,
- **(ii)** Compositional invariance, and
- **(iii)** Equality of a composite's mean value and variance across groups,

Stage 3: Test for multi-group comparisons.

In Stage 1, we calculated the minimum sample size recommended by Cohen (1992) and Hair et al. (2014a) to ensure that the sample sizes of the subpopulations are large enough to meet statistical power guidelines. For a statistical power of 80%, maximum arrows pointing at a construct of 8, and a significance level of 0.05, the calculation resulted in a minimum sample size of 84. Although BM-Tooling and Firm Size's subgroups met the criteria, Firm Age subgroups had two smaller subsamples (67, 32). Since the groups that do not meet sample size recommendations should not be utilized (Hair et al., 2017), we combined young firms with new-established firms to reach a subgroup of 99 samples (see Table 6.3). Therefore, we carried out the multi-group analysis for firm age in two subgroups; new-established, founded in less than 15 years, and well-established firms founded more than 16 years ago.

Table 6.3: Number of samples per subgroup

	Moderators	Group Name	No. of samples per group
1	Using BM Tooling	BM Tooling_Yes	88
		BM Tooling_No	351
2	Firm Age	Firm Age_New Established	99
		Firm Age_Well Established	340
3	Firm Size	Firm Size_Micro	159
		Firm Size_Small	147
		Firm Size_Medium	133

In addition, we assessed the reliability and convergent validity of the model in subgroups. All criteria (loadings, weights, CR, AVE, HTMT, and SMSR) were well below the thresholds. Therefore, we concluded that the subsamples' data had the acceptable quality to perform MGS in PLS-SEM.

Next, in stage 2, measurement invariance (or measurement equivalence) among the subgroups were tested. We used the MICOM procedure built-in SmartPLS software. There are three steps in the MICOM procedure (Cheah et al., 2020), namely, the assessments of (i) configural invariance (Step I), (ii) compositional invariance (Step II), and (iii) the equality of a composite's mean value and variance across groups (Step III).

When running MICOM in SmartPLS, configural invariance (Step I) was automatically confirmed (e.g., similar data treatment and similar PLSPM algorithm settings for subgroups).

To assess measurement invariance, we run a permutation algorithm that set a minimum of 1,000 permutations and two-tailed testing at a significance level of 0.05. Table 6.4 shows the results of the MICOM step II.

To assess the result of MICOM step II, the columns of original correlations and the 5% quantile in Table 6.4 have to be compared. Since the quantiles were smaller than the original correlation for all the constructs, it indicates that the correlation was not significantly lower than one (corroborated by the permutation's p-values larger than 0.05). Having fulfilled this criterion, the results suggested that compositional invariance was established. Thus, the results of step II supported partial measurement invariance.

Table 6.4: MICOM step II results for measurement invariance test

	Moderators	Models' Constructs	Original Correlation	5.0%	Permutation p-Values
1	BM Tooling	BMI	0.675	0.484	0.262
		Firm Performance	0.998	0.988	0.750
2	Firm Age	BMI	0.833	0.516	0.643
		Firm Performance	0.994	0.988	0.257
3	Firm Size (Micro vs Small)	BMI	0.893	0.571	0.825
		Firm Performance	0.998	0.990	0.867
	Firm Size (Micro vs Medium)	BMI	0.784	0.480	0.636
		Firm Performance	0.991	0.986	0.179
	Firm Size (Small vs Medium)	BMI	0.755	0.558	0.404
		Firm Performance	0.995	0.988	0.347

Furthermore, the constructs' equality of mean values and variances across groups was checked in MICOM step III to assess whether full measurement invariance was achieved. As can be seen in Table 6.5, not all the confidence intervals straddled the original value of mean and variance, and the p-values for firm performance in testing BM Tooling, and the BMI in testing moderating effect of firm age and size, were smaller than 0.05; hence there was no significant difference in composite variances. Thus, the Step III results concluded that not all the composite mean values and variances were equal; only partial measurement invariance was supported. Once measurement invariance, either partial or full, is established using MICOM, the researcher can assess group differences using MGA in PLSPM.

Table 6.5: MICOM step III results for full measurement invariance test

			Mean - Original Difference	2.5%	97.5%	Permutation p-Values	Variance - Original Difference	2.5%	97.5%	Permutation p-Values
1	BM Tooling	BMI	0.490	-0.235	0.241	--	-0.173	-0.261	0.213	0.168
		Firm_ Performance	0.242	-0.240	0.214	0.040	-0.228	-0.354	0.306	0.183
2	Firm Age	BMI	-0.276	-0.217	0.222	0.013	0.060	-0.220	0.249	0.593
		Firm_ Performance	-0.132	-0.224	0.226	0.242	-0.125	-0.278	0.329	0.427
3	Micro vs Small	BMI	0.077	-0.230	0.220	0.464	0.228	-0.218	0.215	0.038
		Firm_ Performance	-0.237	-0.235	0.235	0.046	0.179	-0.302	0.287	0.246
	Micro vs Medium	BMI	-0.115	-0.242	0.230	0.337	0.256	-0.273	0.245	0.053
		Firm_ Performance	-0.399	-0.232	0.230	--	0.242	-0.305	0.305	0.118
	Small vs Medium	BMI	-0.196	-0.216	0.238	0.102	0.159	-0.251	0.269	0.230
		Firm_ Performance	-0.177	-0.252	0.238	0.140	0.067	-0.378	0.346	0.732

In stage 3, to test of Multi-Group Analysis, we ran Permutation bootstrap-based MGA using SmartPLS to compare parameters between the groups (with default setting; significance level of 0.05, two-tailed test, permutation 1000, max. number of iterations 5000, stop criterion 10^-7). Following the results of the multi-group analysis for three categorical moderators are presented.

Multi-Group Analysis for users and non-users of BM-Tooling

When considering the use of BM Tooling such as BM Canvas, customer profile, SWOT Analysis that could help SME's owners and managers design and validate their BM, our multi-group analysis found a significant difference between users of BM tooling and the ones who did not. Although the path coefficient between BMI and firm's overall performance in the group of BM tooling ($\beta = 0.525$, $t = 3.999$, $p < 0.001$) shows stronger relationship compare to the other group ($\beta = 0.359$, $t = 8.70$, $p < 0.001$), the differences between two groups is also statistically significant ($\beta = 0.161$, p=0.02). Thus,

H12 is supported by multi-group analysis. When looking at the effect size f^2, it is much stronger for users of BM tooling (0.370) than other groups that did not use BM tooling (0.148).

Multi-Group Analysis for Firm age (New-established vs. Well-Established)

To investigate the effect of firm age in the BMI process and its role on overall performance, surprisingly, our multi-group analysis could not find a significant difference between new-established SMEs and well-established SMEs. Although the path coefficient between BMI and firm's overall performance in the group of well-established SMEs ($\beta = 0.424$, $t = 5.66$, $p < 0.001$) shows a bit stronger relationship compare to the group of new-established SMEs ($\beta = 0.375$, $t = 8.62$, $p < 0.001$), the differences between two groups is not statistically significant ($\beta = 0.049$, p=0.551). Thus, H17 is not supported by multi-group analysis. The effect size f^2 is moderate for two groups of new-established and well-established SMEs, 0.163 and 0.219, respectively.

Multi-Group Analysis for Firm Size (Micro, small, Medium-sized)

In terms of size, SMEs were divided into three subgroups of micro, small, and medium-sized. Since the Permutation procedure can compare two groups at a time, we ran three pairwise comparisons. The Permutation MGA result shows that the path coefficient between BMI and firm's performance is significant for all three subgroups since it is ($\beta = 0.374$, $t = 6.30$, $p < 0.001$) for micro size, ($\beta = 0.465$, $t = 7.96$, $p < 0.001$) for small, and ($\beta = 0.385$, $t = 4.25$, $p < 0.001$) for medium size SMEs. The small size has a stronger effect size f^2 (0.276) on firm performance compared to the micro (0.162) and medium (0.174) size of firms.

As shown in Table 6.6, the path coefficient between BMI and the firm's overall performance does not significantly differ among groups in our pairwise multi-group comparison. Then, H18 is not supported by multi-group analysis.

Table 6.6: Pairwise multi-group comparison among micro, small, and medium-sized SMEs

Relationship	Comparison	Difference	t-value	p-value
BMI → Firm Performance	Micro vs. Small	-0.091	1.093	0.310
	Micro vs. Medium	-0.011	0.105	0.908
	Small vs. Medium	0.080	0.759	0.368

So, out of fourteen hypotheses proposed, six hypotheses are supported after testing interaction and multi-group analysis, and eight hypotheses are not supported. The results are shown in Table 6.7.

6.3 Discussion and Conclusion

Although recently scholars have highlighted the need for investigating the complex relationship between BMI and performance of firms, few studies have been carried out to explore and explain mediation and moderation factors which play a significant role in the relationship between BMI and firm's performance, in particular, research in the SME domain which comprise 98% of the total number of enterprises is even more limited. Due to limited research in the BM literature to explore the process of BMI implementation from a human and organisational perspective, we treated business model change as a subset of organisational change. Our systematic review of relevant literature (see section 2.7) retrieved twenty moderating factors which can potentially impact the relationship between BMI and a firm's performance. We aimed at testing a model that would allow researchers and practitioners

Table 6.7: Results of hypotheses testing

Model No.	Relationship	β	P-Value	Hypotheses
Model 01	BMI > Performance	0.351	0.000	H1 Supported
Model 02	BMI > Performance	0.305	0.000	H7 Supported
	Employees Motivation> Performance	0.155	0.000	
	Moderating of Motivation on (BMI > Performance)	0.049	0.021	
Model 03	BMI > Performance	0.320	0.000	H8 Supported
	Employees Development > Performance	0.144	0.002	
	Moderating of Empl. Development on (BMI > Performance)	0.053	0.005	
Model 04	BMI > Performance	0.332	0.000	H9 Not Supported
	Effective Communication > Performance	0.062	0.112	
	Moderating of Eff. Communication on (BMI > Performance)	0.040	0.093	
Model 05	BMI > Performance	0.321	0.000	H10 Not Supported
	Resistance to Change > Performance	0.179	0.000	
	Moderating of Resis. To Change on (BMI > Performance)	0.030	0.139	
Model 06	BMI > Performance	0.130	0.007	H11 Supported
	Culture of Innovation > Performance	0.377	0.000	
	Moderating of Culture of Innovation on (BMI > Performance)	0.042	0.047	
Model 07	(Use of BM Tooling) vs. (Not Using of BM Tooling)	0.161	0.022	H12 Supported
Model 08	BMI > Performance	0.338	0.000	H13 Not Supported
	BM Exprimentaton > Performance	0.022	0.333	
	Moderating of BM Exprimentaton on (BMI > Performance)	0.021	0.226	
Model 09	BMI > Performance	0.266	0.000	H14 Not Supported
	Degree of Novelty > Performance	0.138	0.005	
	Moderating of Degree of Novelty on (BMI>Performance)	0.047	0.197	
Model 10	BMI > Performance	0.339	0.000	H15 Not Supported
	Scope of Change > Performance	0.052	0.137	
	Moderating of Scope of Change on BMI>Performance	0.021	0.245	
Model 11	BMI > Performance	0.302	0.000	H16 Not Supported
	Speed of Change > Performance	0.146	0.003	
	Moderating of Speed of Change on BMI>Performance	0.022	0.270	
Model 12	Firm Age: (New-established) vs. (Well-established)	0.049	0.551	H17 Not Supported
Model 13	Firm Size: (Micro-sized vs. Small-sized)	0.091	0.310	H18 Not Supported
	Firm Size: (Micro-sized vs. Medium-sized)	0.011	0.908	
	Firm Size: (Small-sized vs. Medium-sized)	0.080	0.368	
Model 14	BMI > Performance	0.297	0.000	H19 Supported
	Competitive Intensity > Performance	0.124	0.005	
	Moderating of Competitive Intensity on BMI>Performance	0.036	0.019	
Model 15	BMI > Performance	0.308	0.000	H20 Not Supported
	Technology Turbulance > Performance	0.092	0.026	
	Moderating of Technology Turbulance on BMI>Performance	0.026	0.133	

to explain and predict the strength and direction of the relationship between BMI and SME's performance. Since examining all moderating factors was not feasible in this study, we tested fourteen moderating factors. The identified moderating factors were classified into four sub-groups: (1) BM-Implementation comprised of employees' motivation, employees' development, communications among various stakeholders, Resistance to change, and Culture of Innovation, (2) BM-Practices; including BM tooling, BM experimentation, the scope of change, speed of change, and degree of novelty. (3) Firmcharacteristics include firm size and firm age, and (4) Industry-Characteristics consist of competition intensity, technology turbulence.

Among fourteen moderating variables, eleven moderating factors had a continuous measurement scale (Employees Motivation, Employees Development, Effective Communication, Resistance to Change, Culture of Innovation, Degree of Novelty, Speed of Change, Scope of Change, Competitive Intensity, Technology Turbulence), and three moderating factors had a categorical scale (Using BM Tooling, Firm Size, and Firm Age). We used SmartPLS built-in moderating effect analysis for testing the continuous moderators and multi-group analysis (MGA) for categorical moderators.

Results of the structural equation modeling support six and fail to support eight of these hypotheses. Consistent with the findings of Ladib and Lakhal (2015), Brettel et al. (2012), Huang et al. (2012), Guo et al. (2017), and Waldner et al. (2015), the analysis supports the direct relationship between BMI and SMEs' performance. Although, this is in contrast to the findings of Liu and Han (2013), Velu (2015), and Kumar et al. (2018), who reported that they could not find any significant relationship between BMI and firm performance under certain assumptions.

The PLS-SEM results reveal that, apart from interaction effects, all of the research moderating variables, surprisingly, have a significant direct relationship with SMEs' performance, except the "scope of change" variable. Among those variables, "culture of innovation" has the strongest correlation with SME's performance ($\beta = 0.377$, $p < 0.001$) and "effective communication" the weakest ($\beta = 0.062$, $p = 0.048$). A further novel finding is that "culture of innovation" has an even more substantial (8 times) contribution in explaining SMEs' performance than the BMI itself by considering their effect size f^2. This finding highlighted the importance of the culture of innovation since it can boost behavior that is ultimately related to business performance (Hult et al., 2004). Therefore in our case study research (chapter 7), special attention will be paid to the culture of innovation and its role in a BMI attempt. According to Anning-Dorson (2017), a culture that supports the implementation of a strategic initiative and encourages all employees' enthusiastic assistance can create a specific attitude diffused across teams and individuals inside the firm and leads to sustainable competitive advantage. These findings are in accordance with findings reported by several researchers in the strategic management field (Tushman & Anderson, 1997; Teece, 1996, Tellis & Chandy, 2009); however, we could not find a statistically significant relationship between "scope of change" and SME's performance. Since "scope of change" defines the breadth and depth of change in an organization and determines to what extent the current BM has to be changed, according to Foss and Saebi (2016) and Taran et al. (2015), the scope of change has a direct relationship with firm performance; however, in our sample of SMEs, we could not find evidence for this statement.

From the analysis of interaction effects, it is clear that among four moderating sub-groups, the moderators relating to the BM-implementation sub-group were the most relevant, followed by the BM-practices sub-group. Four out of five moderating factors, namely "employees' motivation", "employees' development", and "culture of innovation," significantly moderate the relationship between BMI and SME's performance and "effective communication" approach to the conventional

level of significance (p=0.062). Although the "resistance to change" is considered a crucial factor in dealing with any organisational change and is a widely explored (Hienerth et al., 2011; Knab, 2014; Von den Eichen, 2014; Yannopoulos, 2013), it is the only moderating factor in the BM-implementation sub-group our analysis could not support a possible significant moderating effect. This finding highlights the importance of current guidelines to implement organisational change in the context of implementing BMI (Appelbaum et al., 2018). According to Breiby (2011), business model innovation is closely linked to many aspects of change management, and these two fields should be even much more connected, than what we have seen in literature so far. Our findings contribute to the BMI literature by connecting the yet two separate concepts of BMI and change management in ensuring acceptance of new business models in the organization as well as enriching the literature in the less explored field of implementation of BMI.

Since the implementation of business model innovation requires a fundamental change, not only in the structure and processes, but also with regard to people and culture. The human aspect of organization is undoubtedly affected by changes in organisational structure and processes because almost in every attempt to implement a new BM, key elements of the organization and relationships among groups and individual employees will change.

Investigating the moderating factors in the BM-practice sub-group, the multi-group analysis casts a new light on the importance of using BM tooling (e.g., BM Canvas, customer profile, SWOT analysis, etcetera) in the BMI journey. The result shows a significant difference between users of BM tooling and those who did not use tools to design and validate their BM. In line with Athanasopoulou et al. (2018) findings, this result contributes to the limited literature on BMI and how to implement it more effectively in the organization and its ecosystem.

Moreover, the present study confirms that while BM-experimentation has a direct positive effect on SME's performance, its interaction with BMI has no significant impact. This finding responds to Bouwman et al.'s (2020) call for empirical research on BM experimentation and enriches existing BMI literature. The result is in line with Verhagen et al. (2021) research, however, it is in contrast to prior research conducted by Brunswicker et al. (2013), Bocken et al. (2016), and Sosna (2010), who revealed that BM-experimentation helps firms to test assumptions and hypothesized outcome through empirical observations such as usage data and market share and leads to superior performance. Although BM-experimentation does not moderate the relationship between BMI and SME's performance, an additional multi-group analysis reveals that BM-experimentation positively moderates the relationship in the sub-samples of BM-tooling users.

Although according to scholars (Cucculelli & Bettinelli, 2015; Dahlin & Behrens, 2005; Foss & Saebi, 2016; Gerasymenko et al., 2015; Nicholls-Nixon & Cooper, 2000; Zott & Amit, 2007), the speed of change (incremental or radical), the scope of change (change only within a department and process, or entire key elements of the organization), and degree of novelty (new to the company, industry, or world) can strengthen or weaken the relationship between organisational change initiatives and firm's performance, our quantitative analysis could not discover any significant moderation effect for these three moderating factors.

Another promising result is the significant moderating effect of industry competitiveness in our industry-characteristics sub-groups. The positive relationship between the BMI and SME's performance is more pronounced in more competitive environments but becomes weaker in low competitive environments. This is because, in a highly competitive environment, the old fashion way of doing business does not work well, and entrepreneurs, owners/managers of SMEs have to find new opportunities to leverage contingencies arising from information technology to create a new value

proposition. On the other hand, less competitive industries cannot force SMEs to engage in the risky phenomenon of BMI and hence the owner–manager's willingness to radically innovate the business model diminishes. Innovation is crucial for competition, especially in high-tech industries, in which firms are forced to constantly introduce new values to meet rapidly changing consumer needs. This result supports the previous research conducted by Casadesus-Masanell and Ricart, 2010; Lambert and Davidson, 2013. The findings are contrary to Velu's (2014) findings and Waldner et al. (2015), who argued that industry competition negatively influences the relationship between BMI and a firm's performance.

Furthermore, although technology turbulence has a positive direct relationship with SMEs' performance, it has not a moderating effect on the relationship between BMI and SMEs' performance. In other words, although our samples of companies came from a wide range of industries such as IT services, financial services, construction, and transportation, we could not recognize any significant difference between technology-insensitive industry and less technology-sensitive industry. This result supports the previous research conducted by Jaworski and Kohli (1993) and Bouwman et al. (2017), but is in contrast with Velu's (2014) and Rubera and Kirca (2012) findings.

When considering the SMEs' size and age in our multi-group analysis, we also found that this direct relationship is significant in SMEs of different sizes and ages. This result ties nicely with our previous study on the 2017 data (section 5.3) and Verhagen et al.'s (2021) study conducted on 2016 data. The analysis shows that the findings are robust across our samples in multiple data sets and provide sound evidence to confirm that BMI attempts lead to SMEs' superior performance, no matter how small or large they are or how many years they have been in business. In other words, we find that firm size and age, as two of our firm-characteristic moderators, have no significant moderation effect on the desired relationship.

However, in terms of age, the relationship is stronger in well-established SMEs rather than new ones (f^2=0.220 and 0.163, respectively). It can be explained by the fact that older organisations can benefit from their organisational capabilities, reputation and established relationships amongst their ecosystem to improve their performance. Although this result is in contrast with Marshall (1920) and Zhou and Wu (2009) who argue that younger firms can adapt to new technology and market, this may be considered a further validation of Heikilla et al.'s (2018) argumentation of BMI processes in newly-established firms are more explorative and needs several iterative BMI steps to find the best fitting BM, which maybe decreases their expected performance.

Considering the size, the correlation between BMI and SME's performance is much stronger in small-sized SMEs than micro and medium-sized ones (f^2=0.276, 0.162, and 0.174, respectively). Size-wise, small-sized firms are places between micro-sized and medium-sized firms. Our result demonstrates that small-sized firms can take advantage of the flexibility and capturing new opportunities (Damanpour and Wischnevsky, 2006) from micro-sized firms, and having better access to resources (Aldrich and Pfeffer, 1976), taking advantage of economies of scale (Thompson, 1967), and having better bargaining power (Zott and Amit, 2007) from medium-sized one, to create superior performance than the micro and medium-sized SME's.

In the next chapter, we explore the moderating factors which are validated in this chapter, namely employees' motivation, employees' development, the culture of innovation, effective communication, as well as use of BM tooling in more detail, and also focus on the missed moderating factor in the research as discussed in this chapter, i.e., leadership styles, so far, and on the unexpectedly not supported moderating factors, e.g., BM-experimentation, firm size and age.

Chapter 7: The four cases: human and organisational factors

A few empirical studies are available on the human and organisational factors in implementing the business model innovation (BMI) in general and also in SMEs. In this chapter, the focus is, therefore, on gaining an in-depth understanding of a phenomenon, and the role human and organisational factors play in the implementation of BMI. Based on the limited literature, the mediation and moderation models as tested in the previous chapters (chapters 5 and 6), we try to understand the nature and complexity of the processes (Benbasat et al., 1987). Multiple case-study research is therefore carried out. In this chapter, the findings of case-study are presented in two sections; (1) within-case analysis in which the findings of case study analysis on the impact of the BM change on the employees are reported, and (2) cross-case analysis in which patterns, similarities and differences among four cases are presented. The case selection criteria and data collection protocol were presented in the research method chapter (chapter 4), and background information about each case (history, business strategy, products/services, business model innovation process including old and new BM, and reasons behind change in BM) was explained in the research domain chapter (chapter 3). Thus, background information is essential for further interpretation of our findings.

7.1 Within Case Analysis

7.1.1 Human and organisational factors in Case 1 Weber

“Weber Machinebouw” was founded in 1959 in Zwaag, The Netherlands. Weber started as a toolmaker, manufacturer of standard punching tools. In the course of years, Weber started specializing in customer-specific tools, from simple stamps to complete automated production lines. Since the early 90's Weber has delivered tailor-made solutions, stand-alone or fully automated production lines, in those situations in which no standard solutions are available. From 2017, Weber entered the hospital bed disinfection business. Weber Hospital System provides a robotic solution for cleaning and thermal disinfection of hospital beds, mattresses and medical aids such as wheelchairs, drip piles and material carts. The new "Hospital Disinfection System" business model, was developed alongside the existing business model. In other words, Weber's traditional business model is still working, and the new business model is implemented as a total new parallel BM.

The shift from the manufacturer of the more general metalworking machines such as punching, pressing, milling, sawing, and product handling machines in the metal, construction, and automotive industry, to a manufacturer of the smart machines for washing and disinfecting the hospital beds in the healthcare industry, made a fundamental change in the way Case 1 Weber works. Although most components of the new products are manufactured at the same location as the previous products, the changes in the product's requirements and standards, the variety and level of employed technologies, customer segments, and delivery channels make launching the new product a new challenge. To develop a new product equipped with state-of-the-art technology to detect the washable materials in real-time

and program the robot simultaneously, Case 1 Weber is required to engage in intense activities such as collaboration with other partners and raising capital to launch the prototype. Besides the technological part of the project, the people side of this innovation in BM should be taken into account. While this change in BM does not seem to be complicated on people side, its implementation had a tremendous impact on the employees of the company as they need to acquire new knowledge, skillsets, and training to adapt their role together with changing the organisational culture. Managing people in a time of significant change is complex and requires a holistic approach that calls on the full range of management skills and disciplines. The effect of shifting from the old business model to the new business model on employees can be seen in Figure 7.1.

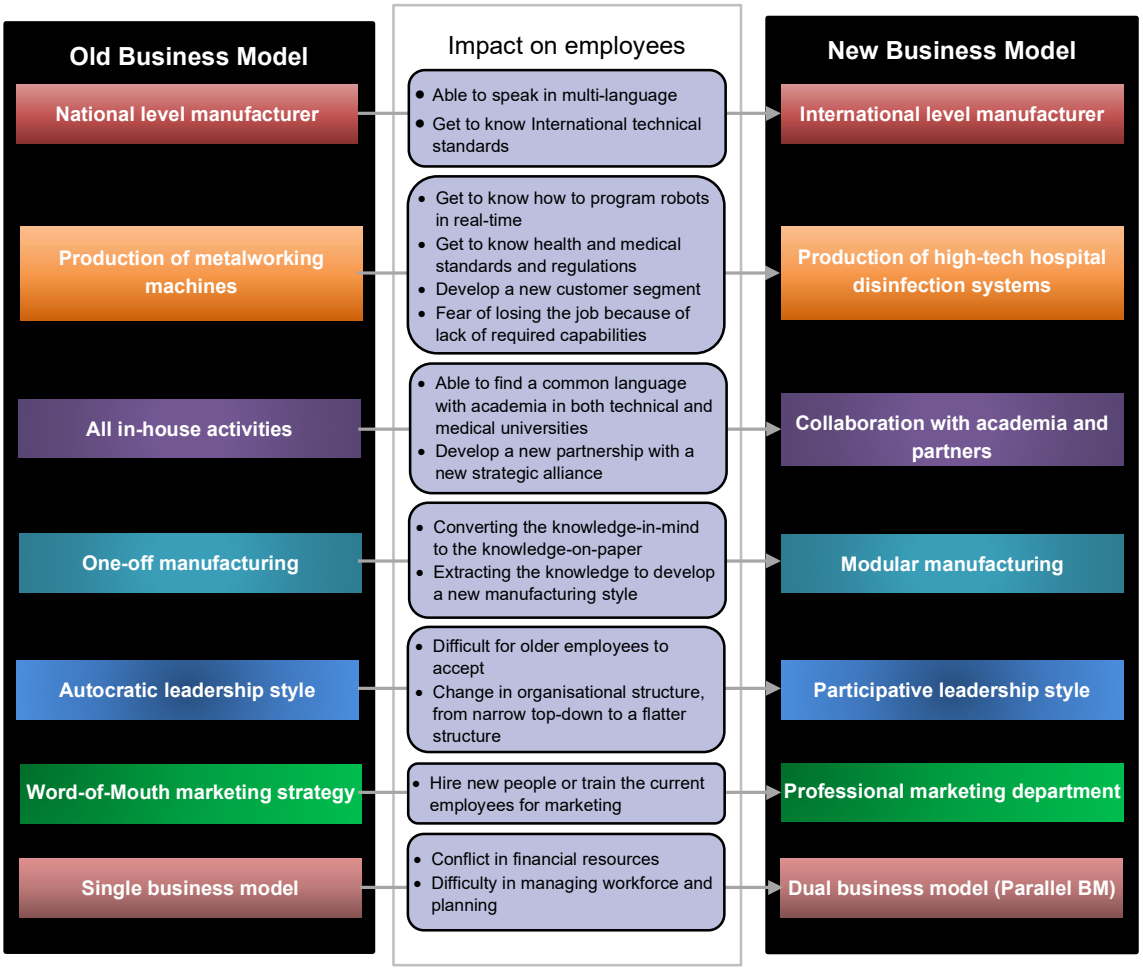

Figure 7.1: Impact of BM change on the employees of Case 1 Weber

This section discusses the impact of introducing the new business model on employees, including quotations from interviewee(s).

Implementing two different BMs which come from two different worlds, required different channels, customer segments, key resources, and key activities. Since the company was in lack of resources and would like to reduce the risk of failure, they decided to run the old and new business model in the existing organization (parallel business model). Apart from technological requisitions, the company is required to prepare employees to acquire new skill-sets.

Although the new CEO came from a totally different industrial background, he believed that to change the business model, you have to make change people first. Therefore the top manager offered daily based informal conversations with employees to promote engagement and to involve them from the beginning of new initiatives. Interaction with the young generation led to fewer issues than the more experienced employees. Elderly employees were very reluctant to accept changes in procedures and organisational culture.

> *"The age of employees is important! I think we have about 15 people who are employed thirty years or longer, and the average is somewhere between 21, which is very long, so employees are also used to the old ways.… It is difficult for old people to get familiar with new technologies. And changing the behaviour of older top managers is very difficult, but young employees have more open to accepting new ideas <Weber CEO>"*

Since the new business required open-mind and technology-friendly people, the company changed its hiring strategy. Being young, having a couple of years of work experience, possessing a university degree are defined as the key requirements for hiring new people. The young people not only could easily cope with change and had the required knowledge to implement the new BM, but they could also help the company to keep knowledge within the company. Most products manufactured in the company were different from each other, so lacking a formal knowledge management system, the knowledge and experience were mainly in the people's minds.

There was no specific program to increase employees' awareness to change and the intrinsic motivation of the people. Different generations have different motivational preferences. The younger employees were self-motivated and they did not have a mentality of working from eight to five. There was not any reward system to promote actions toward the new routines and values. Even the old BM and new BM employees gave a salary on the same scale. However, the new KPIs were defined, which could provide feedback to employees as a way to promote extrinsic motivation. However, winning a large project, there are small celebrations. These small celebrations could help employees to engage in the company's objectives and goals. Moreover, team meetings were organized once every two months to give feedback to departments and introduce future plans and projects the company expected to win in the coming months.

Because the two parallel BMs, are from two different "worlds", the new BM needs new technical and organisational skills. So the company decided to hire new people who are young, educated, and knowledgeable about technology. The company hired a marketing manager with the ability to speak in multi-languages to expand its international market and employed several software engineers to program the new products. On the other side, the company decided to fire or force into the early retirement of older employees, although the company found this a very time-consuming and difficult process.

> *"Sometimes, you need to dismiss or promote early retirement to replace your people. It is not easy and takes time. We wanted to fire our old employees in a social way without forcing them to leave. However, sometimes we cannot do it in a social way. Now I want to terminate working with two employees in the next six to nine-month by force because I still need the work to be done, but I want to replace them with younger people! <Weber CEO>"*

Moreover, no special training programs were found that could enable employees to implement the change. However, the company acquires new skills needed by hiring new experts.

Case 1 Weber took several actions to make people and organisation ready to accept the changes needed for implementing BMI. First, the organisational structure and line of command were reorganized. The top-down, hierarchical structure went towards a flat organisational structure. Having fewer levels of management simplified internal communication. Power and responsibility were divided evenly throughout the organization. The autocratic style of leadership transformed into a more participative leadership style. Therefore instead of making a decision by top managers without involving the subordinates, the managers engaged the employees in the decision-making process. However, the company encountered resistance from older employees who were used to the old leadership style.

> "*Participatory type of decision making is hard for older employees who get used to the autocratic leadership style. We wanted to make the decision together. To make this step, it is already hard for the older employees because they are not used to it. Because they received instructions from the ex-CEO, and they had to accept how to make it a product, and afterward they could see if it works (or not) <Weber CEO>".*

The company also tried to change the organisational culture by encouraging teamwork and openness. Information was shared among all employees before starting a project. However, they found that changing a corporate culture is a very slow process.

> "*Changing* organisational *culture takes time. In my view it is a too slow process and, the other shareholders also have this opinion. So I had kind of a roadmap of myself to change the corporate culture within 12 months, but being realistic, it will take more than my expectation. Because it is changing the culture, changing in leadership style, and changing in knowledge basically. It's also a change in people. So it will probably take 36 to 48 months, step by step, I have to change these kinds of things. <Weber CEO>"*

One interesting lesson that can be learned from the Weber case was its parallel implementation of two business models in the existing organization. Since the company lacks resources, they decided to run the old and new business models at the same time. Apart from producing the old products, the existing business could produce the mechanical and electrical parts of the hospital disinfection system. The employees hired for the new business worked on the programming of the robotic system. Although running two BMs at the same time, could bring some benefits such as reducing the capital investment, utilizing the currently available knowledge and experience, and making it easy to learn by try and error, it also has drawbacks such as mixing up the roles and provoking conflicts while sharing resources (financial, human capital). Moreover, everyday activities hinder the implementation of the new BM because keeping the current customers satisfied is always a priority for the business. Overall, implementing the new BM in Weber is cumbersome. The company has to assess the firm's readiness to change and prepare itself for a fundamental change.

7.1.2 Human and organisational factors in Case 2 ZoDichtbij

Case 2 ZoDichtbij is a new-established company and a spin-off from a university research project in 2017. Case 2 ZoDichtbij developed a platform-based business model, in the health and well-being domain in order to support people to age-in-place. Case 2 ZoDichtbij's platform makes matches between (1) end-users looking for products and services, (2) product and service providers to market their products and services, and (3) government authorities to coordinate and control the quality of care to the elderly (Keijzer-Broers et al. 2015). Acting as a brokering platform, older adults and their informal caretakers can easily search for the products and services they require without experiencing

an overloaded of confusing information in a fragmented marketplace. Case 2 ZoDichtbij also improves information exchange and interaction between end-users, service providers, and government contributing to independent living and healthy aging.

Introducing a new model of connecting people, government authorities and providers of products and services for older people necessitated a lot of effort, not only in the designing stage but also in the implementing phase. To launch a novel business model that required a network of enterprises working on different levels and in different sectors was challenging, time-consuming, and risky. Managing all different stakeholders with different objectives and keeping them on board needed an effective communication scheme. The social nature of Case 2 ZoDichtbij innovation made the situation more unique. Since the not-for-profit characteristic of the case organization facilitated the interaction with government authorities, for-profit corporations found it difficult to cooperate with an organization that was reluctant to earn money on its business. The situation even became more complicated as the new business required a massive investment in IT. Because of the privacy and data protection requirements of the GDPR (general data protection regulation), different components of the platform should be developed and maintained at the highest level of security. Besides the complexity of the technical part of the multi-sided platform, launching a BM, which is new to the market, had its own challenge from an organisational and human perspective. Managing people's intentions, attitudes, and behaviors to act in a new way had multi-dimensions and was complicated.

The shifting from the current traditional business model usually used by competitors of Case 2 ZoDichtbij to the novel business model of Case 2 ZoDichtbij needed changes in different aspects, which are summarised in Figure 7.2.

The following paragraphs discuss the impact of introducing a new business model on employees and internal stakeholders.

One of the distinctive characteristics of Case 2 ZoDichtbij BM was its social entrepreneurship nature. The primary purpose of social entrepreneurs is social benefit provision, and their organisation may seek profits as a secondary objective in order to provide incentives to invest in social ventures and to facilitate the growth of the innovation, while the for-profit organizations are generally considered to be "self-centred", and seek for financial profitability. Since the implementation of the new BM required close collaboration between different for-profit and not-for-profit organizations, apart from the technical capability of potential partners, the reason behind joining the team was carefully taken into account.

> *"So every party has its own business model or ways of working how to add value or earn money, but they cannot earn money on the platform, but because of the platform. It means that if the platform is there, they can have a podium place, they can explore themselves, they can say to Dutch clients, look there and then you can find us <Keijzer>"* .

> *"And that is why, for example, the big 'A' telecom company is a partner, but the other big 'B' telecom company is not. Because company 'B' wanted to incorporate the new BM into their business, so then you will lose ownership. It's very important that you have many different partners and not one who will try to be the owner <Blok>"*

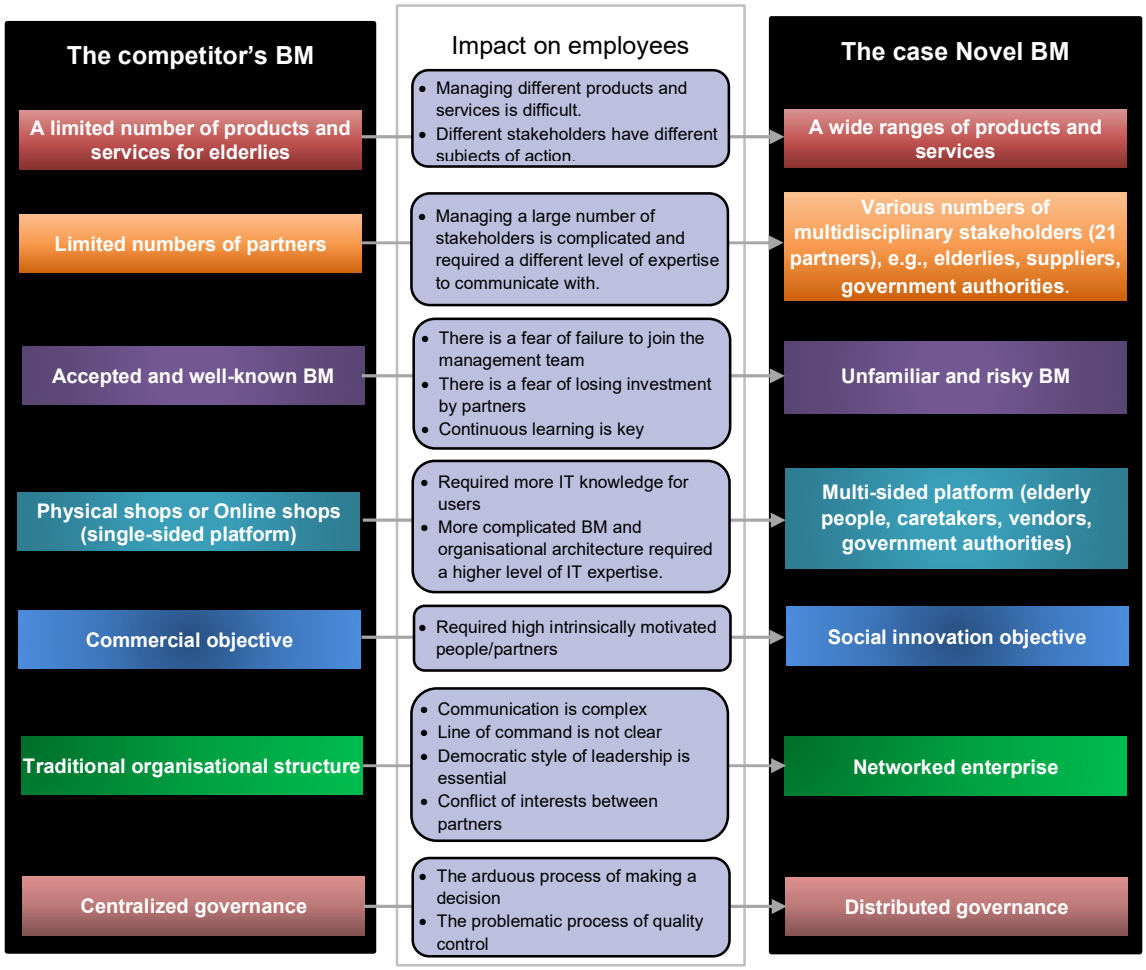

Figure 7.2: Impact of changing of traditional BM of competitors to the Novel BM of Case_2_Zo-Dichtbij on employees

For the co-founders, the key motive to establish a foundation was intrinsic in order to improve the well-being of society. In many cases, stakeholders cooperated with the foundation in-kind, having their companies' support. To keep partners motivated, the case company kept on board all partners from the design and test stage using various workshops and in the developed living lab setting. This way, the feeling of ownership and belonging to a successful party can result in a high level of motivation. Another way of increasing motivation, Case 2 ZoDichtbij shared the successes among all partners to recognize their effort.

In order to enable all stakeholders to work professionally on the platform, three groups of skill-sets were required: first, training and skills which were necessary for the management team; second, technical skills for developing and maintaining the IT platform; and third, the required training for different types of users including elderlies, informal caretakers, and vendors.

Although the management team and advisory board were all professionals, a world-class management consultancy company provided a limited number of workshops to help different parties to get aligned in terms of business strategy. For the second group, the foundation employed several IT companies to provide required technical services such as platform infrastructure, matchmaking technology, identity

access, and CRM (customer relationship management) solutions. But to the insourcing approach, there was no need to train people. Basically, using the platform for creating a profile, searching for a specific service and product is not tricky and is similar to the other commonly used web environments. The case company realized that it is not necessary to provide special training for users of the platform.

> *"We think that the elderly do not need to train for working on the platform, since 90% of the elderly use the internet for banking, so we are very technologically educated in The Netherlands. <Blok>"*

However, in some cases, older adults are not able to work with the platform because of, for instance, cognitive problems or physical disabilities. The formal and informal caretakers are therefore trained to create (digital-safe) profiles.

Since the recent change in government regulations concerning elderly healthcare and well-being have encouraged relevant parties to find a more efficient way of delivering services to the senior people, the interviewees believed that there is a strong awareness regarding the necessity of implementing such a platform among government authorities, healthcare providers as well as insurance companies. The co-founders did not believe that promoting the new BM in social media is efficient, however, if the case company could convince the municipalities to use their platform, the elderly users are obliged to join the platform.

To increase commitment, partners were asked to engage in making decisions based on a democratic approach. The opinions of all partners have listened to during the BM development process, and the decisions were made by the whole group (a democratic leadership style). According to one of the co-founders, when comparing the decision-making process of different parties, SMEs could make a decision speedily and could think much more out of the box than the large multinational companies.

Keeping the network of stakeholders connected in an efficient way, was crucial for developing a BM in a networked setting. Connecting 21 partners in the living lab setting, including end-users, businesses, academia, and local governments, required a networked enterprise architecture for the case company. The partners collaborated to co-create the products, but at the same time, they were loosely coupled. Because there was no official contract between different partners and they cooperated together based on a gentleman agreement and trust. So, clear communication was fundamental. The key role to connect and orchestrate the networked enterprise was played by one of the co-founders. As a network enterprise, relying on one person as a center of a star network is very risky because a single person's failure can devastate the whole communication network. To facilitate communication among stakeholders, web-based file sharing, time tracking, and milestone management software were used. Although there were some regular meetings, the major medium to communication was carried out by phone calls and video conferencing tools. Having face-to-face meetings was not doable since all multiple parties have their own agendas and expectations. So the most severe difficulty in implementing the business model was communication with all parties.

> *"I prefer to have a face-to-face meeting, of course. But it's not really doable. It's too complicated with other people, and all the people have their own agendas, and I'm not on top of their agenda. I'm quite important for some people, but I'm not at the top of the agenda. And that's why I tried to seduce them: Can we zoom or can we have a phone call? And they always say yes. So you have to be flexible, as a group, but you can see me a little bit as the glue, keeping everyone together. I think communication through all*

parties is the most difficult part of implementing BM, but most of the time, it works <Keijzer>".

One of the major success factors of the Case 2 ZoDichtbij was the characteristics of its leader; her motivation to solve social issues, perseverance, continuous support and being available 24/7, her ability to communicate and orchestrate different partners, and her attitude to sharing information and knowledge and being non-threatening, facilitated building trust among the network.

One negative aspect of being a social innovator is finding capital for the business. Although government authorities were able to collaborate with social entrepreneurs, their budget was limited. Also, not-for-profit organizations have to turn back 80% of their earnings to their social innovation. So more in-kind investment is required to run and grow the business. The case company realized that finding a middle ground between being a non-profit organization and earning a reasonable income to keep the business running is not easy. The company is still working on a portfolio of revenue streams consisting of a freemium model for elderly people, advertisements to providers, and annual fees to municipalities.

Although the company was in the early phases of business development and has recently received its first revenue, Case 2 ZoDichtbij has not defined any KPI (key performance indicator), yet. Although the company measured customers' satisfaction in one of its projects, e.g., Alkmaar, and received a high level of customer satisfaction, a research protocol is drawn up for an alternative project to define KPIs, including the financial measures.

"Our advocates are the people who use our platform. Rotterdam came on board because the people in Alkmaar were so enthusiastic about the platform. So they came to Rotterdam to tell them, you're going to need this. So it is better if your users make the PR [public relatipons], than that you have to do it yourself. <Blok>"

The founders of the company generally were satisfied with the results but expecedt faster growth. The plan for the next step is to increase the number of clients (municipalities) and create criteria for selecting and rating the suppliers of products and services on the platform. The case company is also thinking about changing the governance structure, shifting from a not-for-profit organization to a for-profit organization (LTD).

Analyzing the Case 2 ZoDichtbij case shows that implementing a novel BM that is new to the market, includes a variety of stakeholder at different levels take lots of time and effort. The best strategy to develop such a complicated project is implementing it in several steps and improving based on a learning-by-doing principle. Moreover, the not-for-profit nature of Case 2 ZoDichtbij makes it easy to do business with government authorities or social entities but difficult with for-profit organizations. This also makes it difficult to find funding for the project. The key to having a successful networked enterprise is effective communication and building trust among partners. The approach you can get and keep stakeholders on board with high motivation and solid support is crucial. One of the co-founders believes that the most crucial factor in implementing a new BM is being able to do strategic thinking. The management team has to be focused and has a clear target. At the same time, they have to be flexible enough to adapt to environmental changes. So having a good sense of the external factors around the business is also essential. Making a balance between being focused on the original idea and being flexible is key and not easy to achieve.

7.1.3 Human and organisational factors in Case 3 Iddink[1]

Case 3 Iddink provides educational services in the Netherlands, Belgium, and Spain with a headquarters in Ede, The Netherlands. Case 3 Iddink was founded in 1922 as a shop for office supplies and books. The firm began, in the 1980s, distributing educational (text) books to the market for secondary education. In the 2000s, it launched the first online ordering portal for students. Currently, Case 3 Iddink has more than 55 permanent employees in the Netherlands, in addition to the many temporary workers who carry out warehouse work every year during the summer holidays.

Case 3 Iddink, in addition to selling and renting books, has provided digital education solutions in the form of a student monitoring system and a virtual learning environment in recent years. The educational industry makes use of a wide range of learning resources while also taking into account the rapid speed of technology advancements such as digitization. Schools are required to stay up with current developments and present their students with the most up-to-date and effective learning methods. Case 3 Iddink shifted from a traditional logistics service provider to an international cloud service provider to meet the company's digital focus and internationalization plan, in response to changing market demand created by technology advancement (Raguraman, 2019). This shift in business model necessitates some change in human and organisational factors in the current organization to adapt to the new situation (Figure 7.3).

Employees' motivation was an important issue to deal with in implementing a new BM. Employees become acclimated to certain ways of working when a routine is established, and they begin to feel convenient not just in terms of job satisfaction but also in terms of job security. When the radical change in Case 3 Iddink was introduced, employees began to feel fearful, anxious, and unsure about how the change would affect them on a personal level. As a result, at the start of the BMI process, they resisted change.

> *'There was some resistance. A lot of people were used to the old model, and they saw the new model as a threat. They started thinking...what is going to happen to my job, my responsibilities, and my income.' <Lead Architect>*

However, managers at Case 3 Iddink attempted to engage employees who would be involved in implementing the new business model by explaining and demonstrating the importance of innovating the old business model, the importance of distributing digital content, explaining the change process, and what was going to be changed. Case 3 Iddink made an effort to motivate the employees and bring them on board to implement the new BM.

Despite taking steps to motivate employees, managers discovered that people pretended to accept the change, but in practice, they did not want to change at all. Employees who had doubts, concerns, or questions about the new business model found it difficult to speak out and provide feedback since they believed that top managers were not accessible. Furthermore, there was no HR department at the time, and only managers were involved in decision-making, which is regarded to be a top-down approach.

[1] Some parts of Case 3 Iddink data collection and analysis was done together with Sushmitha Raguraman as published in a master thesis (Raguraman, 2019).

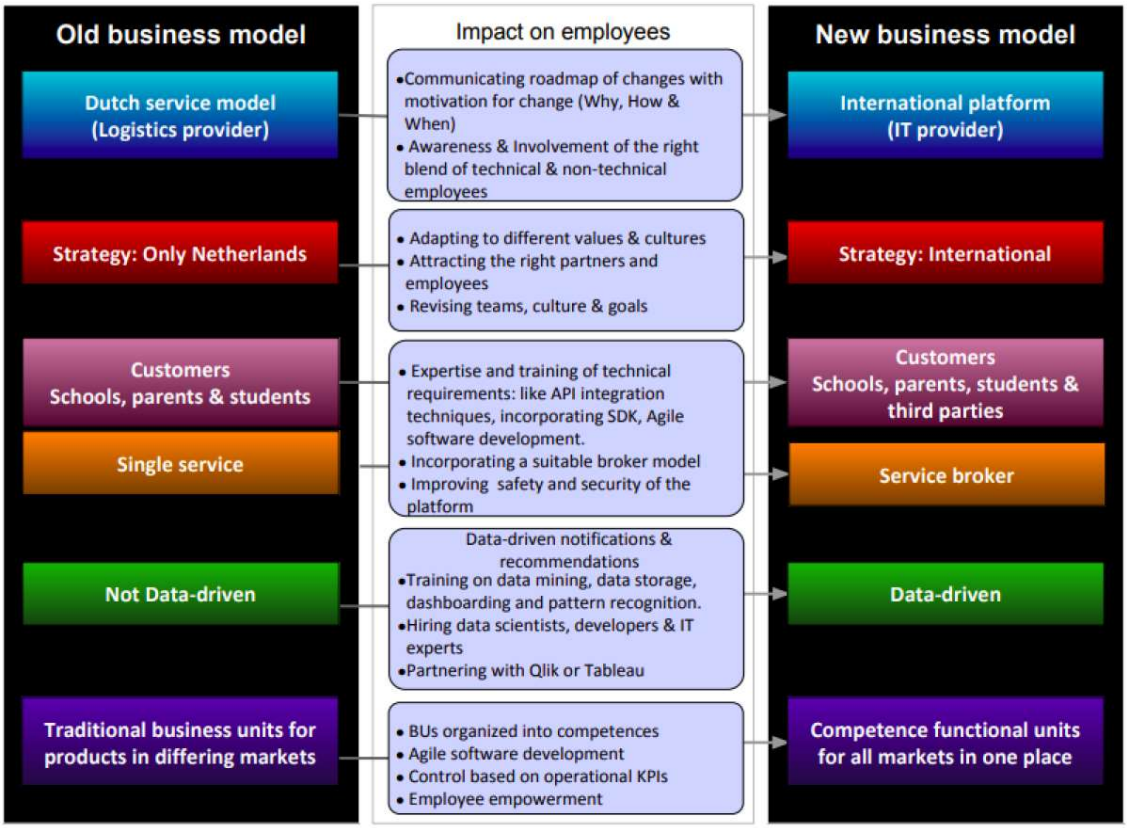

Figure 7.3: Impacts of BM change on the employees of Case 3 Iddink

> *'There was no HR manager at that time. Everything within HR was done by the directors of the management team… there was not a lot of openness from senior management towards the people.'* <Director of Innovation>

As a result, employees who were involved in the implementation of the new BM not only had to accept the change out of fear of losing their jobs, but they also found it impossible to express their opinions. Therefore, when managers requested feedbacks from employees, they found it was difficult to get this. The management team had to let down their guard in order to hear the employee's ideas.

> *'From a lot of people, you never get their input unless you stand near the coffee machine or during Friday afternoon drinks. You have to lower your barrier to get their input. That's a problem when you're at the top of the company.'* <Director of Innovation>

So, in order to inspire the Case 3 Iddink employees, the company's leadership then engaged a change agent to spearhead the new way of doing business and urge employees to adopt the new BM implementation.

> '*We were looking into the company and said whom we can appoint as a key person… a real believer of the new way of doing business. To play a major role in the transition...to become more digital.*' <Director of Innovation>

This agent was essential in the transition from books to digital books (Books to Bits). And the implementation of the BMI process began when the change agent joined the team. A new team

consisting of technical and non-technical staff was assigned to the new BM, and the 'need' for the change (the why, what, and how) and required modifications were presented to the team. The team began to submit their ideas. The team presented the modifications to be tested and executed, as well as the 'need' for the change—the why, what, and how—and employees began to submit their ideas. The existing IT staff, and sales department were all quite excited about implementing the new business model, and offered a bunch of suggestions and recommendations for the new platform. However, throughout the BM implementation, the management found that to change into a software firm, some competencies required to become a worldwide platform were absent.

> '*We were just old-fashioned logistics-provider with warehouse people. So we bought other companies to get the competencies and the knowledge in.*' <Director of Innovation>

Thereupon, Case 3 Iddink acquired some companies to gain the necessary competencies and expertise to push more digital content. This ultimately produced an imbalance because each firm had its own culture and working style, making it impossible for Case 3 Iddink to integrate the companies and implement the new BM.

> '*It was hard to manage because new people don't know the history, they don't know about the existing employees and it was hard to get them integrated*' <HR manager)>

> '*We later realized...buying a new company meant buying a new culture*.' <Director of Innovation>

Employees of the original BM were intrinsically driven to be engaged and had a social obligation to improve education methods, but employees of the newly acquired companies were mostly extrinsically motivated by goods and other resources such as laptops, cell phones, leased vehicles. This, in turn, let the former employees recognize that the two firms provided unequal compensation in terms of salary, perks, and rewards.

> '*It was a little difficult to motivate due to the differences between the old company and the new company. The new company, they were always motivated by money or goods...by a new laptop or a new car and also had a higher income.*' <Director of Innovation>

Extrinsic motivators such as new phones, laptops, or salaries might affect the initial commitment to make the change. However, intrinsic motivators such as the value of employee engagement, job satisfaction, and organisational commitment are more important in the long run. Aside from that, additional elements such as job recognition, performance feedback, and the company's vision all have an impact on employee motivation. This can be found in Case 3 Iddink:

> '*We had a normal HR cycle. We had target setting meetings, bilateral meetings, middle of the year (mid-year review) and of course year-end meetings - setting new targets for next year*.' <Director of Innovation>

Although the Case 3 Iddink management learned how to motivate employees late in the BM implementation phase and the firm struggled through the transition phase, eventually, it managed to adopt the new BM while motivating the employees. Next, we discuss employees' development.

In Case 3 Iddink, the transition to a software company necessitated training and coaching in an agile method of software development, Application Programming Interface (API), and data analytics to implement the new BM. However, the company's managers realized that educating existing personnel to develop the skills and capabilities required for the new BM would be impossible, so they acquired a portion of the new BM's capabilities by acquiring firms that might help them realize their objectives.

'*We bought new companies because starting from scratch, being a book supplier, and becoming an IT company was impossible. People wise...forget it. Because somebody working in a warehouse picking books is never going to code.*' <Director of Innovation>

Instead of assessing the competencies of its employees, Case 3 Iddink assessed potential acquisition partners. This demonstrates that greater emphasis was placed on the products, services, and technology of those firms that could improve the international platform, rather than the employees and culture.

'We did an assessment of the company. Like how healthy is the company? How good is the company for some market share? What's the revenue?... So we bought it, and we set an ambition...within a year, we had a virtual learning environment where we could distribute digital content, and that's exactly how it went.' <Director of Innovation>

Even though Case 3 Iddink has little experience with IT as a logistics provider, they needed the right people with the right capabilities in the right roles to implement their new BM (international platform). Employees with experience with API and software development kits, for example, were necessary to include third parties in the all-in-one platform. As a result, IT staff participating in the new BM implementation received training and coaching services.

'*The key resources in IT we appointed had to complete certain training...Also, those key players were in the sales, marketing, and product side of the book's part. They were really trained*.' <Lead Architect>

An agile way of working through continuous development cycles was used to launch the platform. As a result, Case 3 Iddink's key resources, including IT, sales, marketing, and product development staff, were trained on the new products and how to combine them into a single platform by using agile approaches. Furthermore, in Case 3 Iddink, employee development included not just developing technical skills for implementing the new technical platform but also non-technical skills such as collaboration and teamwork and creativity. This guarantees that employees were provided the appropriate training and working conditions to prepare for the change in BM.

'*We had training for the managers from the ICT company and the logistics company to learn and know about each other. Learn more about each other's work, on how to lead a team, how to manage and become a team*.' <HR manager>

Case 3 Iddink empowered employees by providing them with all of the resources they needed to accomplish the change, as long as it was aligned with the company's strategy. Furthermore, because the new employees from the acquired company were professionals and experts in their fields, they were given the freedom to execute their jobs.

'*We empowered everybody with all the tools and resources they needed. But they were aligned with the strategic vision. They had the freedom because they were specialists*' <Director of Innovation>

Case 3 Iddink demonstrates that empowering employees instilled a sense of responsibility and ownership, allowing them to confidently implement the change rather than resisting it.

Another related concern is the readiness to change among employees. So, employees participating in the new business model must be properly prepared to proceed with the change before it can be implemented. Employee readiness to change requires effective communication, management support, and a cultural shift that was addressed late in the BMI process in Case 3 Iddink.

First, it was critical to positively impact the employees who would be involved in the transition and include them in the implementation plan. Although employees of Case 3 Iddink initially resisted accepting change in the business model, proper communication and explanation of the new BM and the amount of money it would generate helped many employees accept and embrace the rationale behind changing the previous business model. The company's executives utilized visual models to convey their vision and demonstrate how the change would benefit the old business model. As a result, efficient communication of specific factors helped employees understand business requirements and prepare them for executing the change.

> '*We made some sort of show models...like UML diagrams. To say this is going to be the future and ask them what you think about it and do you believe in it.*' <Director of Innovation>

Furthermore, the management held multiple workshops, presentations, and meetings with employees from various departments to communicate their vision and discuss the new BM adjustments.

> '*There were several workshops and meetings offsite, where employees of different companies were invited and spent together to discuss...Ok...This is where we are going, what does this strategy mean for us, and what's your understanding of it*.' <Lead Architect>

Employees appreciated such efforts since they allowed them to express their views. When employees had worries or doubts, management took the time to reassure them and explain the company's present position and competition in the marketplace and the need for the change.

> '*There was some resistance like why we are going to do digital learning? And we explained the business model and the amount of money we could earn with that as a whole company, and they felt it was logical*.' <Director of Innovation>

Apart from that, managers attempted to create connected leadership by attempting to engage with employees and informing them on the next measures to take. This way, employees gained a better understanding of their role early on, gained confidence in the process, and were better prepared for the change. As a result, Case 3 Iddink fostered a culture of change and promoted employee engagement and involvement.

When it comes to organisational culture, Case 3 Iddink essentially aimed to gather a group of individuals with bright ideas in order to create synergy and to build even bigger ideas. In order to implement the international education platform, the internationalization strategy required a cultural shift. On the other hand, managers were trying and learning along the process to figure out what works best within the organization and for the all-in-one platform. They moved from an operational excellence approach, where everything was centered on optimizing the logistics process, to a more international, innovative software development business. This created a significant cultural impact not only for the organization but also for its employees.

> '*The differences in the culture was for the hardest part, the cultural integration. When we bought other companies...we bought another culture, and the culture of a digital company is really different from the culture of a factory. We tried to merge, but we failed*' <Director of Innovation>

Although BM change in Case 3 Iddink using advanced technologies to reach the international market by developing an all-in-one platform eventually was achieved by acquiring relevant high-technology

companies, the company encountered difficulties in managing the people side. Despite management's best efforts to bring people together through informal gatherings, they discovered there was a mismatch among employees from different business models. People from the acquired firms had different backgrounds, cultures and even spoke different languages than the old employees, making it difficult to integrate and become "one organisation" and as a result, it became much more difficult to implement the new BM. So, it is important for owners and managers to prepare employees to change and take into account cultural differences in mergers and acquisitions (M&A) required before implementing a new BM.

7.1.4 Human and organisational factors in Case 4 Drukwerkdeal[1]

Case 4 Drukwerkdeal was founded in 2005 as an internet printing firm that devised a cost-effective and efficient printing method by merging several orders from consumers into a single order and sharing the operating costs. Case 4 Drukwerkdeal integrated many parties engaged in the printing process, e.g., as customers, shipping companies, and print outsourcing companies, through its e-commerce platform. Case 4 Drukwerkdeal experienced rapid growth in the first years of introducing its new business model. However, the unique way of doing business by Case 4 Drukwerkdeal became popular in 2010. Then Case 4 Drukwerkdeal made a strategic choice to position itself as a quality printer with a personal customer approach. The Case 4 Drukwerkdeal new platform for one-stop shop printing orders was launched in 2013. The focus of the new platform shifted the BM from a low-cost, narrow-product offering to a broad product and service offering with increased quality and level of automation.

With the rise in product and service offerings, the number of employees increased by 100%, prompting them to abandon the functional organisational structure and business units to become more autonomous (Spotify model). When changes were implemented in the business, they had a tremendous influence on the employees. Build on the analysis of the old and new BMs of Case 4 Drukwerkdeal, this part addresses the influence of the business model change on employees, e.g., their motivation, development, and willingness to change based on statements from interviewees (Figure 7.4).

Regarding employee motivation, the concept of change was ingrained in the core values of Case 4 Drukwerkdeal from the beginning of the BMI process. Implementing a new BM was extremely routine for the firm and its employees, just like any other change within the company.

> '*One of the core values in our company was that we have a high velocity, and change is common. And because we talk about change, like a normal issue...changing the business model, or changing the team formation wasn't a complicated thing, because people were used to the concept that things can change from one day to another'* <HR manager>

Employees embraced the BM changes of expanding the product range and transitioning to a Spotify model as a reasonable step when they were offered. This indicates that employees were committed to supporting implementing the new BM changes. However, in the early phases of the BMI process, because the operational employees did not generally participate in strategic-level decisions, employees were not engaged in the BMI process. Nonetheless, as the firm grew, management made it a point to

[1] Some parts of Case 4 Drukwerkdeal data collection and analysis was done together with Sushmitha Raguraman as published in a master thesis (Raguraman, 2019).

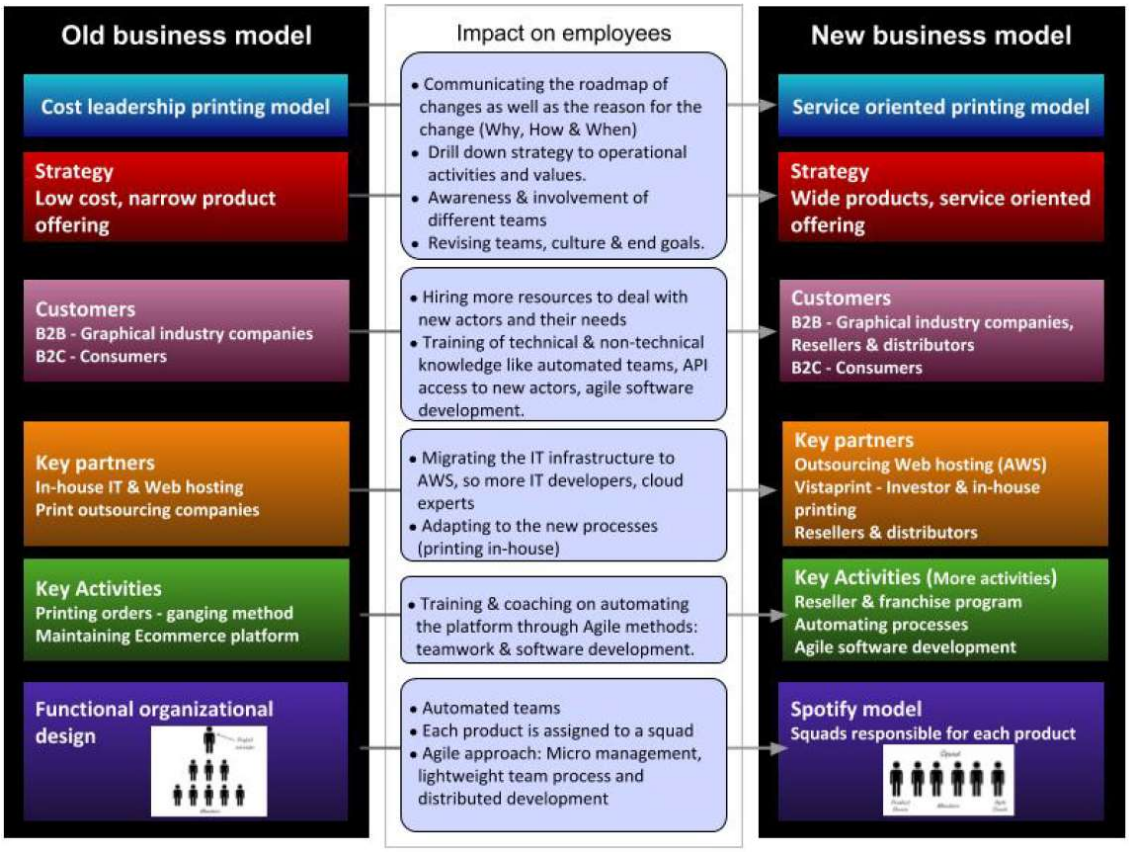

Figure 7.4: Impacts of BM change on the employees of Case 4 Drukwerkdeal

involve employees as much as possible to intrinsically motivate them from the outset of the BMI process.

> '*We shared our thoughts and vision, and asked them to think with us...so they're involved from the start...we showed them the Spotify model and said...we want to do this, and asked how we can do this the best way? How do you think we should form the teams?*' <HR manager>

This demonstrates that managers valued employee input and feedback during the BM implementation and that managers encouraged employees to acquire a feeling of commitment while maintaining a positive attitude regarding the change.

Furthermore, Case 4 Drukwerkdeal encouraged the teams' entrepreneurial mindsets by designing the organization to be more flexible and independent in the form of squads, as proposed in the Spotify model. Employees were given the responsibility of managing the development of their own product as well as how they presented it on the e-commerce platform under this arrangement. Increased product and service offerings related to the new BM were handled by motivated employees who not only understood their role in the process but also felt involved, responsible, and dedicated to making the change. Employees were intrinsically motivated, which aided in the implementation of ongoing changes.

In terms of extrinsic motivation, Case 4 Drukwerkdeal did not believe in awards or assessments because they wanted to treat all of their employees to feel equally valued.

> '*We wanted to be fair to everybody. So there wasn't any kind of conflict, on rewards, or salaries or other extras as it distracts people from what they really have to do*.' <HR manager>

Employees who are motivated and pleased are more productive at work, and the level of effort put in improving the quality and quantity of work depends on employee motivation. Case 4 Drukwerkdeal developed a cultural transformation, that pushed employees to implement the new BM, by making employees feel engaged and equally valued.

The change in BM included moving to an open and interoperable modular IT architecture to speed up product invention and deployment in the e-commerce platform. New actors (third-party resellers and distributors) can also use APIs to access the platform. When compared to their old BM, this obviously signaled a shift in the function of IT employees as well as a need for new expertise. As a result, the firm acquired additional expertise that they lacked internally, for instance, IT specialists, sales and marketing personnel, but there were no explicit training programs in place since they believed that was not how people develop their skills.

> '*We didn't have an external agency to train our employees because that often does not work in the skill we wanted. actually, the training was more on the job...*' <Project Leader>

Instead, the organization had multiple meetings to discuss technical challenges and promoted experimental learning and teamwork. The teams sat near one another and cooperated to work together while also training themselves and learning by action. This shows that Case 4 Drukwerkdeal convinced people to take action and learn on the job, allowing for mistakes to be learned from.

> '*One of the best achievements for each of them is that they did it themselves, and we only supported them and gave them the right direction to find a good way of working*' <HR manager>

Nonetheless, there were multiple meetings with various teams to discuss agile techniques, Scrum, Kanban boards, and other concepts which featured an agile approach in terms of e-commerce platform development, before implementing the Spotify model. As a result, the company's training and learning focus stemmed partially from knowledge exchange within teams and partly from knowledge sharing by new hires. This was beneficial since, during the BM implementation, new viewpoints and knowledge were developed, empowering employees to make responsible decisions in their organisational activities, especially when they encountered issues.

Employee empowerment was a key component of the company's culture since it encouraged to be entrepreneurial in their work. Employees have to think and react quickly throughout the implementation of continuous BM changes.

> '*It was very important for all the people to act fast...there was no time for waiting for people. So, if you have a problem and someone is blocking you...unlock yourself or find people that can unblock you but don't wait*.' <Project Leader>

This implies that Case 4 Drukwerkdeal gave its employees the authority and space to make their own decisions to gain confidence and accept ownership for their own as well as the company's objectives.

Case 4 Drukwerkdeal offered employees adequate internal training and coaching on both technical and non-technical areas of the new BM implementation. The purpose of coaching and training throughout the change was to assist employees in their own personal growth, which not only helped employees to

reach their full potential but also showed the mechanisms and direction to improvement in performing the job.

Regarding employee readiness to change, Case 4 Drukwerkdeal creates effective communication, a change receptive culture, and management support to make employees ready to implement the new BM. First, it was critical for Case 4 Drukwerkdeal employees to realize that change was an important component of their organisational culture. To do so, managers frequently discussed the change receptive culture with employees, explaining what it meant to them, their role and breaking down the new changes in BM into value and operational activities.

> '*We tried to visualize how the teams were working and made the roadmap visible within the Office. And then it was easier for people to see what was needed, and also have ideas about how to organize themselves...*' <Project Leader>

Managers, according to interviewees, communicated the necessity to automate the process for consumers, develop a modular IT infrastructure, transform the organisational structure to a Spotify model, and express how it helped employees and the organisation as a whole. Furthermore, because each person learns at their own rate, the managers provided employees time to embrace the change, making it simpler for them to deal with the transition from the old to the new BM.

> '*We respect people for who they are. We gave them the room and the space to be human. The fact is, some candidates changed very easily, and others had difficulties with it*.' <HR manager>

Employees who were on board with the change demonstrated their readiness for the change and desire to support the change. So, in the case of implementing the BM changes in the platform, managers, after introducing the idea, translated the idea into design requirements to make it understandable to others. Next, informal meetings were convened to communicate and discuss the situation.

> '*Often, I met the CEO and a designer, just to sketch some new website ideas, and then we set up informal, design-driven meetings to explain that this is a new idea. Let's focus on that.*' <Project Leader>

So, employees who have a clear vision of the change are more likely to believe in it and commit their time and energy to its success. As a consequence, when the changes were communicated, Case 4 Drukwerkdeal employees were able to proceed with implementation. However, when they encountered difficulties, management was always available and supportive to assist them in overcoming any difficulty that made it difficult to progress. They also instituted a meeting code (i.e., Holacracy) to assist employees in resolving issues that produced stress and anxiety throughout the implementation of the new BM.

> '*If something felt not okay, then you could always go directly to the CEO or manager to overcome your challenge...the CEO at that time was really involved. When people spoke to the CEO...they saw the passion and got things explained why we should do things differently...People like that.*' <Project Leader>

Another key aspect of employee readiness to change is having an organisational culture that supports and facilitates the implementation of the new BM, which may be difficult to incorporate given Case 4 Drukwerkdeal's constant innovation and expansion. Due to the uncertain nature of the printing industry, the company has always supported a culture of adapting and implementing changes instantly. Therefore, employees continually prepared their mindset to adapt to changes.

> '*From the beginning, people were used to everything changing all the time. We did not work on the same desk for two months. So you're also used to a new workplace and new faces every day.* ' <Project Leader>

Furthermore, the transition to a Spotify model improved the collaborative climate among employees, allowing them to exchange information and cooperate in cross-functional teams.

> '*Spotify model was one of the best ways to let information flow, and when you share the same information, you share the same goals, then it's much easier to also support it and your colleague in that change.*' <HR manager>

Overall, Employees at Case 4 Drukwerkdeal were more equipped to implement the new BM because of their cultural mindset towards change, continual innovation, and experimental learning. This indicates that employees regarded change as happening through them rather than to them, which was most likely one of the reasons for the successful implementation of the company's BM. Having employees trained to have a change receptive mindset, assisted by change agents, enables the company to create fundamental change within organisation, for instance, change in organisational structure from functional to Spotify model and logic behind the way of doing business. Case 4 Drukwerkdeal highlights the importance of organisational culture in facilitating the change in BM.

7.2 Cross-case analysis

In the previous part, we presented the within-case analysis. Each specific case (in the form of its implementation of BMI) was taken as the unit of analysis. At that stage, the research focus was on identifying a unique pattern of the BMI process to gain knowledge about the story of BMI in each case. The tentative theoretical constructs were developed further in the cross-case analysis from the patterns that emerged from the within-case analysis.

Our cross-case analysis did not aim to enhance generalizability or transferability to other contexts (Miles et al., 2019), but to explore the issues and bring new possible explanations about the implementation process of BMI. The cross-case analysis is used to deepen our understanding and explanation. Multiple cases help the researcher find negative cases to strengthen a theory, built through an examination of similarities and differences across the four cases. The cross-case analysis considers the case as a whole entity— looking at configurations, associations, causes, and effects in order to perform a comparative analysis of a (usually limited) number of cases and look for underlying similarities and associations, compare cases with different outcomes, and begin to create more general explanations.

Case study research produces enormous amounts of data. It means that qualitative data analysis of case studies are complex and requires flexibility, experience, and skill (van Staa & Evers, 2010). To break up the qualitative data into manageable pieces, we followed the three steps coding procedure introduced by Corbin and Strauss (2007), which are (i) open coding, (ii) axial coding, and (iii) selective coding.

Open coding is the part of the analysis concerned with identifying, naming, categorizing, and describing phenomena found in the data. After conducting each interview, the interview text was converted into a transcript. The transcripts were read line by line carefully, and conceptual tags or labels were assigned to fragments of data as open codes. Data collection and analysis occurred concurrently and simultaneously, so the researcher could identify avenues that might be explored further and seek explanations for unexpected results. After the coding of the third interview was done, a codebook was

developed to facilitate the coding process. Having a solid codebook that contains possible preliminary codes to draw from makes the process of constructing themes more efficient and rigorous (N.N., 2019). Based on concepts present in the interviews, a list of research questions, problem areas, and key variables that the researcher brings to the study (Miles et al., 2019), a codebook containing 128 codes was developed. For the rest of the interview transcripts, the codes from the codebook were used to code similar concepts; however, new codes were welcomed to the codebook when new concepts were identified. The researcher tried to be as open as possible to grasp information from research data and not limit himself to using the codes from the initial codebook. Therefore, after completing the open coding process, 438 open codes were extracted. By re-reading the transcripts and merging redundant and similar codes together, we reached 223 sub-categories in sixteen categories. This process of relating codes (categories and properties) to each other is called axial coding.

In the last step, the axial codes were again categorised into a more abstract framework with categories that are generally more abstract than words in interview transcripts. Therefore, selective coding was done to group all the categories around the "theme" that represented the phenomena under study, which was "implementation of business model innovation," and relating all other categories to that core category. This enabled us to explore the inter- and intra-relationships of the categories and generate propositions to bring insight into the complex process of implementing the BMI in SME settings. The coding process was performed using Atlas.ti 9.0 qualitative data management software to categorise, display, and rearrange the interview data. The Atlas.ti 9.0 supported us to work and rework the data without losing their original context, code, retrieve, and analyse the data and produce a visual presentation of findings to summarize and compare findings within (and across) cases.

7.2.1 Descriptive cross-case analysis

The objective of this stage was to explore the implementation phase of business model innovation and gain deep insights into what was going on with a view on organisatonal issues and employees with a focus on the soft part of BMI implementation. Apart from some limited activities related to the hard side of BMI implementation, such as redefining the processes and procedures, providing required resources, and changes in the organisational structure, most responses were concerned about the people-side of implementation and a clear set of practices were found across the cases. We could categorise the core themes on two major levels, namely individual and organisational levels. In line with other studies, our finding revealed that to be fully engaged in such a change in the business model within a company (and its ecosystem), employees are required to be equipped to deal with it on an individual level. Employees have to be motivated (mentally) to act toward the new direction and be capable (in terms of required skills and knowledge) to accomplish new tasks to attain the company's new objectives. To have motivated and capable employees to act in line with new BM, companies have to provide an environment to make employees ready to change at the organisational level. Our finding showed that companies, to push their employees toward their desired destination, have to focus on three primary activities by choosing (1) an appropriate leadership style, (2) clear communication channels that promote (3) a receptive culture. In the following, our findings in each dimension of individual and organisational levels were discussed. Prior to describing our findings in each dimension of individual and organisational levels, the performance of BMI is discussed. Knowing the extent to which each case study has achieved its expected outcome in implementing the business model can help the reader to understand and interpret research findings.

Cross-case analysis in BMI Performance

Generally speaking, firm performance is a result of coherent strategic planning and its effective execution, while multiple internal and external factors are involved in creating a superior firm performance. Most strategy and organisational studies make use of the performance construct in their attempt to examine various strategy content and process issues (Venkatraman; Ramanujam, 1986). Since in this study, our focus was on BMI, we measured performance as the extent to which case companies produced their expected outcome in implementing the business model. The BMI performance was measured subjectively by asking participants about their opinion on the success of the process of BMI and its effect on the firm's overall performance. The respondents' answers were triangulated by available objective financial measures.

Our analysis shows that Case 1 Weber, could not implement its new BM according to its plan and to make money through the new BM, which launched in parallel with the old one. The company struggled with implementation, especially in integrating people from two BMs. The performance of BMI was, at the lense of this study, perceived as unsatisfactory. Case 2 ZoDichtbij, as a social entrepreneur foundation, successfully built up an extensive network of stakeholders and developed several prototype platforms for its clients, recently received first funded projects. The owners and managers of Case 2 ZoDichtbij considered their BMI endeavor moderately achieved their expected outcome. Although Case 3 Iddink almost achieved its financial targets, it encountered several challenges in the implementation phase. They could not manage to merge two BMs within one organization despite of cultural conflicts among old employees and employees from acquired companies. Therefore its performance can be seen as a satisfactory performance. Finally, Case_4_Dreakwerkdeal could fully implement their new BM by well managing both the hard and soft side of the change and generating a huge amount of money. So its performance was perceived as an excellent effort to implement a BM change. Table 7.1 summarises the cases' perceived performance in implementing their BMI.

Table 7.1:Cases' performance in implementing their BMI

Case name	Performance in BMI
Case 1 Weber	Unsatisfactory 
Case 2 ZoDichtbij	Moderate 
Case 3 Iddink	Good 
Case_4_Dreakwerkdeal	Excellent 

7.2.2 Employees motivation while implementing BMI

Happy and engaged employees invariably lead to productivity. The success of any business relies on the motivation of its employees. Although researchers have been working on motivational techniques for decades, unfortunately, there is no simple approach to motivate people. What works for one individual does not for another. Some are motivated by money alone. Some prefer recognition, and others are motivated when they feel valued. The motivation factors can be categorised into two groups. Intrinsic motivation, which is a form of autonomous motivation which refers to an individual's intention to perform a task for its own sake, and Extrinsic motivation are a form of controlled motivation which refers to an individual's intent to perform a task when triggered by an external influence or outcome distinct from the task (Davis et al., 1992).

Our analysis revealed that to encourage employees to implement the new business model, SMEs increase intrinsic motivation through early involvement of employees in the process of BMI in planning, learning, and making decisions. Employees' opinions were asked to define the scope and speed of change and key features of products and services, from the design stage to the implementation stage (Normalized Frequency[1]= Fr_N=12). As a second approach, companies tried to align organisational objectives with their employees' personal interests (Fr_N=10). The other general approaches to motivate employees intrinsically were listening to the employees' ideas and opinions (Fr_N=8), creating a friendly environment (Fr_N=5), making a high commitment to the company goals (Fr_N=5), and establishing a feeling of being useful (Fr_N=3).

However, to generate extrinsic motivation, the SMEs used to give verbal feedback to employees and recognise their effort, which was in line with the new norms and behaviour (FrN=4). Deserving financial rewards and incentives (FrN=3), sharing success with partners financially (FrN=3), and receiving training (Fr_N=1) were three ways of improving extrinsic motivation. Different cases had different approaches to motivate their employees. While Case 1 Weber concentrated on "*early involving people in the process*" and "*creating a friendly environment*," the Case 2 ZoDichtbij focused on "*aligning organisational objectives with personal interests*," clearly due to the nature of its business structure. As a network enterprise, Case 2 ZoDichtbij has to bring together a large number of partners in different fields and from different organisations to collaborate together, and have aligned organisational objectives, crucial for a social entrepreneurship business. Case 3 Iddink also paid attention to "*early involving people in the process*" and "*feeling of being useful*." Case 4 Drukwerkdeal focused on "*listening to the ideas and opinions*" and also "*early involving people in the process*." Figure 7.5 presents the axial codes and relevant quotations to explain different dimensions of employee motivation during BMI implementation.

Although figure 7.5 provides general insight into SMEs' approaches to motivating employees while implementing the BMI, we found some similarities and differences between our case companies. Although creating a link between individual performance and their financial income is considered as an established practice in change programs within organisations, our research revealed that SMEs pay more attention to intrinsic motivation than extrinsic motivation (Figure 7.6) while implementing innovation in BM. Intrinsic motivation was cited four times (Fr_N=43) more than extrinsic motivation (Fr_N=11) by interviewees, and almost in all cases, they stated that there is no link between the employees' outcome and their salary. It might be explained by specific working culture in the location of cases (The Netherlands) or research context (nature of BMI implementation). Managing employees' motivation became extremely challenging, while two different business models run in parallel within a company. The greater the difference between the two business models in terms of the level of required expertise and technology, age of employees, and industry sectors, the more cultural differences can occur between the two groups. This cultural difference can cause distinctive preferences between people in the two BMs and makes it difficult to increase their motivation. For instance, the manager in Case 1 Weber was forced to apply a combination of intrinsic and extrinsic motivators to enhance the motivation of employees to implement the new BM. The employees of the old BM –less-educated and older employees - were motivated using extrinsic motivation, while the employees of the new BM –younger

[1] Fr_N: Normalized frequency means that the numbers are automatically adjusted by the software by taking the number of interviews per case into consideration (see section 4.4.7 for more detail).

employees - were motivated using intrinsic types of motivation. In contrast, in Case 3 Iddink, which also ran two parallel BMs, the employees of the old company were motivated by intrinsic measures while the employees of the acquired companies - with high-educated and younger employees were motivated using extrinsic measures. This caused an imbalance between the two BMs, which made it difficult not only to merge the companies but also to implement the new business models.

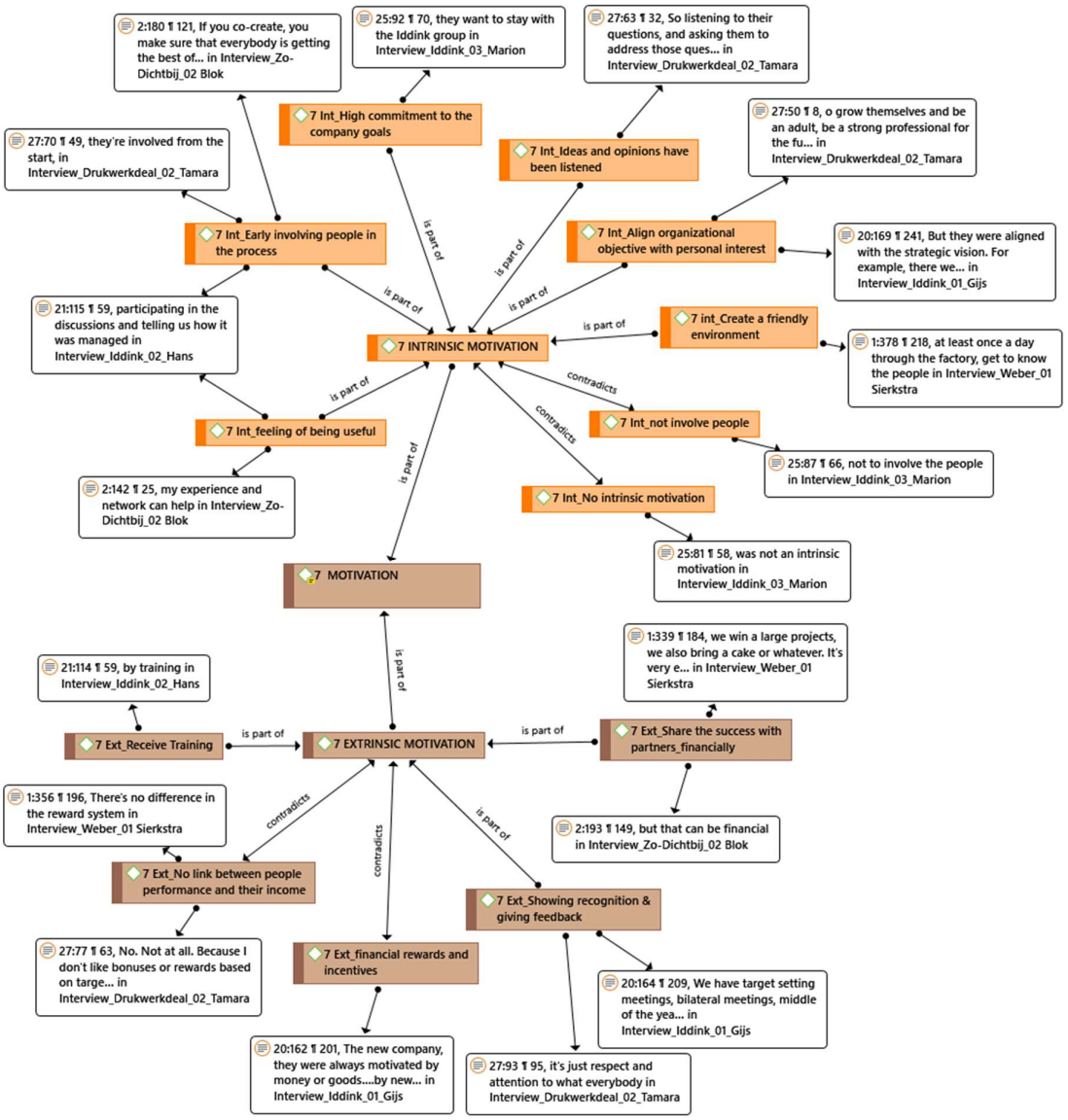

Figure 7.5: Different approaches to motivate people during the implementation of BMI

Case 1 Weber was forced to apply a combination of intrinsic and extrinsic motivators to enhance the motivation of employees to implement the new BM. The employees of the old BM –less-educated and older employees - were motivated using extrinsic motivation, while the employees of the new BM – younger employees - were motivated using intrinsic types of motivation. In contrast, in Case 3 Iddink, which also ran two parallel BMs, the employees of the old company were motivated by intrinsic

measures while the employees of the acquired companies - with high-educated and younger employees were motivated using extrinsic measures. This caused an imbalance between the two BMs, which made it difficult not only to merge the companies but also to implement the new business models.

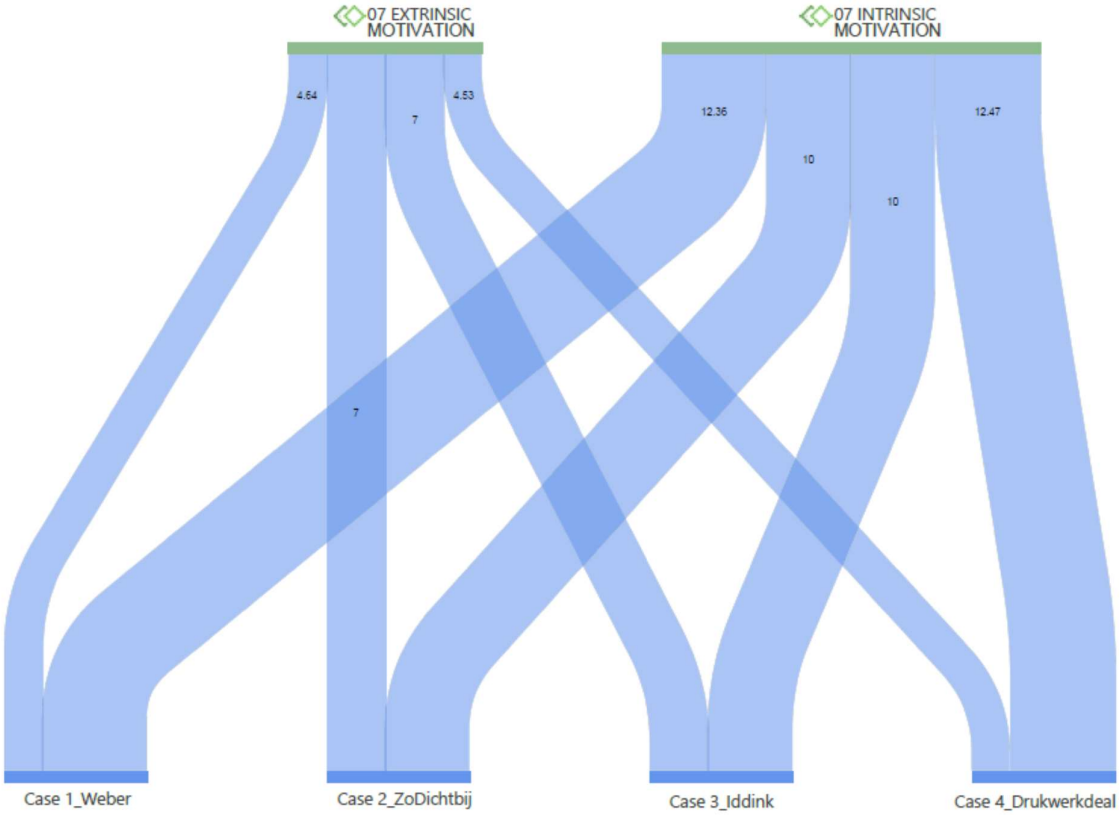

Figure 7.6: The frequency (normalized) of codes used for extrinsic and intrinsic motivation across the cases

Early involvement of employees in the BM innovation process, aligning personal goals with organisational objectives, listening to the employees, and giving feedback to them were the most ubiquitous ways of motivating employees, are all intrinsic types of motivation. Showing recognition and giving feedback was the most common practice to strengthen the extrinsic motivation of employees.

7.2.3 Employees Development while implementing BMI

Although the new business model is usually formulated and introduced by a management team, it has to be executed by all members of the organization at any level. The success rate achieved by an organization is both driven and limited by employees' capabilities to adopt and adapt to change. Therefore, the process of preparing and supporting individuals to implement the new way of doing business is paramount for each and every organization.

In this study, we could identify several approaches to the development of employees. Although the majority of cases (3 out of 4 cases) provided technical training initiatives for employees to develop

certain competencies and skills that would help them to implement the new business model (Fr_N=10), SMEs had less attention to developing non-technical or soft-skills training such as communication skills and teamwork (Fr_N=2). However, Case 4 Drukwerkdeal emphasised cross-department collaboration skills (FrN=4) since the company had various teams requiring common technical services.

Apart from training, empowering the current employees was among the most common approaches to develop employees (Fr_N=15). Leaders empower employees by giving them the freedom to do the job, fostering ownership and responsibility across the organization as well as providing all the necessary tools and resources needed to implement the new BM. Consequently, employees will feel a greater sense of autonomy, value, and confidence within their work.

Moreover, when certain competencies could not be insourced within the organization, companies gained that knowledge and skills in two ways, either by acquiring new companies done by both Case 2 ZoDichtbij and Case 3 Iddink or by hiring new employees, which happened in Case 1 Weber and Case 4 Drukwerkdeal. Our results show that although acquiring new companies can instantly provide needed knowledge, it can cause cultural problems, which thwarted the BMI outcome. Integrating the acquired company's culture with the current company requires a considerable amount of time and effort. On the other hand, employing required competencies that fit the organization's culture may take even more time but keep the organisational culture almost the same. Figure 7.7 displays the axial codes and relevant quotations to explain different approaches to employee development before and during BMI implementation.

In response to our question regarding how the business model implementation could have been better if they had a chance to do it all over, Case 3 Iddink and Case 4 Drukwerkdeal expressed that they missed the change specific training program, which could help organizations reduce resistance to change among their people and managers. Interestingly there was no training to facilitate the change among any of our case organizations (Fr_N=6). In addition, the interviewees from Case 3 Iddink and Case 4 Drukwerkdeal suggested that the knowledge and skills of existing employees should be assessed and compared with the required competencies for implementing the new BMI prior to taking any decisive action towards implementation. Assessment of employees' capabilities and skills can help the companies develop their human resource strategies to support BMI implementation.

Although there were a variety of approaches to developing employee competencies and skills ranging from technical ad non-technical training, coaching, empowering employees, hiring new people, acquiring new companies, and special training for managers, the case companies selected different portfolios from this collection. The analysis revealed that companies that were more successful in BM implementation used a more diverse portfolio of employee development methods. For instance, Case 1 Weber only used one approach of developing employees, which was "acquiring new competencies by hiring new people." In contrast, Case 3 Iddink and Case_4_Dreukwerkdeal, which could produce a satisfactory outcome during the implementation of their BMI, used a wide variety of approaches for employee development. Figure 7.8 compares the frequency (normalized) of codes used for employee development across the cases.

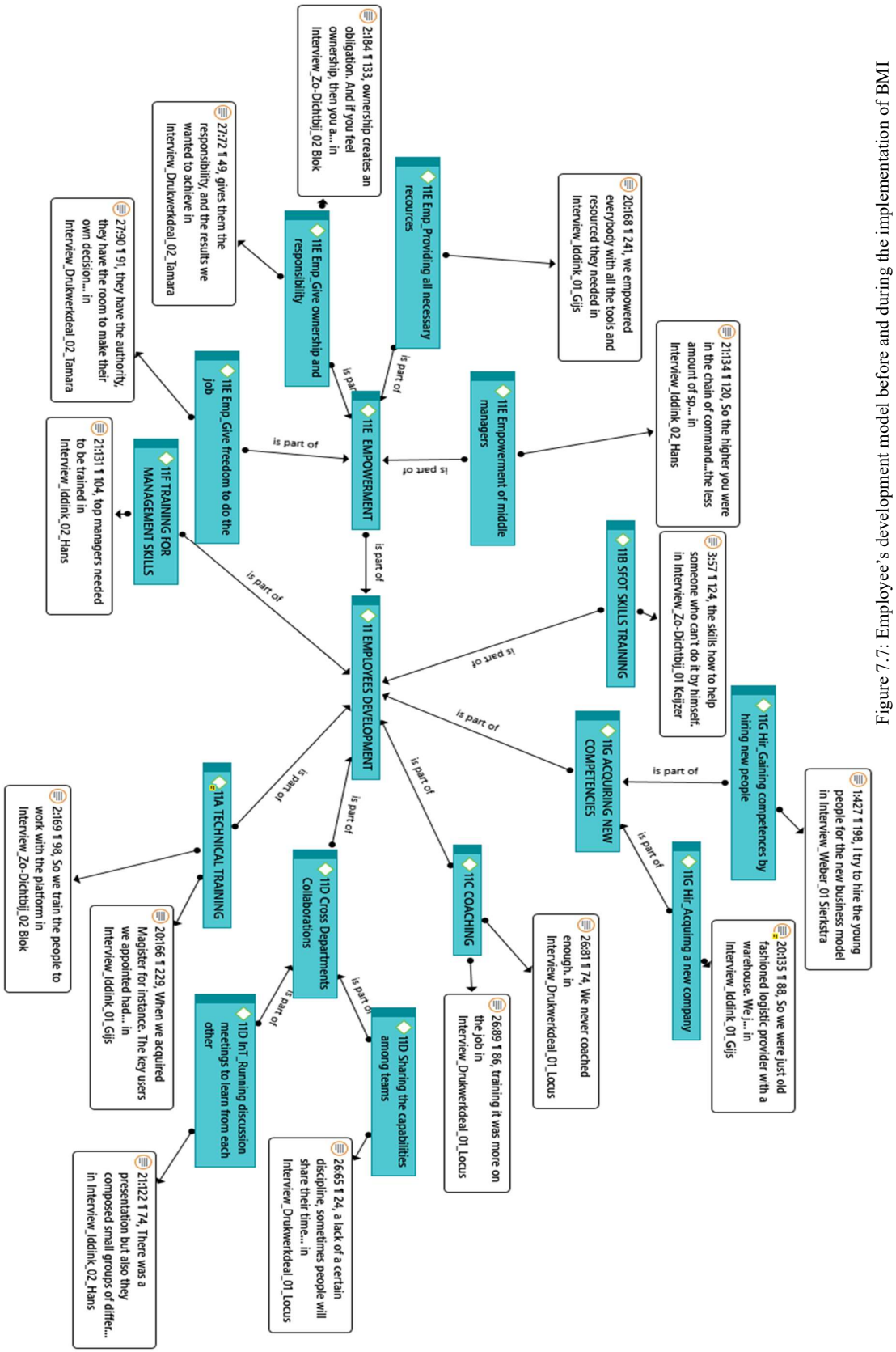

Figure 7.7: Employee's development model before and during the implementation of BMI

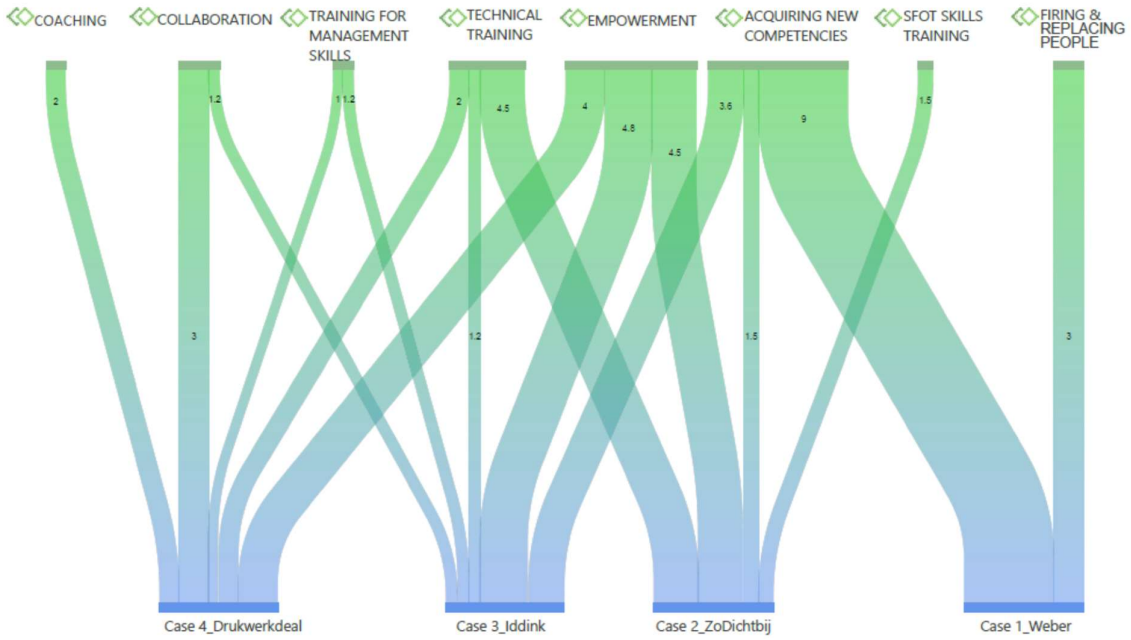

Figure 7.8: The frequency (normalized) of codes used for employee's development across the cases

7.2.4 Readiness to change at the organisational level while implementing BMI

Despite the fact that employees have to be prepared to implement the new BM at the individual level, the organization has to provide an appropriate environment to create a united community that is ready to change at the organisational level. Our case study analysis unfolded three central themes if a company intends to promote such an environment. The first theme is concerned with the kind of management support. Which leadership style should be chosen, and what kinds of management practices were employed to lead the change towards a new desired destination? The second theme was related to expressing the reasons behind the change, communicating the road map to change, and how to keep the ball of change rolling towards implementing the new BM. The focus of the third central theme was on organisational culture. Since organisational culture affects how employees and groups interact with each other, with clients and stakeholders, it can create a basis to encourage employees' motivation, align their beliefs, assumptions, and values to understand the new processes, expectations, and systems. Findings will elaborate on these in the following subsections.

7.2.5 Communication while implementing BMI

Effective communication plays a vital role in implementing a new BM. Effective communication can reduce resistance to change among employees and reduce some of the fears and uncertainties that employees face. Effective communication can also simultaneously bring employees together around common goals. Communicating the change in the BM by the right people, at the right time, in the right formats, and through the right mediums can increase employees' motivation and help the company's ability to adapt to the new approach. Our research revealed that informal meetings and open communications were commonly used to manage stakeholders, share knowledge, and keep people integrated around the new objectives (Fr_N=24). Companies also used storytelling to communicate the

necessity of change for their employees and applied visual presentation of the new goals and benefits of the planned change (Fr_N=12). The analysis highlighted the importance of BMI tools and frameworks such as Canvas, Stof, and Visor to simplify and visualize the BMI and create a common language among employees within and outside the company. Moreover, effective communication has to include a clear definition of the objective so that employees know the new destination. It also should involve an explicit definition of the new roles and responsibilities of individuals and departments so that people know what is expected from them, how to behave, and what they need to accomplish. Sharing a roadmap to change is emphasized several times (Fr_N=13) by participants as an essential part of an effective communication program. Creating trust among parties within and outside of the company was mentioned as a major characteristic of the change communication plan (FrN=5). Trust rises to prominence in organizations engaging in BM innovation because such a fundamental change prone to add complexity and uncertainty to the organization. Employees need a certain degree of trust in their leaders and colleagues in order to comfortably deal with the uncertainty created by such changes. Figure 7.9 summarizes our findings of effective approaches to communicating through the implementation of BMI.

Although informal meetings were most commonly used to convey objectives, norms, and values in our cases (Fr_N=24), Case 2 ZoDichtbij used this approach more than the other cases (Fr_N=9). The reason may be laid down in its business type and organisational structure, since Case 2 ZoDichtbij is a networked enterprise, along with its focus on building trust, Case 2 ZoDichtbij motivated collaboration between parties. Case_4_Dreakwerkdeal, which has an excellent result to achieve its goals in implementing the new BM, besides employing a variety of communication practices, had more stress on using storytelling and visualization techniques (Fr_N=5) and sharing their visions with employees (Fr_N=2). This way, Case_4_Dreakwerkdeal could comprehend large amounts of information fast and easily among its employees to increase awareness and reduce the resistance to change. However, Case 1 Weber, as a company that could not attain its expected outcome in implementing the new BM, mostly focused on sharing the roadmap to change with employees (Fr_N=7) to decrease the level of uncertainty among them but less on building trust (Fr_N=0) and sharing visions (Fr_N=0). Figure 7.10 compares the frequency (normalized) of codes used for different practices to communicate change in BMI across the cases.

7.2.6 Management Support while implementing BMI

Mangers are pivotal figures in all kinds of organizations; they have to perform functions like planning, organizing, staffing, directing, and controlling (Koontz and O'Donnell, 1968). All these functions are essential for running an organization smoothly and achieving enterprise objectives. However, managers play more significant roles in SMEs since SMEs are normally operated by owners/managers who both own and run the businesses. Therefore, SME's owner/managers are mostly engaged with day-to-day operational issues and spend limited time with strategic matters such as implementing a new BM (Case 1 Weber, CEO). Therefore, we aimed to explore different dimensions of management support in BM change. After coding the interviews, the management support theme was divided into two main categories; the different leader leadership styles and management practices were used during the implementation of BMI.

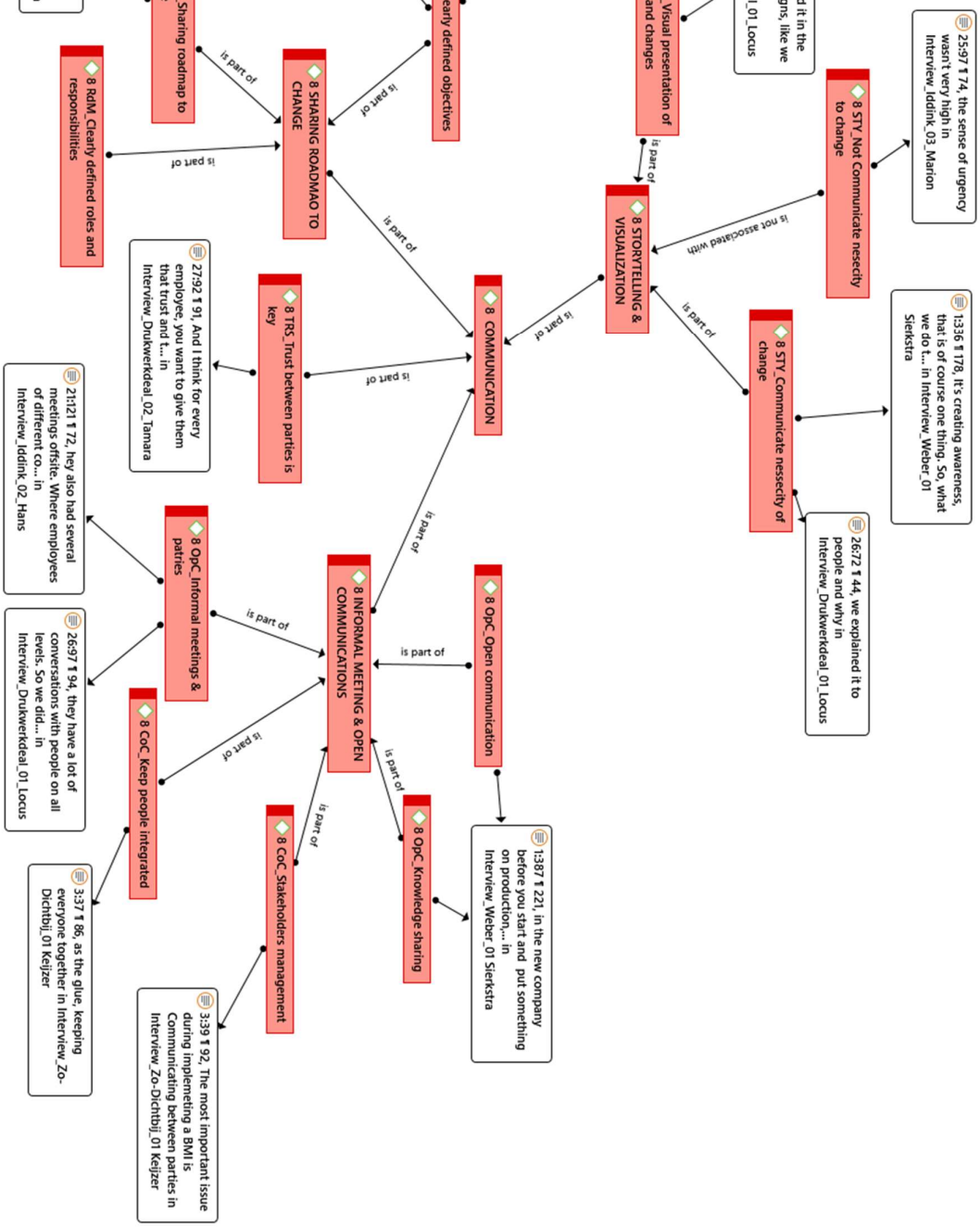

Figure 7.9: Effective approaches to communicating through implementation of BMI.

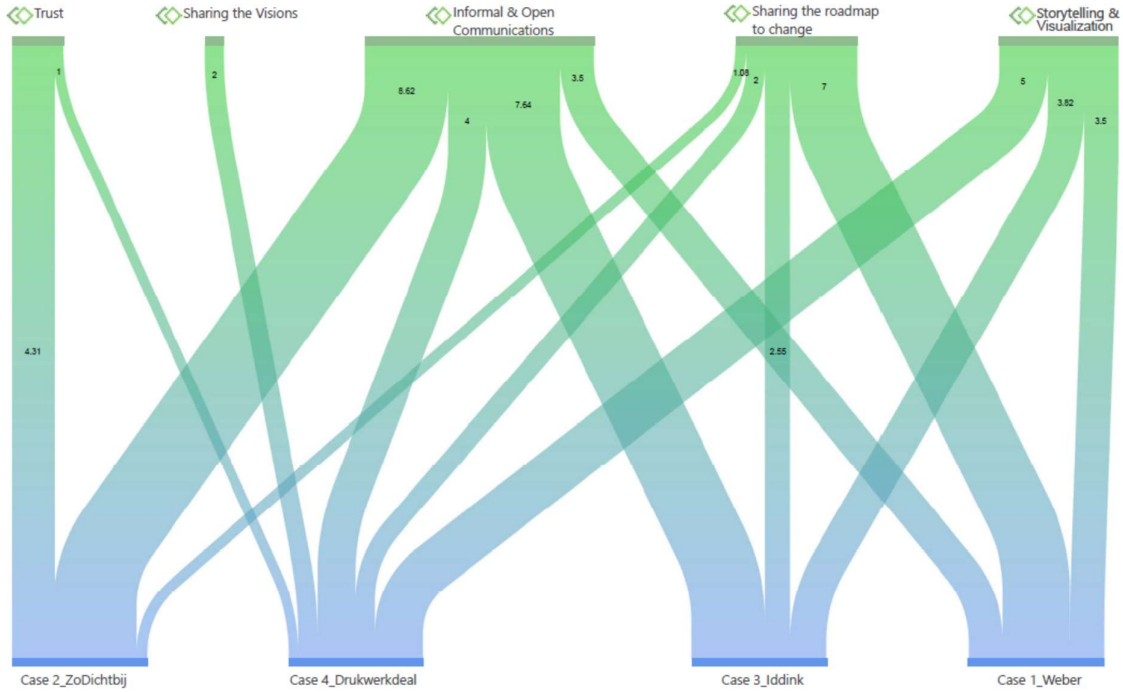

Figure 7.10: The frequency (normalized) of codes used for different practices to communicate change in BMI across the cases.

Leadership as a method of providing direction, motivating, and guiding people has different styles. Among different leadership styles, four styles were commonly used, which are (1) Autocratic leadership style (Fr_N=4), (2) Democratic (Fr_N=3), (3) Participative (Fr_N=6), and (4) Visionary leadership style (Fr_N=12). Although there is no best leadership style to fit all situations, SME's leader/managers have to flex from one style to another as the situation demands. Our analysis shows cases used several leadership styles the same time in implementing the BMI. The visionary leadership style was mentioned more than the other styles. In this leadership style, leaders have visions and missions that people buy into and are inspired by the direction it will take them in to the future. Case_4_Dreakwerkdeal, maybe in combination with other factors such as collaborative and change receptive culture, achieved its expected outcome in implementing the new BM.

Leaders/managers also employ several management practices in the implementation process such as (a) hiring a change agent to facilitate the required modifications in organization and reduce resistance to change among employees (Fr_N=2), (b) increasing their accessibility to employees to facilitate communication (Fr_N=16), (c) keeping consistent behaviour, since consistency of word, action and direction creates a powerful cycle in the organization can enable the organization to have the confidence to take action (Fr_N=4), (d) giving stimulation and feedback as a method of coaching can guide employees to do things right and as a method of motivating employees can lead them to do right thing (Fr_N=3), (e) having a detailed plan (Fr_N=2) for change can also reduce the uncertainty among employees and can clearly define the scope and pace of change, and finally (f) providing required resources to implement new initiatives (Fr_N=6) increases the level of trust between managers and employees and reduces the conflicts between individuals and departments. Figure 7.11 presents the axial codes and

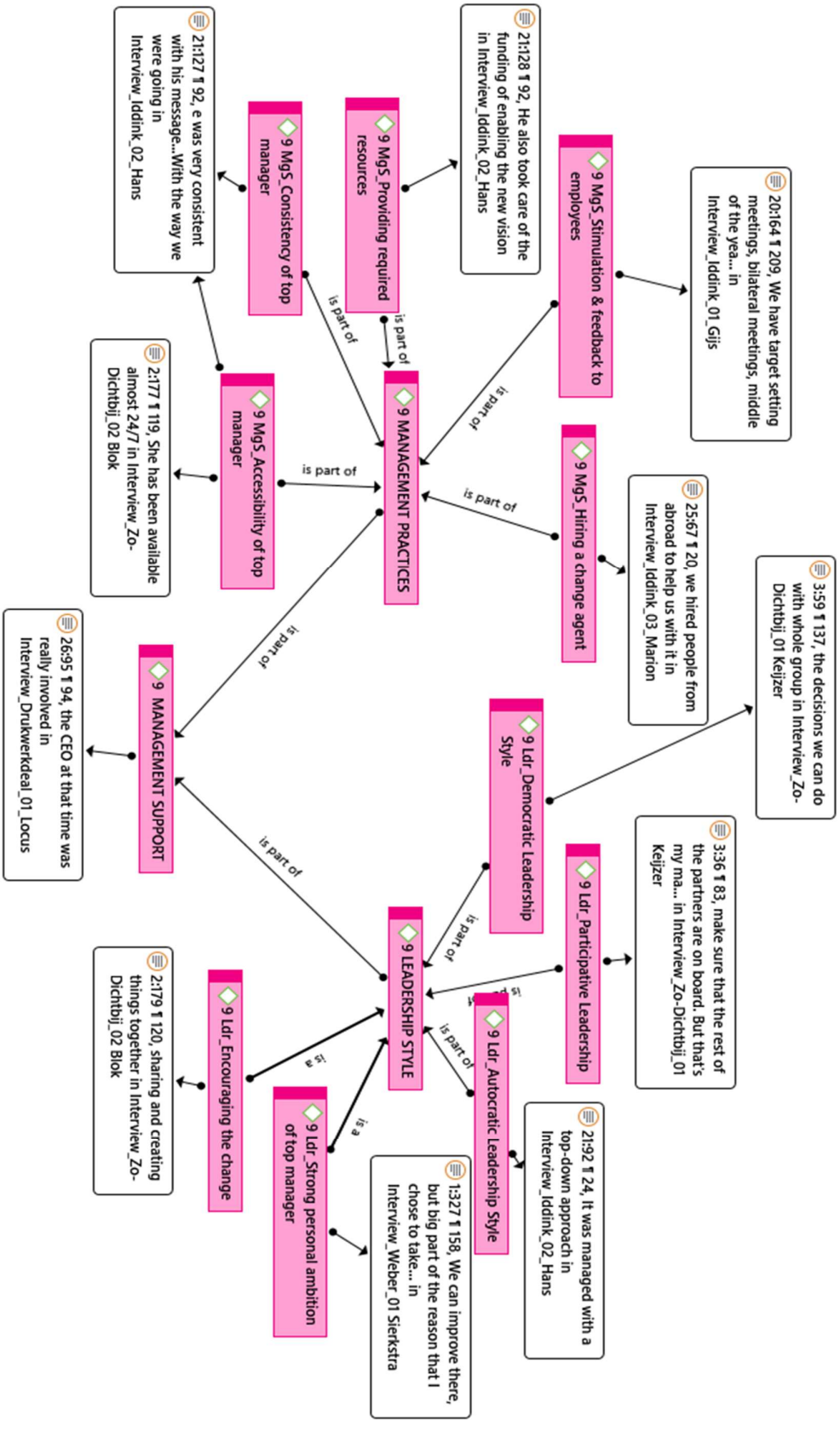

Figure 7.11: Management practices and leadership styles through implementation of BMI

relevant quotations to explain different leadership styles and management practices in which leaders/managers were used to supporting the implementation of BMI. Figure 7.12 shows that companies, based on their business structure, life cycle, corporate culture, and employees' motivation and capabilities, took different approaches to lead their people. In the time of collecting data, the focus of Case 1 Weber was on visionary leadership style to encourage employees of old business model to accept producing high-tech equipment and concurrently employed participative leadership style to engage employees with the new business model in the decision-making process in order to increase their intrinsic motivation. Since Case 2 ZoDichtbij, as a networked enterprise, had a variety of stakeholders at different levels, it used all four types of leadership styles to guide its stakeholders towards its organisational goals. Case 3 Iddink started from a more participatory type of leadership style, and when the company expanded through acquisitions and the BMI process got a predictable structure, managers/leaders applied a more autocratic leadership style. On the other side, Case_4_Drekwerkdeal just followed the visionary leadership style to communicate the vision and mission clearly, display emotional intelligence to develop a collaborative and innovative culture (Figure 7.12).

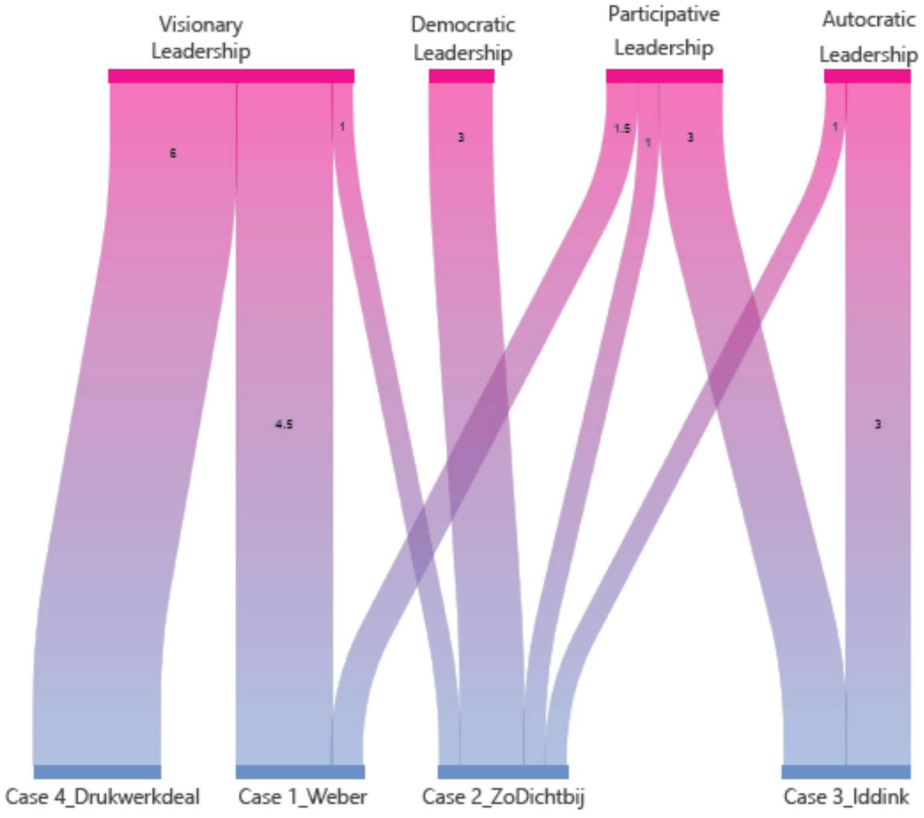

Figure 7.12: The frequency (normalized) of codes used for different leadership styles across the cases

Although managers in most of our case studies tended to increase their accessibility in the time of implementing new BM, and moderately stayed consistent over time and provided required resources for implementing BMI, they used fewer other management practices (Figure 7.13). However, hiring a

change agent, for instance, was a game-changer in Case 3 Iddink. While managers at Case 3 Iddink were disappointed with the lack of engagement from employees into implementing the new way of doing business and were faced with resistance to change, hiring a change agent who deals with the

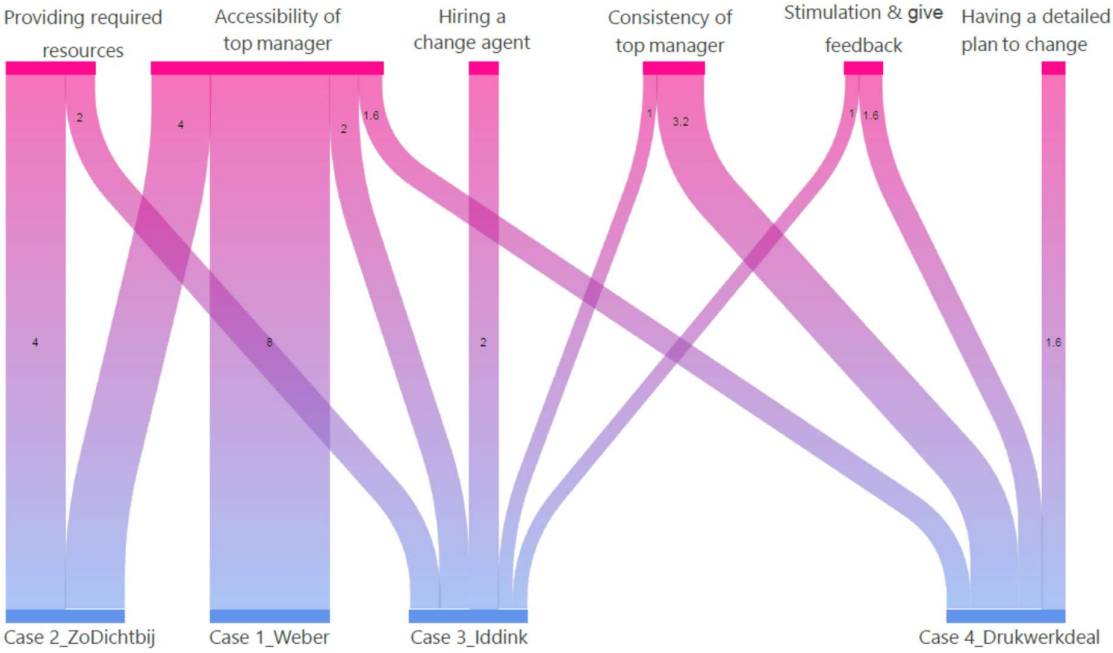

Figure 7.13: The frequency (normalized) of codes used for different management practices to support BMI across the cases

people side of BMI facilitated the process of change and at the end, they could manage to accomplish their objectives of implementing the new BM. Case_4_Drekwerkdeal was the only case that developed a detailed plan for managing the transition from the old BM to the new one. The interviewees from Case 3 Iddink recommended having a detailed plan of action for such a change.

7.2.7 Organisational Culture while implementing BMI

Although an organisational culture defines norms, values, beliefs, and appropriate behaviour of people within an organisation, it is not easy to change it in a short span. A proper organisational culture that supports the implementation of a strategic attempt and encourages the enthusiastic support of all employees is fairly difficult to imitate and can lead to a sustainable competitive advantage. Organisational culture is influenced by or on different factors on individual, group, and organisational levels. In fact, organisational culture is a sophisticated social phenomenon that can be considered as an overall but unique image of any organization. Three types of subculture were identified through our case analysis; (1) Innovative culture (Fr_N=11), (2) Collaborative culture (Fr_N=27), and (3) Receptive to change the culture (Fr_N=3). Figure 7.14 shows the axial codes and relevant quotations to explain different subcultures to support the implementation of BMI.

Despite the importance of innovative culture in implementing BM innovation as found in the quantitative analysis, our cross-case analysis revealed that collaborative culture is far more important than innovative culture. Moreover, creating a receptive to change culture takes plenty of time and effort, but when achieved, introducing changes in product, process, and business level will be facilitated (Case_4_Drekwerkdeal).

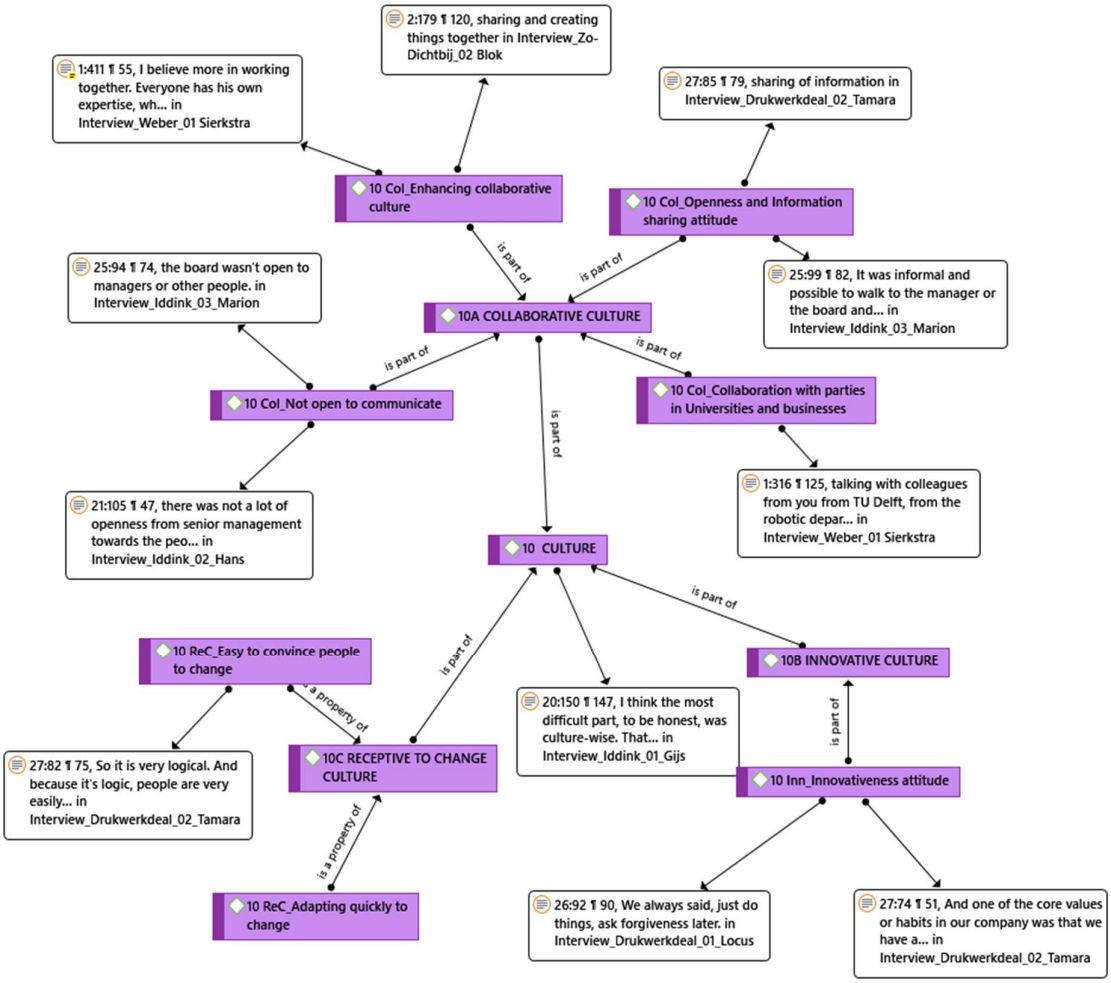

Figure 7.14: Different types of culture during the implementation of BMI

Culture-wise, Case 1 Weber, and Case 3 Iddink experienced a tough situation. Both cases run the old and new business models in parallel. The two groups of involved people came from two different cultures in terms of age, education, motivation, and skills. These companies had difficulties in managing expectations, leadership style, coaching, communicating, and compensating people. They found the cultural difference between the subgroup as the major hinder of implementing their BMI. And the older people are, the more difficult it is to change their culture. Case 2 ZoDichtbij required both innovative and collaborative culture since their business demanded close collaboration among parties. Case 4 Drukwerkdeal, by focussing on collaborative culture and taking into account the culture of innovation and receptive to change, could implement their BMI more effectively (Figure 7.15).

7.2.8 Contingency factors of size and age of case companies

Managing the soft side of implementing a BM is an arduous challenge. The first reason can lie in the inextricably intertwining of its contributing factors. One can hardly measure the impact of leadership style and top management support, communication, motivation and development of employees, and

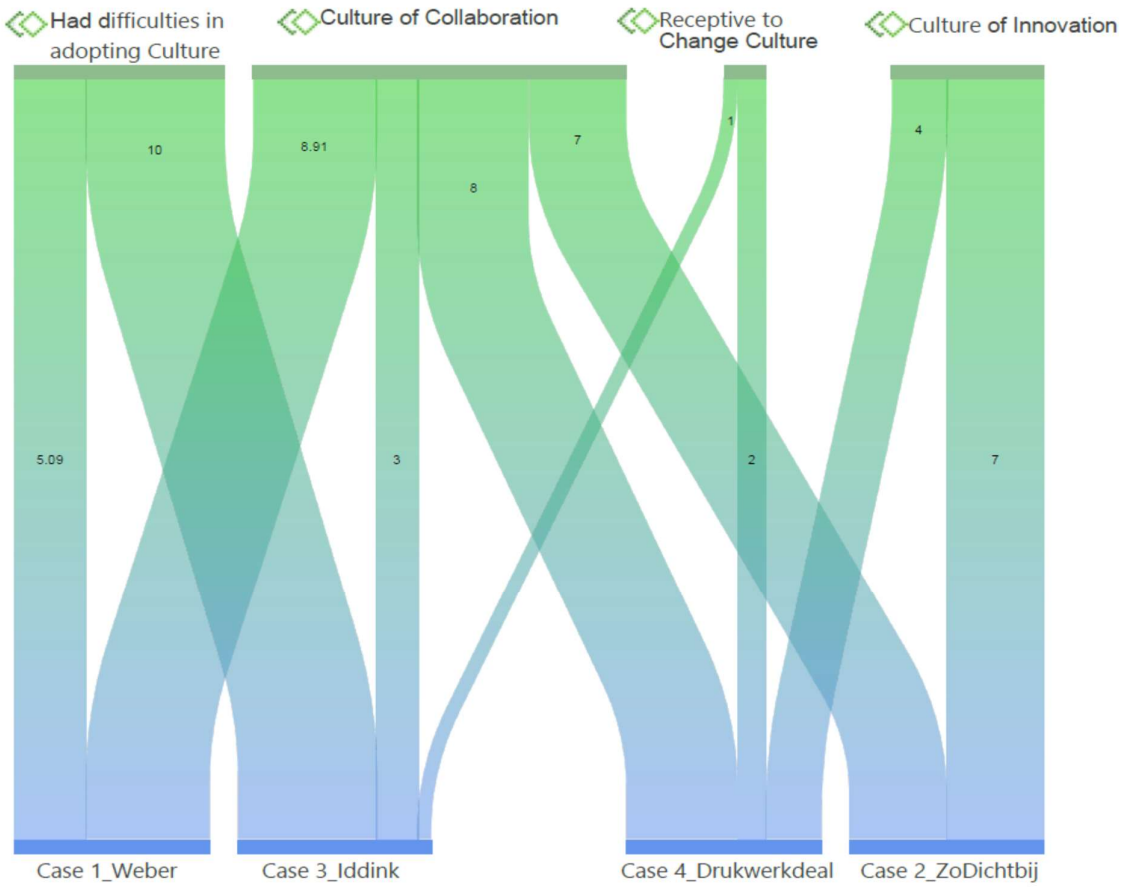

Figure 7.15: The frequency (normalized) of codes used for different types of subculture to support BMI across the cases.

corporate culture since there is a close correlation among these concepts. For instance, fundamental cultural transformation is such a massive undertaking that it always must initiate from the top. It requires effective leadership and extensive commitment from top management (Christensen, 2016; Hittmár, 2014; Zott and Amit, 2010). Leaders have to constantly communicate the destination and increase employees' motivation and empower them to act in a new way, and a new state of culture should be encouraged to reinforce the change. Another reason can be because of the fact that contributing factors of the soft side of implementing a BM are dependent upon the wide range of internal and external situations and the numerous industry and firm-specific contingency factors (Latifi & Bouwman, 2018). These create various situations in which different courses of action are possible, so there is no one best way to manage the people side of fundamental change. Therefore, it is not possible to introduce a static framework presenting the people's dynamic nature of implementing a BMI. To gain a deeper understanding of implementing a BMI in SMEs, the two dimensions of size and age of SMEs were used as the most common contingency factors in management and organization studies. We put our four cases into a two by two matrix considering the size (as small and medium firm based on the number of employees) and age (as young and well-established firm based on the number of years after establishment) (see section 3.4, Figure 3.6).

To explain and identify BM implementation practices, from a generic perspective, Figure 7.16 illustrates the similarities and differences among four cases and provides an overall picture of the

implementation of BMI in this study. Apart from summarising the description of cases, Figure 7.16 takes into account ten important aspects of BM implementation characteristics. The comparison expands our horizon about the possible influence of size and age of firm on the BM implementation efforts and helps to understand how BM implementation issues emerged and to what extent the applied solutions worked to alleviate the problem.

First, the well-established firms implement their new BM in parallel with the old BM. One of the reasons that both older case companies run two different BMs simultaneously could be that older firms may have inertia to accept the new way of doing business, and the bureaucratic inflexibility that advances with age decreases the degree of innovativeness. This characteristic leads to less adaptability to make a rapid change. Therefore to reduce the risks and give time to employees to adapt to the new situation, well-established SMEs run dual BM at the same time. Unfortunately, both cases experienced a serious conflict between two groups of employees and found out that integrating two different cultures within a single organization was the most challenging part of BM implementation. However, the younger firms could manage to run their new BM from scratch or make a fundamental change in the current BM, maybe because they were more flexible in accepting changes in routines and less resistant to the use of new technologies.

Second, the Medium-sized firm hired a change agent to help them to manage the people side of implementing the new BM. The change agent provides both the technical know-how and the social support needed by managers and front-line teams alike as they learn and adopt new BM. Since change agents are not bound by the firm's culture, politics, or traditions, they are able to bring a fresh perspective to conduct the change smoothly and regularly. Hiring change agent only in larger firms can be rooted in two things, (1) the larger firms have more employees and usually with different beliefs, behaviour, preferences and expertise; therefore, their management team figures out that it is essential to employ a specialist team to handle the people in the time of transformation, or (2) compare to smaller firms, larger firms has more access to financial resources to hire a change agent, while the smaller firms lack the resources. Not surprisingly, results show that the level of resistance to change among people was low while the companies employed a change agent.

Third, in almost all four cases, there were no financial incentives to direct and drive their employees toward desired behaviour and achieve the new organisational objectives. Although the majority of available change model expressed the importance of using financial incentives to facilitate the change, this decision could have been made for one of two reasons; (1) the management team in all cases were well-informed about the inefficiency of financial incentives and intentionally ignored them, or (2) it simply could be stemmed from a broader perspective, i.e., Dutch national culture. Since the Netherland is an egalitarian society and values the culture of equality, this can shape a specific workplace culture for the Dutch organization. Unlike the more liberal economics such as the USA, Canada, and UK's, Dutch people may prefer to work with peace of mind rather than be challenged to receive a higher bonus. According to Accenture (2019), companies that drive a culture of equality, willingness and ability to innovate among their employees are nearly five times higher than companies in which those factors are less common.

Fourth, all four cases promote informal and open communication strategies to share their vision to employees. Having informal and open communication became a common practice in organizations in developed countries and particularly, it has cultural roots in the Dutch business environment. Informal communications by satisfying four top human's necessities, i.e., the physical proximity, instinctive need

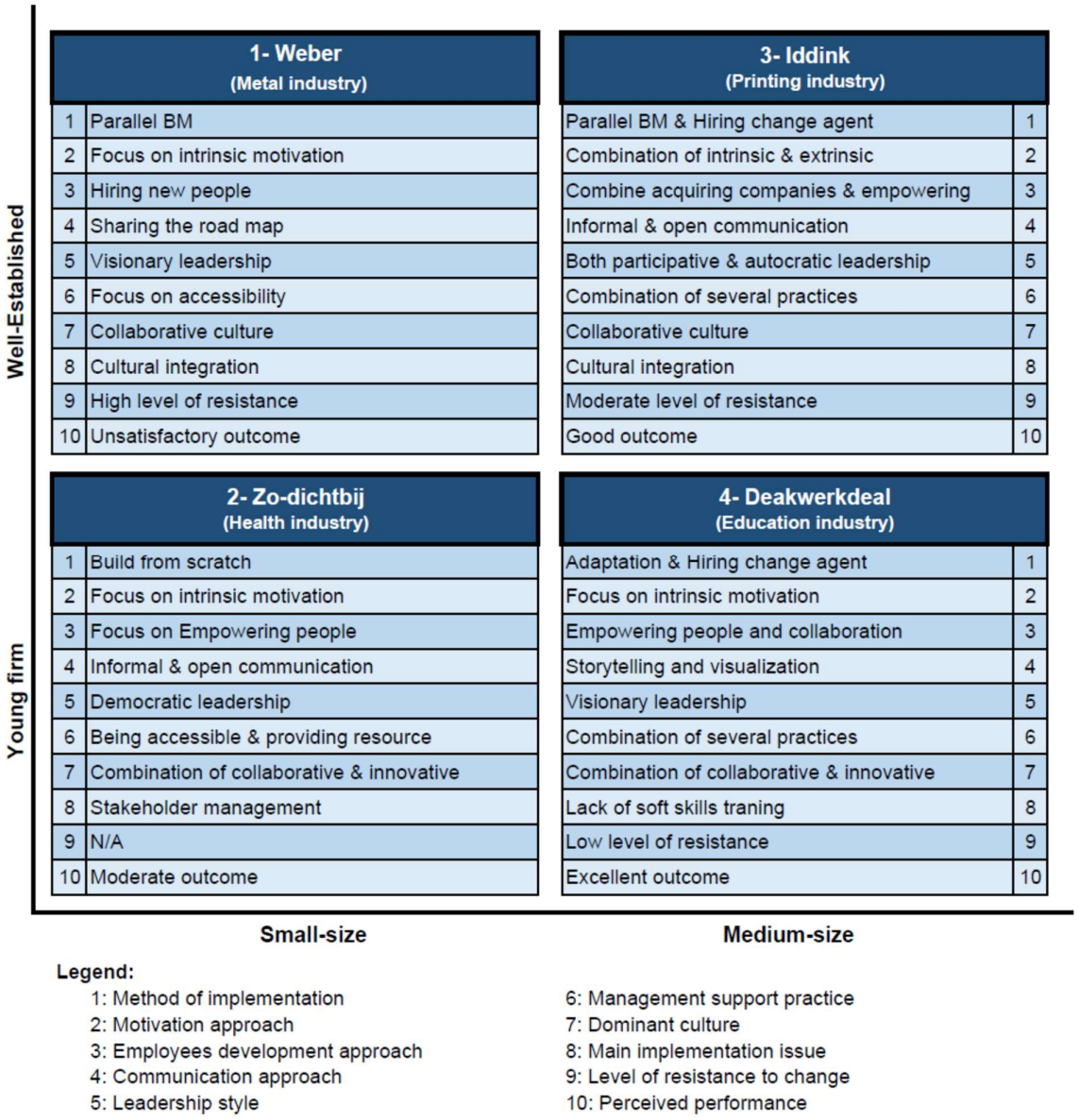

Figure 7.16: Summary of cross-case analysis considering the size and age of firms

to communicate, sense of belonging to a group, and hierarchy (Kraut et al., 2002), play a key role to create a friendly working environment. Open communications also foster building trust within an

organization (Conchie & Burns, 2008). Informal and open communication both are effective ways of communication. However, we found that storytelling and visualization can facilitate the sharing of the business vision and engage employees to implement change in the BM. The use of effective stories as a paradigm penetrates in company's culture and accelerates the change in mindsets (Denning, 2008).

Finally, the result shows that the more companies utilize a combination of managerial practices, the more likely they can manage employees to gain superior performance. For instance, in contrast to Case 1 Weber and Case 2 ZoDichtbij that applied limited approaches to manage the soft side of implementation, Case 3 Iddink and Case_4_Druckwerkdeal deployed a diverse combination of

managerial practices to motivate and develop employees and a portfolio of communication channels and leadership styles. Since employees by nature come from different backgrounds, beliefs and values, experience, education, position, and social class, finding the best approach to fit all is not possible. Therefore using a combination of different approaches can direct and engage employees into implementing BMI. Usually, the size of a company plays a role here. The smaller company, due to a lack of resources in the form of financial and human capital, cannot afford to provide the required support to make employees ready to change.

Our case studies analysis identified four distinct stages for implementing a BMI, e.g., the preparation, execution, stabilization, and optimization stages. The preparation stage starts before the real execution of the BMI implementation. Tasks in the preparation stage can be classified into three categories, e.g., *planning*, *technical preparation*, and *making people ready to change*. Planning activities include defining the BMI scope and objectives, estimating required resources and time frame, planning communication, identifying required changes in processes and policies, defining key performance metrics (KPI), and planning a roadmap of change. Although changes in doing business in SMEs are often carried out fortuitous and are not perceived as a BMI, this study revealed that a planned attempt to change in BM is more effective. Moreover, technical preparation assesses required changes in processes, technology, partnership, and policies necessary for implementing BMI and provides an infrastructure to start BMI. Technical preparation mostly focuses on resource mobilization, which are considered assets to the company and could be in different types of physical, financial, and intellectual assets. Besides technical preparation, employees and relevant stakeholders should be prepared to accept the upcoming change. To make people ready to change, companies can create a sense of urgency by communicating the trends in technology or customer preferences among their stakeholders (Tangi et al., 2021). By expressing credible expectations for accomplishing change and providing necessary training for new roles or hiring new people, motivation and readiness for change increase at both individual and organization levels.

In the second stage, while the company is ready to change, the necessary changes in the organization to create, deliver and capture new value proposition are executed. In the execution stage, the identified changes in processes, systems, organisational structure, production lines, sales, marketing, distribution channels, and customer relationship management and so forth might need to be implemented.

In the third stage, stabilization stage, the new state of changes needs to be maintained as a new normal, and the change among people has to be institutionalized. To do this, top management's role modeling, team building, and employee training and development are all effective methods to anchoring the new norms and culture. Incentivising desired behaviours also is a powerful tool to encourage accepting and consolidating the change. Therefore, individual performance appraisal and organisational performance systems should be aligned and interconnected.

In the fourth stage, i.e., the optimization stage, companies seek to improve organisational performance by optimizing the BMI process. organisational performance can be obtained by focusing on revenue growth, improving efficiency and developing organisational capabilities. The process of implementing the business model is an iterative process, as such, the feedback taken from the optimizing stage is given as input to the previous steps and facilitates the trial and error process. Organisational capabilities play a key role at this stage. The higher the organisational capabilities, the better organisations can learn from the feedback cycles.

7.3 Discussion and conclusion

While there is limited research on the implementation phase of BMI, conducting this case study yielded a more in-depth insight into how a new BM is implemented within SMEs. We figure out some similarities and differences between implementing a BMI and an ordinary organisational change management program. Since innovating the company's business model entails fundamental changes in core components of the business, it is similar to radical change, which is discussed in management literature, but it is different from incremental or gradual change management. In both BMI and radical change management, it is most likely that all aspects of the company, from organisational structure, systems, procedures, and resource allocation, on the hard side, towards changes in beliefs, values, behaviours of internal and external stakeholders, and generally in the organisational culture, in the soft side, have to be redefined and changed. These massive changes can lead to ambiguity and uncertainty about the future. This uncertainty creates a sense of fear of losing power, rewards, current skills, and perceived lack of skills for new situations; therefore, people resist such fundamental changes. To deal with such resistance to change and increase the attitude of readiness to change among middle-managers and other employees, several models were developed by academia and practitioners such as ADKAR, Kotter's eight steps, and Mc Kinsey 7-S change management model. These models provide general advice for any change program. However, our findings provide more specific recommendations related to change in BM.

Our first core finding is to highlight the importance of intrinsic motivation to engage employees in the process of BMI rather than extrinsic motivation. Although in many change management models, a clear link between employees' financial rewards and their performance is embedded to direct and reinforce organisationally valued behaviours (Bartol and Srivastava, 2002; Eisenberger et al., 1998; Hiatt and Hiatt (ADKAR), 2006; Kotter (8-steps), 2012; Stajkovic and Luthans, 2003), our results emphasized that in implementing BMI, the focus should be on intrinsic drives such as the tendency to personal growth, sense of meaningfulness, and the recognition of purpose, and less on extrinsic motivations like financial incentives, status, and public recognition. Although research on the effects of intrinsic and extrinsic rewards on innovation has a long history filled with controversies (Amabile et al., 1995; Anderson et al., 2014; Cerasoli et al., 2014; Malik and Butt, 2017), and the role of extrinsic rewards remained at the centre of this debate because of inconsistent and mixed findings (Shalley et al., 2004), many researchers argue that emphasizing extrinsic motivation has been shown to be effective to increase people's day-to-day performance and for methodical, uninteresting and repetitive tasks (Garaus et al., 2015) and are responsible more for incremental change with a low level of uncertainty (Malik et al., 2019;Bhaduri et al., 2011). Therefore, in the innovation context, when innovating the products or improving the processes consisting of routine-based tasks in an R&D department, extrinsic motivation can be effective. However, when a radical change in BM is concerned, extrinsic rewards may fail to generate active involvement, high commitment, and required persistence (Kray et al., 2006; Ward et al., 2004). Intrinsic motivations are the most critical driver of human behaviour when the tasks become more complex, and self-directed (Pink, 2009) and the level of uncertainty is high (Bhaduri, 2011). For instance, when implementing a new BM, learning new competencies is inevitable; previous research has shown that an extrinsically motivated individual tends to engage in surface learning behaviour (Simons et al., 2004). Moreover, when organisational culture changes are mostly involved in any BM implementation attempt, the influence of extrinsic motivation on cultural changes is quite limited (Bogićević Milikić, 2009). Therefore, internally-driven employees can handle the BMI process in a faster and more efficient manner.

Our second core finding gave prominence to the importance of visualization and storytelling to communicate the change in BM and share visions with employees. A complex and sometimes multiple ideas can be conveyed by a single still image more effectively than a mere verbal description. In other words, "a picture is worth a thousand words." Several frameworks and tools were developed by scholars to facilitate the design, test, and implementation of BM (e.g., 29 tools are available at businessmakeover.eu). Owners/managers can use these tools to help employees comprehend large amounts of information fast and easily in order to increase their awareness, and reduce resistance to change among them. For instance, business model road-mapping tooling describes how the current BM should be changed to the desired BM in the future (Bouwman et al., 2012). Business model road-mapping can be visualized in a graph and shows the transition path; therefore, stakeholders, especially employees, can understand the steps to change, the scope of change, and specific activities required to establish the new BM. As the most popular tooling that allows practitioners to design BMs, business model Canvas can visually communicate BM to within and outside the organization. It is visible and can fit on one large piece of paper that can be hung on the wall in several locations in the office, so every team member sees it every day and can refer to it. The visualisation makes it easy to understand the BM (Saemiento et al, 2020); therefore, everyone can contribute ideas and participate in implementing them.

Our third core finding revealed that collaborative culture is far more important than innovative culture in the context of BMI implementation. However, prior research emphasizes the critical role of innovative culture in fostering product and service development and improving business processes. An innovation culture provokes emerging new ideas, supporting experimentation and taking entrepreneurial risks to continuously learn from successes and failures, so that people are not afraid to share ideas or fail. Innovative culture allows organizations to pivot swiftly and can actually make innovation happen. In contrast to product and process innovation, implementing a BMI usually consists of several fundamental organisational structure changes, redefining the source of power and control, and modification in the current procedures and processes, therefore, many inter-personal and inter-departmental conflicts has occurred. Managing potential conflicts is crucial in implementing BMI. The best way to tackle conflict issues is to encourage a culture of collaboration, which can foster a cross-functional and all-hands philosophy about innovation. It is by sharing the responsibility to innovate, and through a collaborative culture, teams will withstand the uncertainties and instability of building on an innovative BM. In a collaborative culture, power is deeply rooted in relationships among people and employees look to adapt themselves into active collaborators, aiming to become respected members of the group. The decision-making process is genuinely participatory and democratic (Hurley and Hult, 1998), which provokes all folk of people to involve in the change process and increase their intrinsic motivation to achieve organisational goals. Since collaboration culture is strongly based on human relationships, it is remarkably effective in conflict resolution at different levels at the organization at the time of fundamental change, maybe because people prefer to put organisational goals ahead of personal interests.

Chapter 8: Conclusion

Ample research, applying multiple theoretical lenses, has been conducted to investigate the concepts of BM and BMI, resulting in a diverse range of tools, approaches, typologies, ontologies, and definitions. However, it is far from clear to scholars and practitioners how BMI contributes to a firm's overall performance. Therefore, knowing how and when to innovate a BM is a serious challenge for managers and owners of firms. This research was a response to BMI scholars' recent call for conducting the causal analyses of the antecedences and effects of BM by using large-scale samples, and applying advanced and sophisticated methodologies (Clauss, 2016; Methlie and Pedersen, 2008; Zott et al., 2011). In this study, we aimed to explore the black box of implementing a BMI in small and medium-sized enterprises (SMEs). Although most studies that combine strategic and innovation management with BMs mainly focus on large firms (Hartmann et al., 2013), the vast majority of firms worldwide (99%) are small and medium-sized enterprises (SMEs). This thesis presents how SMEs can implement (BMI) to improve their overall performance by focusing on the human side of implementation rather than the technical side. So, the research objective is as follows:

> *To develop and test a model for implementing Business Model Innovation in SMEs focussing on "human and organisational" factors to improve performance.*

In section 8.1, we will answer the research questions posed in chapter one (see section 1.4), and discuss to what extent the research objective has been achieved, and present the main findings. The theoretical contributions and practical implications are discussed in sections 8.2, and 8.3 respectively. Next, the research limitations are presented in section 8.4. The recommending avenues for future research are provided in section 8.5.

8.1 Main research findings

In order to fulfil the research objective (section 1.4), five research questions were posed. To answer the first research question of *"RQ1: Which critical factors play a role in different steps of BMI process?"*, a systematic literature review was carried out. The results discovered 75 critical factors in different phases of the BMI process. Approximately 60% of the factors were related to the BM-Implementation phase; therefore, the findings emphasized the significance of BM-Implementation phase in BMI process. BMI implementation has the potential to create a big jump toward enhancing the firms' overall performance. Despite the fact that managers focus on designing a viable, feasible and robust BM and invest a lot of time and energy in this stage, important challenges are found in the implementation stage of BM. This research suggests that far more emphasis should be put on the implementation stage. Moreover, among those factors which were associated with the BM-Implementation phase, only 33% were related to the technical side of implementing a BM, e.g., lack of alignment between processes, financial resources, and execution plan. The majority of the factors (almost 67%) were related to the people side, such as employees motivation, training, effective communication, change management skills, and cultural issues. The answer to the first research question (RQ1), highlighted the implementation phase in BMI process, particularly its people side, and motivated the need for a more thorough examination of the BMI implementation phase. Hence, we analyzed the BMI implementation

phase in greater depth to explain the complex mechanisms through which BMI influences firm performance.

To address the second research question of "*RQ2: Which factors related to the implementation of Business Model Innovation mediate and/or moderate the relationship between BMI and firm's performance?*", an additional systematic literature review was conducted. To understand the causal mechanism under which BMI indirectly influences the firm performance, twelve mediating factors were identified and classified into three sub-groups, e.g., efficiency growth, revenue growth, and enhancing the organisational capabilities. This research was among the first studies to introduce organisational capabilities as a mediator in the relation between BMI and the firm's overall performance. In the next part, twenty moderating factors were identified and classified into four sub-groups, e.g., firm-characteristics, industry-characteristics, BM implementation and, BM practices, to identify under which contingency factors, the relationship between BMI and firm performance can be affected. The findings provided an exhaustive reference model, consisting of 34 variables/constructs categorised in three mediating and four moderating sub-groups, to explain the relationship between BMI and firm performance (see Figure 2.9 in section 2.9). This model was used as a starting point for the quantitative research as presented in this Ph.D. thesis. "Organisational capabilities" among the mediating sub-groups, and "BM-Implementation" and "BM-Practices" from moderating sub-groups were found to be more related to the human and organisational side and can be managed by SMEs' leaders and managers to improve performance.

To address the third research question of "*RQ3: Is the relation between BM Innovation and the firm's performance mediated by the herefore (RQ1 and 2) identified factors in SMEs?",* quantitative research was undertaken. Built on the answer to RQ2 and drawing on the data from a cross-industry sample of 563 European SMEs, we tested the relationship between BMI and firms' performance through three mediating factors. The analysis found that the path between BMI and firm performance is fully mediated through efficiency growth, organisational capabilities, and revenue growth. This study has extended prior literature on business model innovation by introducing and examining organisational capabilities as a mediator. This study revealed that developing organisational capabilities are a stronger mediator than the existing mediators of revenue and efficiency growth when it comes to improving overall firm performance. The effect size f^2 for organisational capabilities is five-time stronger than efficiency growth and two times than revenue growth mediation effect to explain the firm's overall performance. This highlights the importance of organisational capabilities in implementing a BMI to improve performance.

Since the contingency factors related to the implementation of BMI in SMEs have rarely been studied, in the next step, additional quantitative research was conducted to explore what factors strengthen or weaken the relationship between BMI and firm performance. This way, we found the answer to the next research question "*Is the relation between BM Innovation and the firm's performance moderated by the here fore (RQ1 and 2) identified factors in SMEs*?". The research model obtained from RQ2 was used to examine the significance of the moderating factors. Our findings using data from a sample of 439 European SMEs, revealed that among four moderating groups, the moderators related to the BM-implementation group (e.g., employees motivation, employees development, a culture of innovation, and effective communication) was the most relevant contingency factors than the other group of moderators. Although "using the BM tooling" in the BM-practices group, and "industry competition" in the Industry-characteristic group were positively influence the relationship between BMI and the firm's overall performance, the data did not support the moderating role for "resistance to change" from the BM-implementation moderating group, "BM-experimentation", "speed of change", "scope of

change", and "degree of novelty" from the BM-practices group, and "technology turbulence" from the Industry-characteristic group. When considering the SMEs' size and age in our multi-group analysis, we also found that the direct relationship between BMI and performance is significant in SMEs of different sizes and ages. Therefore, the size and age of firms in the firm-characteristic moderating group were not found to be significant moderators to strengthen or weaken the relationship between BMI and the firm's overall performance.

This study confirmed that the two concepts of organisational change and implementation of BMI are relevant. This research provided empirical evidence for hypotheses derived from the literature on change management. That is, four out of five hypotheses (in BM-implementation group) were significant, and one hypothesis barely attained statistical significance. We could not find statistical support for only one hypothesis in BM-implementation group. Therefore, we can conclude that theories and practices in the well-developed realm of organisational change management can be applied in managing the people side of implementing BM. This sheds light for scholars and practitioners to utilize various available management practices and tools to handle the implementation of BMI smoothly and effectively. More precisely, the implementation of BMI can be considered as a subset of organisational change. This research found similarities between the two fields of organisational change and the implementation of BMI. It is confirmed that employees motivation plays a vital role in driving individuals to make a change in their attitudes, intentions, and behaviour in order to implement required change in the firm BM. Particular attention should be devoted to empowering employees to enable them to implement the BM by training required technical and non-technical skills. A culture that fosters and encourages continuous innovation throughout the organization facilitates the implementation of BMI. Moreover, having effective communication by sharing the vision and defining the role and responsibility of individuals at every stage of implementation are among the findings that adapted from the organisational change literature and have been approved empirically in the field of business model implementation. The hypothesis related to 'resistance to change' was the only one that was not approved to be relevant to implementing the BMI in our samples. The reason could be due to the way 'resistance to change' has been measured. Future quantitative research can measure 'resistance to change' more rigorously to examine the relevance of 'resistance to change' to the BM implementation. However, our case study research highlighted the importance of overcoming 'resistance to change' while implementing the BMI in selected cases. By providing an answer to RQ3 and RQ4, the conceptual model developed in RQ2 (Figure 2.9) was empirically tested. Figure 8.1 illustrates the refined conceptual model for explaining the mechanism under which BMI improves SMEs' performance.

Although the quantitative study (2018) sought to find similarities between the two areas, and whether theories in the field of change management are applicable in implementing the BM, the qualitative study attempted to figure out an explanation for findings of previous research and to discover a distinction between the two and what are specific in implementing BMI. Multiple case study research was conducted to gain deep insight into implementing the BMI in SMEs. The case study research provided insights to answer the fifth research question of "*RQ5: How do human and organisational factors mediate or moderate the relationship between BMI and firm's performance within the selected SMEs?*". As mentioned earlier, the implementation of BMI is complicated and consists of fundamental changes in almost all aspects of an organisation and its business network. Therefore, the different nature of implementing BM can lead to differences in the way it is managed compared to a generic organisational change program. Our in-depth analysis in four cases revealed specific characteristics for BMI which differentiate it from an organisational change. The four Dutch SMEs engaged in the implementation of

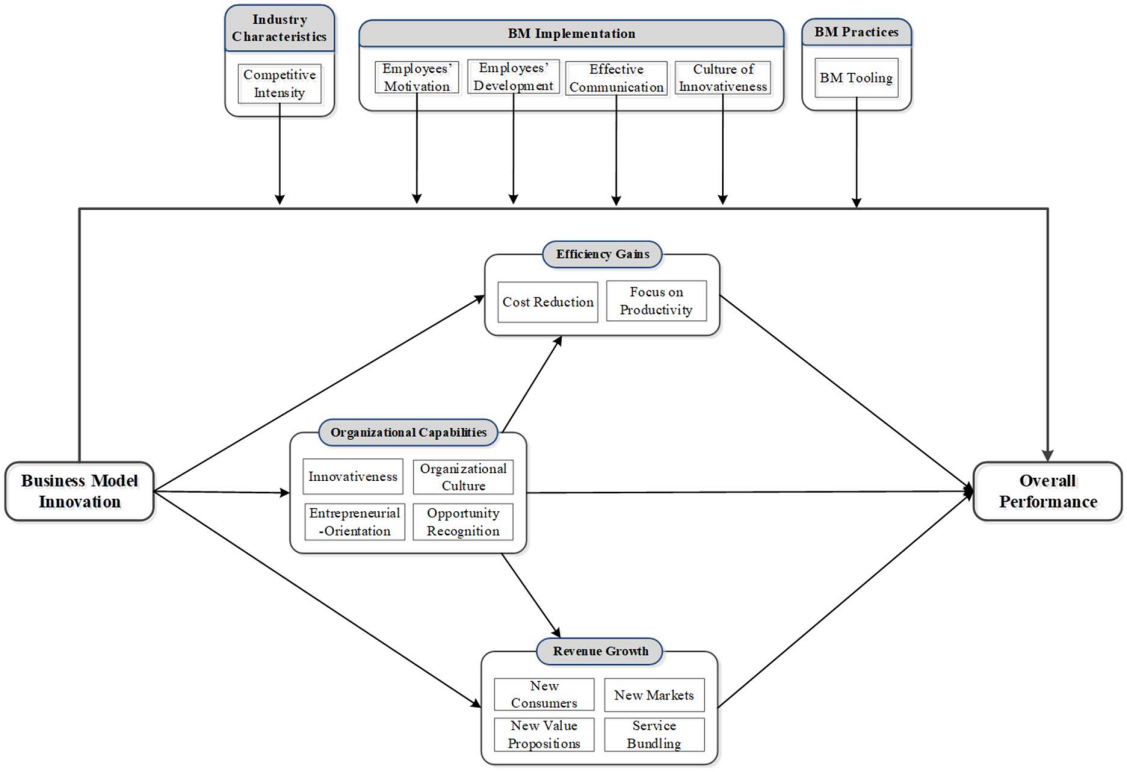

Figure 8.1 Refined conceptual model for explaining the BMI mechanism to influence an SME's overall performance

a new business model were selected. The case study analysis provided an explanation about our previous quantitative studies (exploring the moderating factors in the relationship between BMI and firm's overall performance). Furthermore, it yielded deeper insights into how those factors make an impact on the firm's overall performance as well as influence each other. Some key findings can be summarised as follow: (1) Although in many change management models, a clear link between employees' financial incentives and their performance is forged to promote the desired behaviours, our results emphasized that in implementing a BMI, the focus should be more on intrinsic drives and less on extrinsic motivations; (2) Visualization (by using BM tooling, e.g., BM Canvas, Stof) and storytelling play a vital role in communicating the change in BM and facilitating to create a shared vision among employees. More effective communication leads to increased awareness and reduced resistance to change; (3) Although a culture of innovation is important, collaboration plays a dominant role in the BMI implementation phase. Implementing a BMI required handling the inter-personal and inter-departmental conflicts, and having a sense of collaboration decreases conflicts among divisions, groups, and individuals and creates a synergy among various groups while the organisational goals are preferred to the personal goals. The cross-case analysis also demonstrated that the well-established (older) firms implement the new BM in parallel with the existing BM to overcome the potential inertia among stakeholders; (4) Although visionary and participatory leadership styles are insightful in the design stage of BMI and increase the level of involvement among employees and facilitate the implementation stage by reducing the resistance to change, they are not the best leadership style in implementing BMI. Therefore, after the objective and roadmap to change in BM are well communicated in the early stage of BMI, the leadership style shifts towards participatory and even autocratic leadership style; (5) Well-established firms implement their new BM in parallel with the old BM. One reason could be that well-established firms may have inertia to accept new ways of doing business, and the

bureaucratic inflexibility that advances with age decreases the degree of innovativeness. Therefore, to reduce the risks and give time to employees to adapt to new situations, well-established SMEs run dual BM simultaneously; (6) Medium-sized firms hire change agents to help them manage the people side of implementing the new BM. Change agents can provide both the technical know-how and the social support needed by managers and frontline teams alike as they learn and adopt new BM. Since change agents are not bound by the firm's culture, politics, or traditions, they are able to bring a fresh perspective to conduct the change smoothly and regularly and get acceptance within organisations; (7) There are various managerial practices in managing people side, e.g., a diverse combination of motivating employees, developing employees and having a portfolio of communication channels and leadership styles. The more companies utilize a combination of managerial practices, the more likely they can manage employees to improve performance. Since employees by nature come from different backgrounds, beliefs and values, experience, and social classes, finding the best approach to fit all is very challenging, therefore using a combination of different approaches directs and engages employees from all folk into implementing BMI; (8) The development of a common culture among different groups of people from an existing and a new BM (parallel BM), is considered as the biggest challenge in the implementation of BMI. Having a plan for merging two different communities and fostering a culture of change receptive facilitates the cultural integration process. Figure 8.2 summarises the findings of our qualitative research. The model presented in Figure 8.2 presents the human and organisational factors relevant to the BMI implementation phase.

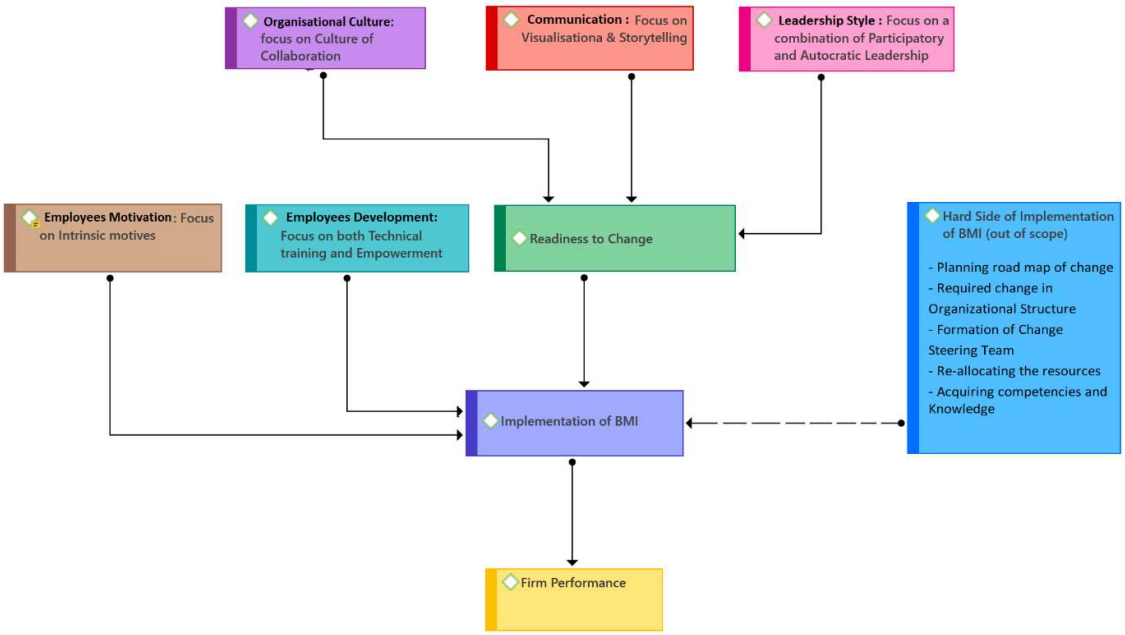

Figure 8.2 Model for BMI implementation phase by focusing on human and organisational factors

Although the focus of the research was on the implementation phase of BMI, our multiple case studies also produce valuable insight into BMI's design phase. We found that human and organisational factors associated with the BMI process are contingent and vary in different phases of the BMI process. To

achieve a higher level of performance in implementing BMI, people should be involved at earlier stages of the BMI process, i.e., BM design phase. Since designing a BM is an iterative process and needs an innovative, out-of-the-box perspective, and risk-taking attitude, managers using a visionary leadership style and stimulating a culture of innovation, encourage people being involved in BM design., By developing open and informal communication and applying a participatory leadership style, managers listen to the opinion of employees at all levels who are influenced by BMI and involve them in the decision-making process. In this way, the acceptance rate of changes increases and is resistance to change in the implementation is reduced. Figure 8.3 shows the human and organisational factors in the BM design phase.

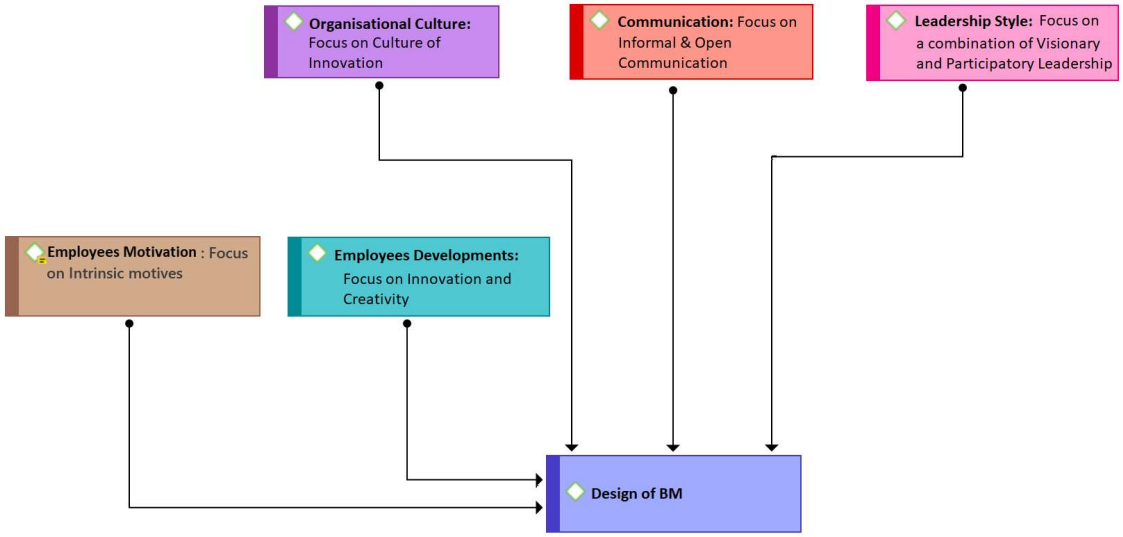

Figure 8.3 Model for BMI Design phase by focusing on human and organisational factors

Effective implementation of BMI already starts by paying attention to implementation when designing a BM. However, comparing the results that have been presented in Figures 8.2 and 8.3, the best management practices to handle human and organisational factors in the design phase of BM differ from those in the implementation phase of BMI. Due to the nature of the job in the two stages, distinct approaches to motivating and empowering employees, leadership style, communication channel and organisational culture are required. Therefore, managers/owners have to consider the shift between different stages of the BMI process to adapt their management support.

The models presented in Figure 8.2 and Figure 8.3 also provide initial thoughts about managing the people side of the design and implementation of BMI. To generalize those findings, the following hypotheses can be examined in future quantitative research.

H_a: Stimulating intrinsic motivation of employees engaged in the implementation of Business Model Innovation is more effective in achieving set implementation objectives than the use of policies directed towards extrinsic motivation

H_b: A focus on stimulating a culture of collaboration above a culture of innovation is more effective in achieving in the implementation phase of BMI

H_c: Storytelling and visualization tools are more effective than informal and open communication in implementing a BMI

H_d: The combination of participative and autocratic leadership styles is more effective than democratic, visionary, and laissez-faire leadership styles in the implementation phase of a BMI

H_e: Non-technical training is more effective than technical training in employee development in a BMI's implementation phase

H_f: Stimulating intrinsic motivation of employees engaged in the design phase of Business Model Innovation is more effective in achieving set implementation objectives than the use of policies directed towards extrinsic motivation

H_g: A focus on stimulating a culture of innovation above a culture of collaboration is more effective in achieving set objectives in the design phase of BMI

H_h: Visionary and participative leadership styles are more effective than democratic, autocratic, and laissez-faire leadership styles in the design phase of a BMI

The preparation, execution, stabilization, and optimization stages were identified in our case studies analysis as four distinct stages for implementing a BMI (see section 7.2.8). The preparation stage, which begins before the actual implementation of the BMI, includes planning, technical preparation, and preparing people to change. While the firm is ready to change, the second step involves executing the required organisational changes to create, deliver, and capture new value propositions. Changes in procedures, systems, organisational structure, manufacturing lines, sales, marketing, distribution networks, and customer relationship management, among other things, have been implemented at the execution stage. In the third stage, change among individuals must be institutionalized in order to keep the new condition of changes as the new normal. This necessitates top management role modeling, team building, employee training and development, and alignment between individual and corporate performance appraisals. Companies strive to increase organisational performance by improving the BMI process in the fourth step, referred to as the optimization stage. Organisational performance may be improved by concentrating on revenue growth, efficiency improvements, and organisational capability development. Because the process of implementing the business model is iterative, the feedback gathered during the optimization stage is fed back into the previous processes, facilitating the trial and error process. At this level, organisational capabilities are crucial. Figure 8.4 demonstrates an overview of the four stages of implementing a BMI (for a more detailed visualisation of the framework of Implementation Canvas for Business Model Innovation, see the appendix G)

8.2 Research contributions

To investigate how the "human and organisational" side of a company can impact the implementation process of BMI within SMEs, this study contributed to the existing literature of business model innovation in three ways.

1. *By developing a framework containing critical factors playing a role in different steps of the BMI process*

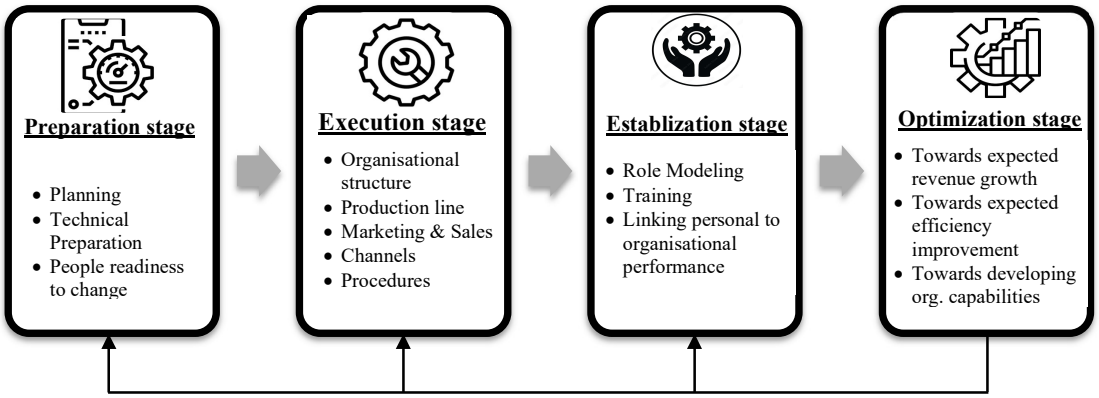

Figure 8.4. Four stages of implementation phase of business model innovation

This study developed a framework to identify important *factors* that have a role in various stages of the BMI process. The identified barriers were classified into four categories of strategy-related, BM design-related, BM Implementation-related and BM management-related issues. This framework can serve as the grounding for empirical research and the development of tools to overcome BMI management issues. The framework helps to focus research on the necessary theoretical constructs for determining barriers and success factors of BMI.

2. *By developing causal mechanisms under which BMI influences the firm's overall performance*

A comprehensive conceptual model to help scholars understand the causal mechanism under which BMI influences the overall firm performance was developed. This model theoretically contributes to BMI research in several ways. First, it provides an answer to calls raised by Clauss (2016), Methlie and Pedersen (2008), and Zott et al. (2011) to develop a more nuanced model to explain how BMI influences the firm's overall performance. The model considers 32 mediating and moderating factors focusing on human and organisational aspects of implementation. In this way, the model provides an in-depth view of BMI phenomenon and can be served as the grounding for empirical research in different types of companies, e.g., start-ups, SMEs, and large enterprises.

The conceptual model consists of three groups of mediators to investigate the mediation effects. As this model's second and third theoretical contributions, we improved conceptual definitions of two original constructs and conceptualized an additional construct to the existing model in the literature. Although, efficiency growth and revenue growth were related to the design of efficiency- and novelty-oriented BMs as highlighted in BMI literature (e.g., Brettel et al., 2012; Gronum et al., 2016; Heikkila et al., 2016a; Hu, 2014; Wei et al., 2017; Zott and Amit, 2003, 2007, 2008), the conceptual definitions are improved. The novelty-oriented BM introduced by Zott and Amit (2007) focuses mostly on the new value proposition, new links and partnerships. However, in this study, entering new markets and attracting new customers were included in the construct. Moreover, efficiency-oriented BM, as introduced by Zott and Amit (2007), is to a large extent aimed at facilitating high-efficiency transactions. However, in the "efficiency growth" mediating group, in this study, different ways of reducing costs and improving productivity in a firm's value chain, from design, production, inventory, marketing and sales to the delivery process, were included. Regarding the third moderation group, this study was among the first to introduce the mediating role of organisational capabilities in the relationship between BMI and a firm's overall performance. Organisational capabilities contribute to a firm's readiness to change, and its ability to survive in the longer term, rather than merely achieving

short-term growth. Our conceptual model eliminates the shortcoming of transaction cost theory which minimises or ignores the role of learning, resource accumulation and long-term asset orchestration (Leih et al., 2015). Managers and employees need to be trained to search for, learn about, and undertake the interpretive activities needed to recognise new technological and market opportunities (Foss and Saebi, 2015). Organisational capabilities enable firms to efficiently operate their routine activities to produce and sell value propositions and enable them to sense and exploit opportunities and to contemporise business processes and models in the new business environment.

As the fourth contribution, this study, to the best of our knowledge, was the first to categorise moderation factors into four groups: firm-characteristics, industry-characteristics, BM-implementation, and BM-practices. This way, we created four different lenses through which researchers can analyse BMI in organizations. Each lens provides a specific perspective; for instance, considering firm-characteristics factors provides a micro-level analysis, however, industry-characteristics can yield a macro-view to implementing a BMI within an organization. Therefore, analysing implementing BMI from several perspectives gives researchers and practitioners a better understanding of the overall process of BMI and makes informed decisions about allocating strategic resources to implement the BMI in organizations effectively.

3. *By developing a model explaining the human and organisational side of implementing BMI in SMEs.*

Since the human and organisational side of implementing BMI is highly unexplored, through a case study research, this dissertation provided a deep insight into the human factors that managers can influence at the time of implementing a BMI. Understanding such contingency factors helps researchers to better model the implementation of BM innovation and how BMI can better contribute to a firm's overall performance. Our case study research highlighted the importance of a culture of collaboration which was not elaborated in prior studies. The research also emphasized the role of BM experimentation and learning by doing approach as a good practice for the well-established SMEs to give their employees and customers a time to accept the required change and align themselves to the new situation.

Regarding empirical contributions, by conducting two large-scale quantitative studies, this research contributes to the existing literature by providing empirical evidence to examine the potential mediation and moderation effects on the nature of the relationship between BMI and the firm's overall performance. By analysing the data from 542 European SMEs, our first survey empirically proved the significant mediating role of efficiency growth, revenue growth, and organisational capabilities. Testing the mediating role of organisational capabilities was carried out for the first time in the BMI literature. In our second survey, testing 15 contingency variables from various types of firm and industry characteristics, BM-implementation, and BM-practice by gathering data from 439 European SMEs casts a new light on how BMI programs can be better handled. Although SMEs account for the majority of businesses worldwide, owners and managers of SMEs are less familiar with the concept of BMI or lack the knowledge on how to implement BMI, and in-depth empirical research on SMEs is rare. Our finding by focusing on SMEs contributes to BMI literature in SMEs and provides empirical evidence of how various contingency factors influence their BMI efforts. This was the first research focusing on the implementation phase of BMI in SMEs to the best of our knowledge.

8.3 Practical implications

Though existing business model ontologies are mostly descriptive, which means they might be beneficial for brainstorming, but they are not helpful for implementing BMI (Solaimani, 2014). This shortcoming was evident in all four case studies analyzed in this research, since the case managers believed that they had a promising business model, they were not sure how to implement the business model and faced many problems in the implementation phase, which led to unexpected results. Introducing a model to help practitioners and owners of companies to manage the implementation of their BMI, specifically how to encourage all internal stakeholders to be actively involved in the BM change process, is an important contribution to practice.

This study argues that managing the human and organisational side should not be neglected in the implementation of a BMI. All stakeholders inside and outside the company must engage in the BMI process even from the early stages of exploration and designing of a new business model. This engagement increases the level of trust between employees and managers and uses as fuel to drive the change. Indeed, even when SMEs are equipped with the latest technology, lack of support from employees and partners hinders the process of creating and capturing value, causing programs to fail. In particular, the message this study results convey is that SMEs, either micro, small or medium in size or new-established or well-established, competing within a high technology or low technology industry, need to analyze their employees' readiness to change and ensure that their skills and capabilities are aligned with the technical change required to implement a new business model. As such, any attempt to business model implementation requires creating a sense of urgency around the need for change by explaining the current position in the market, the competition, and why it is the right moment to change the logic of doing business. As performed by Case 4 Drukwerkdeal case, encourage people to discuss the reasons for the change and to voice their opinions and answer their questions about the company's goal. Creating an acceptable sense of urgency is difficult. Companies can either create an artificial moment of destabilisation and a certain deliberate unsettlement to overcome an organisational tendency towards stability (Kotter, 2012) or create a culture of change receptive as performed by Case 4 Drukwerkdeal case. The former approach must be handled with caution, as there needs to be "*sufficient disequilibrium to produce dynamism for change, while not surpassing the capacity of organizations, and the people who work in them, to handle the stress thereby produced*" (Smith, 2005). The latter approach also takes time and is value-driven (Mirton, 1998). Since creating a culture of receptive to change is a multi-dimensional phenomenon throughout the organisation, it requires an accurate alignment between appropriate leadership style, human resource management, and communication. The true outcome of change receptiveness is to shift the core elements of value, behavior, and beliefs.

People are at the heart of an organisation's culture. Therefore, to change the culture or shift it to a new direction, organizations must first win individuals' hearts and minds, especially the right ones. To create positive social energy to ensure participation and involvement, SMEs must communicate change messages explicitly. This positive social environment influences the degree of employee involvement, confidence in the process, and willingness to change; hence it is vital that the message delivered to the company is honest and authentic (Smith, 2005). An informal and open communication lays the groundwork for mutual trust, and the leaders should work on creating and solidifying that foundation. This study suggests that visual and pictorial presentation of the change in BMI effectively can communicate desired changes in the organization at various levels. In BM, change involves a wide range of insiders (board of directors, different departments, and employees from different hierarchy levels) and outsiders (e.g., investors, suppliers, customers). Using a popular framework such as BM

Canvas, Visor, BM Road-mapping tool can facilitate communication among different parties and make a complex change in the business logic more understandable. According to Smith (2005), if employees understand the nature and reasons for change early in the process, it provides a solid foundation for subsequent changes and a stronger willingness to take risks and extend beyond current boundaries. After perceiving their role after the change, employees need to be empowered to take new initiatives toward change.

The BMI implementation framework proposed from our case studies provides a more detailed description of a company's human and organisational factors than a high-level business strategy and business model and is less detailed in terms of business process or enterprise architectures. This approach is appropriate for both board-level executives and operational managers due to the framework's degree of detail and by capturing the inherent complexity in implementing BMI. The approach fits the responsibilities of owner/manager of SMEs, innovation manager, line manager, human resource manager, and the likes, who are responsible for designing, testing and implementing new business ideas.

Furthermore, the case studies revealed that for companies involved in running dual business models simultaneously (parallel business models), cultural differences at two organizations might disrupt the harmonious interplay of two business models at the operational and administrative levels. The same applies to companies dealing with rapidly changing business markets. When people from two business models operate with different technologies in dissimilar industries, they often have different preferences, capabilities, and motivations and might come from different generations. Integrating two groups of people from dissimilar businesses is among the most challenging aspect of implementing BMI. It must be considered in any merger and acquisition activities while a company needs to acquire specific knowledge required for its new BM.

On a practical level, by considering mediating effects, our results have implications for practitioners, particularly owners and managers of SMEs, on how to implement a specific BM change that will lead to superior performance. Apart from traditional ways of improving the firm's overall performance by improving the business efficiency and increasing revenues, our results urge that SMEs' owners and managers who want to gain more benefit to invest in their organisational capabilities such as opportunity recognition, innovativeness, and active organisational learning. The organisational capabilities fully mediate the relation in a stronger way and could positively affect the two other mediators, namely efficiency growth and revenue growth. In light of the importance of the mediating role played by organisational capabilities, it is important for managers, as well as the people advising them, to create an open, dynamic and entrepreneurial culture, to prepare, inform and engage employees and other stakeholders in discussions regarding BMI and in reviewing the existing BM. Regardless of the size and age of a company or types of change, investing in organisational capabilities will deliver long-term value for a company. Therefore, practitioners have to provide a stimulating environment to foster organisational capabilities among their people to maximize the advantage of emerging technologies, adapt to customer preferences changes, and ultimately surpass competitors.

By taking into account the firm size and firm age as contingency factors, the findings of our quantitative study conducted in 2017 also provided nascent guidelines for practitioners to implement a BMI. The owners and managers of micro-sized firms have to focus on efficiency-centred BMI, while medium-sized enterprises can improve their performance by developing organisational capabilities. Interestingly, the organisational capabilities are the only significant mediator to improve a firm's overall performance for any size of the firm. To empower SMEs to be able to implement BMI effectively and

enhance their organisational capabilities, policy-makers can provide training courses (free of charge or at a low cost) to those SMEs working on BMI. These courses can consist of both technical skills and organisational capabilities required to improve the efficiency and growth of the firm in line with the firm's strategic goals.

On the other hand, while cost reduction and efficiency improvement can only improve the overall performance in well-established (older) SMEs, it can be recommended to the owner/managers of younger SMEs to limit their investment in BM efficiency as it has limited benefits for younger SMEs. Instead, young SMEs can allocate their resources towards revenue growth. According to results, only well-established (older) SMEs can benefit from efficiency and revenue growth as well as organisational capabilities at the same time to improve their performance. Being mature, well-established SMEs can run their business more efficiently by standardisation, formalisation and economies of scale, they can also enjoy their experiences - based on path dependency theory - to recognise new business opportunities and to manage their innovative culture.

Our results give SME owners and managers insight into possible contingency factors on expected performance effects of BMI by considering moderating factors. It underlines that the performance effect depends on a multitude of factors. Namely, the employees' motivation, employees' development, the culture of innovation, effective communication, use of BM tooling, as well as industry's competitiveness can influence the performance effect. Hence, it is necessary for a firm to regularly evaluate its specific organisational situation in-depth to take appropriate measures to increase the effect of BMI on performance. Among four contingency groups of factors, we recommend more attention should be paid to the factors related to BM-implementation and BM-practice so that they are more manageable by owners and managers. The moderating factors in the firm and industry-characteristics can also be impactful but are less crucial because they usually are out of the company's control and cannot be changed by managers. Hence we recommend practitioners and scholars to focus more on the BM-implementation and use BM-practice factors to determine the best course of action to manage the implementation of BMI.

While there was limited research on the implementation phase of BMI, conducting within-case and cross-case analysis demonstrated some similarities and differences between implementing a BMI and a general change management program as well as with a product innovation project. The results yield a more in-depth insight into how a new BM implementation within SME's by highlighting the importance of intrinsic motivation, a combination of different leadership styles and training courses, using BM-tooling to communicate the urgency of change and to convey the desired state, culture of innovation and collaboration, parallel implementation of new and old BM Simultaneously. The cross-case analysis extended the current management practices and expanded our horizon about the possible influence of size and age on the BM implementation efforts, and help practitioners to understand how BM implementation issues emerged and to what extent applied solutions worked to alleviate the problem.

The human and organisational side of any organisational change, e.g., BMI, is an enormously complex process that can cause uncertainty, anxiety, and instability, so companies innovating business model must develop and tailor a clear implementation plan to diminish negative feelings. BMI is different from ordinary organisational change for three characteristics; (1) fundamental change in the logic of doing current business, (2) the number and diversity of components and actors involved, and (3) high level of complexity among systems and unpredictability of the interactions among them (Van Den Oever and Martin, 2015). Consequently, changing a business model is one of the most toilsome and risky changes a company can make. However, if handled appropriately, using tried-and-true change

management techniques, implementing a new business model can achieve the specified goals on time and within budget. It is strongly advised that the companies examine the implementation steps introduced by Kotter (2012) to manage the human and organisational side of implementing BMI.

8.4 Research limitations and recommendations for future research

This study also has some limitations that should be taken into account when interpreting the findings. First, to develop the conceptual model to explain the causal mechanism under which BMI affects firms' overall performance, we had to define some boundaries for our systematic literature review. Although we included major academic databases, e.g., Web of Science, ABI/INFORMS, Science Direct, and Wiley Online Library and did not set any limitations on papers' publication date or types of documents (journal papers, conference articles, working papers, and book chapters), we might have missed some relevant resources in other academic databases, or the recent research (published after 2018), as well as research in other languages than English. Future research may add some relevant variables to the model by reviewing other academic databases.

Second, although cross-sectional data are used extensively in business and management research, such data represent a single point in time and hardly allow the cause and effect or the impact of changes over time to be determined. Although the quantitative part of the research in Envision project was designed to be longitudinal, due to the high mortality rate in samples from 2016, 2017, and 2018, the longitudinal analysis was not possible. Though to overcome this shortcoming, we tested models with alternative causal paths. We explicitly used a time frame of 24 months in our selection questions to establish if the SMEs were engaged in BMI; some indications of performance could be experienced. A more rigorous test based on longitudinal data would be an important next step. However, longitudinal research does come with a number of complicating factors; for instance, larger samples are required due to sample mortality, while greater attention needs to be paid to control over external, dynamic factors (Aspara et al., 2010).

As discussed in method chapter (4.2), two quotas were considered in selecting research samples, one, establishing equal quotas for micro, small and medium-sized enterprises and one for equally spreading throughout Europe. Therefore, the third limitation concerns the sample size for specific subcategories, which may be somewhat skewed. Although to ensure that the sample sizes of the subpopulations are large enough to meet statistical power guidelines, all subpopulations in this research fulfill the minimum sample size recommended by Cohen (1992) and Hair et al. (2014).

Fourth, although the respondents to our surveys – mainly managers/owners – have a high degree of relevant knowledge, all the measures were based on subjective self-assessment, including firm performance. Future research could collect objective measurements to eliminate common method bias (Podsakoff et al., 2003), although, in practice, it might be difficult to federate micro-data from subjective and objective sources like statistical offices for SMEs.

Fifth, this Ph.D. project was part of the Envision project, which aimed at empowering European SMEs to explore, design, test, and implement their BMI. Being a part of an international research project has several advantages, for instance, strengthening knowledge by exchanging information and experiences, developing research skills and a mechanism for writing research, and enhancing cooperation between various countries in different fields. However, complete alignment between the objectives of the two research projects maybe not always possible. Thus some limitations were imposed on this research. For

instance, there was limited space in the yearly survey to measure all desired items. In this dissertation, eight out of twelve mediating factors and fourteen out of twenty moderating factors from the conceptual model were empirically tested. Although many studies revealed that management support is also crucial in implementing BMI (Batocchio et al., 2016; Zott, Amit, & Massa, 2010; Chesbrough, 2010), items related to management support and leadership style were eliminated from the survey 2018 due to insufficient space in the questionnaire. We believe that this can be considered as one limitation of this study on the quantitative part. Further research can examine the role of top managers in implementing BMI; however, we explored this role in more detail in our multiple case studies (Chapter 7). Examining the other untested mediation and moderation factors may create a deeper understanding of the causal mechanism between BMI and the firm's overall performance and may constitute the object of future studies.

Sixth, although the conceptual model was developed for any companies in general, the model is empirically tested only for SMEs. Future studies could involve larger firms in the sample. Moreover, our findings are based on European SMEs. This may limit their application to other cultural environments. Future research should examine the proposed model in different regions to improve external validity.

Seventh, to explain our findings from quantitative research and explore the key characteristics of the BMI in SMEs, in our qualitative research, the number of case studies was limited to four to maintain the research feasibility and manageability. Although a larger number of cases could lead to a higher external validity, considering the relatively short period of a Ph.D. project, the analysis of more than four cases was already difficult to achieve.

Eighth, our cases were purposefully selected based on information-rich cases related to the phenomenon of interest (here, implementation of BMI) and practical consideration. Since the number of accessible SMEs that were in the final phase of implementing their BMI was limited, we could not select the cases from one industrial sector. This helps improve the case diversity and thus enhances the external validity of the research. However, the case homogeneity could help minimalize a variety of complex destructive effects, and in this way, improve the internal validity of a case study analysis (Yin, 2009), however, its external validity would be limited.

Ninth, given the lack of applicable theories concerning the people's side of implementing a BMI in SMEs, our qualitative explorative case study could provide several new insights on the topic (see section 7.3). Further research is needed to confirm these novel findings by applying them in other case studies or testing in large-scale quantitative surveys to increase the statistical generalizability.

8.5 Future outlook

The only constant in life is the change, and as a result of technological advances, population growth, increased global and social mobility, the rate at which change occurs has accelerated exponentially. This paints a bleak picture of the future filled with uncertainty and disruption. Therefore business owners and managers have to adapt themselves to sensing the new change, seizing its opportunities, and transforming their business to adapt to the new circumstances. Digitalisation, e.g., using *Blockchain, Internet of Things (IoT), Robotic Process Automation, Artificial Intelligence and Machine Learning*, and *Cloud Solutions* still can be a rich source of creating change in the business models in years to come, there are many fields that require a substantial shift in the current paradigms of doing business. Initiatives such as *energy transition* (a pathway toward transformation of the global energy

sector from fossil-based to zero-carbon), *climate actions and sustainability* (meets the needs of the present without compromising the ability of future generations considering all aspects of social, environmental and economics) have gained traction and received special attention from policy-makers and large corporations all of which will also have an impact on the business sector at the SME level quite soon. Therefore, companies of every kind, especially SMEs have to prepare themselves to face changes in the current landscape of businesses. The insights provided in this thesis can further stimulate more discussion in those areas of study, such as digitalisation, energy transition and sustainability. Although sensing and seizing the opportunities is well developed by academia, particular emphasis should be placed on developing a comprehensive model for BMI implementation. Practitioners should enhance their dynamic capabilities and adapt to dynamic environments to get a bigger slice of the cake. Policy-makers, to maintain the long-term growth in the national economy, need to empower SMEs to engage in disruptive innovation either by defining supportive incentives or providing training courses to enable SMEs to successfully launch a new BM.

Admittedly, BMI is a *socio-technical* phenomenon, and such a societal challenge cannot be solved with a single approach or from a single perspective. It requires combining insights from the engineering science, social sciences, and humanities; Therefore, multidisciplinary research is needed. In order to consider the complexity of implementing a BMI as a socio-technical phenomenon, three perspectives with corresponding scientific approaches and methods must be used: a *technical perspective*, a *social perspective* and a *governance perspective*. The analysis of implementing BMI requires a combination of these three perspectives, which requires collaboration with experts from various disciplines. From the technical perspective, organisational architecture, system design, operational management, infrastructure development, product development need to be tackled. Solaimani (2014), Keijzer (2016), Athanasopoulou (2019) have already studied the BMI implementation from a technical perspective. Apart from technical challenges, in this research, the social perspective of changing the BMI was explored. From a social perspective, different factors in individual, group, and organisational levels were investigated, and a model to manage the BMI implementation was developed. Although there is an essential need to continue both lines of research in technical and social perspectives, I believe that conducting research from a governance and integration perspective is extremely important. Although both technical and social perspectives are important, how those technical and social sides are integrated and aligned together plays a critical role. There are interconnections between the technical and social sides of socio-technical phenomena. Even if both technical and social interactions are appropriately designed and managed, the intended outcome will not be achieved if the whole integrated system is handled poorly. Therefore researching the BMI implementation from a governance and integration perspective is an essential step towards effective management of BMI implementation. To fill the knowledge gap in how to integrate the technical perspective of process redesign with the human and strategic perspective of managing organisational change, the "*project management*" field can be applied (Figure 8.5).

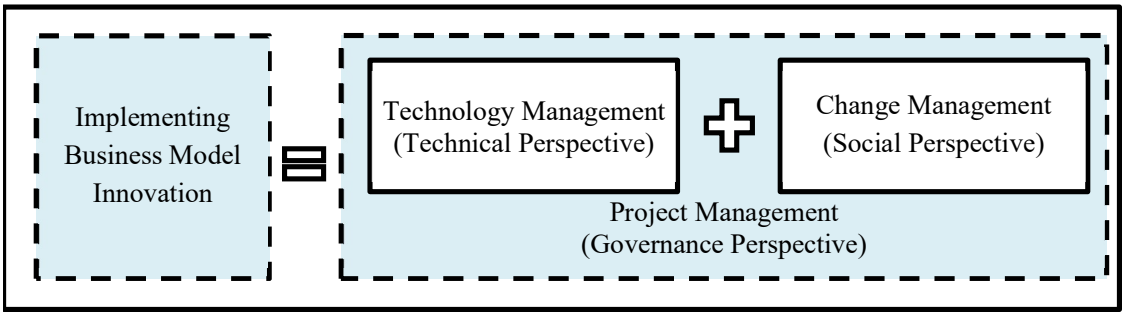

Figure 8.5. Tackle business model innovation as a socio-technical phenomenon

Implementing a BMI effort can be considered as a project. Then the project management body of knowledge can be applied to managing technical, social, and governing aspects of implementing a BMI. According to PMBOK (2021), a "*project*" defines as a temporary endeavour undertaken to create a unique product, service, or result. Project management typically includes identifying requirements, setting up, maintaining, and carrying out communications among stakeholders to make balance the competing project constraints, which include: scope, quality, schedule, budget, resources, and risks. Implementing a BMI can be viewed as a project made up of a series of related projects with milestones, each requiring planning and allocation of resources to deliver results. Using well-developed project management techniques, both technical and social sides of implementing BMI can be integrated and managed to achieve the pre-defined objectives of BMI.

Overall, this thesis contributes to management literature and particularly in BMI research. It glances at BMI from different angles and explains a model to maximize BMI's impact on a firm's performance, especially from the human and organisational perspectives. While the business world is constantly changing in terms of technology, regulations, and customer needs, these results advance BMI research by opening the black box of the causal relationship between BMI and a firm's overall performance to better understand the BMI phenomenon.

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Appendices

Appendix A: Interview Guidelines

An interview is an intelligent conversation between an interviewee and an interviewer, i.e. within Envision this is in most cases a senior researcher. The objective of the interview is to acquire information of the case and (personal) views of the interviewee. Interviewees are often the owners or managers of the SME, Preferably they should be involved in business model innovation. The interview does not need to follow the guideline in detail or in a prescribed order but the guideline functions a check-list to see if the most relevant topics has been discussed. An open interview check-list offers the opportunity to delve deeper in some issues, while other might be marginally touched upon.

In this interview guideline we present topics that might be subject of the interview[1]. Be aware that this list not exhaustive and also it might be possible that not all topics can be dealt with or discussed in one interview or with a specific interviewee. Also the order can be dependent on how an interview develops. So do not try to go the interview question by question but take care that there is an open conversation and that only after a topic is exhaustively discussed use the interview topic list to address the next topic.

The topics follow the order of background information of the company and on the interviewee, a discussion of the business model, and business model innovation, business performance.

At the end of the interview always ask if an additional interview can be done, either with this specific interviewee of with another relevant, informed employee or manager. These interviews can also take place via telephone, Skype or otherwise.

Remember to explain the objective of the research and the way we deal with informed consent. With regard to informed consent make clear that we deal with data in a confidential way. Also at the end make clear that:

- The transcript of the interview will be sent for validation.
- Together with the transcript there is a form for permission for usage of data for research and/or for public communication (with disclosure or non-disclosure of the company name).

Closure

- Ask for available and relevant documentation if available
- Thanks for the interview
- Arrange for the validation of the transcript
- Explain the rules and guidelines with regard to informed consent.
- Follow up interviews if necessary

Steps to be taken

[1] This interview guideline was developed to impove the reliability of the case study research and was adapted from ENVISION. This interview guideline were used to gather data from all four cases (Weber, Zodichtbij, Iddink and Drukwerkdeal). The priliminary case analysis for Iddink and Drukwerkdeal cases was published by Raguraman (2019).

- First always try to get a **signed informed consent form** from company authorized (responsible) person for each case, preferably with the permission to use the case in a non- anonymized form.
- As a backup approach an email with the explicit statement from the case company that we can make use of the case material is sufficient as alternative. Please make clear in the email that we don't publish financial data and or strategic information.
- If you don't get neither the signed informed consent form nor an email, please make a phone call and try to talk to the responsible person and to ask for his/her permission: note the data and send a confirmation email with request for confirmation reply.
- If even that doesn't yield any result: not available anymore, no time, not responding after three calls (leave your phone number and ask to be called back), then you can send an email that in case of not receiving any statement with any further response we assume that we can use the material in anonymized form, and we don't make use of financial data and or strategic information (other than public available).

Explanation of the study

The objective of the interview is to acquire information on the case and (personal) views of the interviewee. Usually, the interview need not follow the guideline in detail or in a stipulated order but is used as a checklist to see if the most relevant topics have been discussed and to have an open conversation with the interviewee.

The below table consists of the definitions of concepts that will be used for collecting data:

Concept	*Definition*
Business Model	"A business model describes the design or architecture of the value creation, delivery, and capture mechanisms employed in a firm"' (Teece, 2010)
Business Model Innovation	"Designed, novel, nontrivial changes to the key elements of a firm's business model and/or the architecture linking these elements." Foss and Saebi (2017)

Every company has a business model, even if it is not explicitly acknowledged. A business model is used to break down and present the core logic of an organization and how value is created, captured and delivered to different stakeholders. With the emergence of digitization, WWW and IT, there has been an increasing awareness towards business models and its innovation thereof. In fact, researchers have concurred that the best way for firms to sustain growth and maintain competitive advantage is to innovate their business models. Although many firms in the industry may recognize the need to innovate their business model, they may not be good at the implementation due to the various organisational implications that come into play when a firm attempts to change or replace their business model. However, innovating a business model is a gradual change process where firms re-configure various business model components and implement the new model within the organization. More often than not, this may be subject to inertia among the employees of the organization and the major barriers that causes this resistance to change involve a low level of employee motivation, lack of qualified personnel, ineffective communication, and inadequate preparation to change. Hence, the main challenge lies in the approach firms take regarding the people during business model implementation, which in turn can influence the success of a business model innovation initiative and lead to superior firm performance.

The aim of this research is to see how individual employee's motivation, development, and readiness to change during business model implementation actualize in a real-life context and explain how these factors influence the relationship between business model innovation and firm performance. Therefore, four cases of SMEs that have experienced the business model innovation process are selected as units of analysis. A semi-structured interview would be conducted to collect relevant data for this research.

Topics to be addressed during the interview

The interview would start by asking about the company and on the interviewee, after which a discussion of the business model innovation process, the transition and the role of employees during business model implementation would be addressed.

I. Questions about the company & business model

No.	*Questions*	*Topics to be addressed*
1	**Could you introduce yourself and your role at the company?**	▪ The formal position of the interviewee
2	**What was the reason behind the BM change? What is the current status of BMI implementation?**	▪ Old BM to New BM ▪ Technology adoption or competition

II. Questions about the BMI process

No.	*Questions*	*Topics to be addressed*
3	**How was the Business Model Innovation process managed within the organization?**	▪ Planning, realizing and aligning activities - Stages or phases created ▪ Experimentation/ pilot ▪ Involvement of change agents
4	**Could you describe the business model implementation phase? What were the initiatives taken within the company during this phase?**	▪ Organisational structure/ procedure/ resources ▪ Team formation ▪ Assessment of employee skills & capabilities ▪ Hiring or Employee development
5	**Did you encounter any difficulties during the business model implementation? If so, how did you deal with them?**	▪ More focus on the technological aspect and less on the people aspect ▪ Resistance to change among employees & departments ▪ Intercultural problems ▪ Plans were not clearly defined/communicated or adapted to the new situation
6	**Did the Business Model Innovation deliver the expected results? How did you assess firm performance?**	▪ Performance measure - financial metrics, customer metrics or employee metrics ▪ Is the company profitable, doing well?

III. Questions about the role of employees during BMI implementation

No.	*Questions*	*Topics to be addressed*
7	**How are employees encouraged to be a part of the planning & decision making process? How were they motivated to implement the BMI?**	▪ Early involvement of employees that are affected by the changes ▪ Employee ideas, feedback, and decisions put into use ▪ Rewards, promotions or incentives ▪ Employees believe implementing the BM was an improvement
8	**How were the business model changes (objectives) communicated to the employees? What exactly did you communicate?**	▪ Why the changes are necessary ▪ Clear vision, objectives, and desired outcomes ▪ Impact on the employee's work - role & responsibilities ▪ How these changes will take place - Roadmap (As is --> To be)
9	**How did managers support employees during BM implementation?**	▪ Manager accessibility, consistency, stimulation & feedback ▪ Following a detailed plan & using change agents to implement the new BM
10	**Does the current culture, within the organization, encourage and support the new BM?**	▪ Open communication, innovativeness, creativity ▪ Collaboration & sharing of information - Teamwork ▪ Adaptability & flexibility to change
11	**Did employees receive any training to implement the BMI?**	▪ Individual development - technical skills or behavioral skills ▪ Group development - teamwork or conflict resolution, communication, adaptability & flexibility, etc.
12	**Were employees empowered to act on the vision during BM implementation?**	▪ Feelingof control: Autonomy ▪ Feeling of competence: ready to perform tasks and do their jobs
13	**Do you have thoughts on how the business model implementation could have been better? Can you think of other factors that play a role during BMI implementation?**	

Appendix B: Discriminant validity assessment

Table B-1: Assessing Fornell-Larcker Criterion for Discriminant Validity for modaration testing model

Model No.	Relationships	BMI	Moderator	Firm Performance	Moderating Effect of Moderator
Model 1	BMI	0.649			
	Firm Performance	0.351	-	0.76	-
Model 2	BMI	0.649			
	Employees Motivation	0.275	0.832		
	Firm Performance	0.347	0.239	0.764	
	Moderating Effect_Employees Motivation	0.000	0.000	0.140	0.532
Model 3	BMI	0.649			
	Employees Development	0.196	0.840		
	Firm Performance	0.348	0.207	0.763	
	Moderating Effect_Employees Development	0.000	0.000	0.136	0.540
Model 4	BMI	0.649			
	Communication	0.256	0.888		
	Firm Performance	0.348	0.147	0.764	
	Moderating Effect_Communication	0.000	0.000	0.115	0.557
Model 5	BMI	0.649			
	Firm Performance	0.349	0.763		
	Moderating Effect_Resistance to Change	0.000	0.103	0.550	
	Resistance to Change	0.152	0.228	0.000	1.000
Model 6	BMI	0.649			
	Culture of Innovation	0.567	0.789		
	Firm Performance	0.343	0.450	0.764	
	Moderating Effect_Culture of Innovation	0.000	0.000	0.164	0.475
Model 9	BMI	0.649			
	Degree of Novelty	0.562	0.810		
	Firm Performance	0.344	0.288	0.764	
	Moderating Effect_Degree of Novelty	0.000	0.000	0.203	0.267
Model 10	BMI	0.649			
	Firm Performance	0.350	0.763		
	Moderating Effect_Scope of Change	0.000	0.082	0.618	
	Scope of Change	0.217	0.125	0.000	1.000
Model 11	BMI	0.649			
	Firm Performance	0.350	0.763		
	Moderating Effect_Speed of Change	0.000	0.098	0.409	
	Speed of Change	0.326	0.245	0.000	0.854
Model 14	BMI	0649			
	Firm Performance	0.345	0.764		
	Moderating Effect_Competetive Intensity	0.387	0.239	0.738	
	Competetive Intensity	0.000	0.152	0.000	0.444
Model 15	BMI	0.649			
	Firm Performance	0.346	0.764		
	Moderating Effect_Technology Turbulence		0.108	0.555	
	Technology Turbulence	0.412	0.219	0.000	0.945

periods of time is exceedingly challenging and expensive, making it difficult for smaller firms to serve as market leaders and challengers. As a follower, though, BMI can still help firms differentiate from their competitors by focusing on customer segments overlooked by larger competitors while enjoying lower costs, lower R&D expenses, and lower customer service costs. Knowing which practice is more beneficial for companies for implementing a BMI can create competitive advantages and prevent costly failure. Taran et al. (2015) introduce a three-dimensional measure to qualify the innovativeness of a new business model, i.e., radicality, reach, and complexity. Taran et al. (2015) refer *radicality* to the novelty (incremental vs. radical) of each building block and *reach* that concerned with whether innovation is new to the company or, at the other end of the spectrum, new to the world (degree of novelty), *complexity* considered as the number of building blocks altered (scope of change). Although, according to their definition, radicality and complexity are very close concepts, speed of change (time-wise) can be another contingency factor that affects the relationship between BMI and firm performance. These three characteristics are crucial, and owners and managers should consider them before making decisions about the organization and management of business model innovation processes (Taran et al., 2015).

2.9 Conceptual model and hypotheses

As the outcome of our literature review, by identifying mediating and moderating factors playing roles in the relationship between BMI and firm performance and categorised them into relevant sub-groups, we developed a reference model (Figure 2.9) explaining the mechanism by which BMI influences a firm's overall performance.

This model provides a foundation for our empirical research in the following chapters. The reference model is rather holistic and comprises 34 constructs. It is, therefore, not feasible to examine the model in a single study. So, the mediation model (presented in Figure 2.10) will be used to empirically investigate the model by testing the following hypotheses (Chapter 5), as also motivated by the proper literature review:

H1*: If a firm engages in BMI, the firms' overall performance will improve.*

H2*: Efficiency growth mediates the relation between BMI and a firm's overall performance.*

H2a: *The BMI has a direct positive effect on efficiency growth, and*

H2b: *Efficiency growth has a direct positive effect on a firm's overall performance.*

H3*: Revenue growth mediates the relation between BMI and a firm's overall performance.*

H3a: *The BMI has a direct positive effect on revenue growth, and*

H3b: *Revenue growth has a direct positive effect on a firm's overall performance.*

H4*: Organisational capabilities mediate the relation between BMI and a firm's overall performance.*

H4a: *The BMI has a direct positive effect on organisational capabilities, and*

H4b: *Organisational capabilities have a direct positive effect on a firm's overall performance.*

Table B-2: Assessing Heterotrait–monotrait ratio of correlations (HTMT) for Discriminant Validity

	Relationships	BMI	Moderator	Firm Performance
Model 1	BMI			
	Firm Performance	0.379	-	
Model 2	BMI			
	Employees Motivation	0.325		
	Firm Performance	0.379	0.250	
	Moderating Effect_Employees Motivation	0.000	0.000	0.126
Model 3	BMI			
	Employees Development	0.243		
	Firm Performance	0.379	0.235	
	Moderating Effect_Employees Development_	0.000	0.000	0.140
Model 4	BMI			
	Communication	0.324		
	Firm Performance	0.379	0.165	
	Moderating Effect_Communication	0.000	0.000	0.116
Model 5	BMI			
	Firm Performance	0.379		
	Moderating Effect_Resistance to Change	0.000	0.116	
	Resistance to Change	0.169	0.229	0.000
Model 6	BMI			
	Culture of Innovation	0.688		
	Firm Performance	0.379	0.502	
	Moderating Effect_Culture of Innovation	0.000	0.000	0.133
Model 9	BMI			
	Degree of Novelty	0.715		
	Firm Performance	0.379	0.329	
	Moderating Effect_Degree of Novelty	0.000	0.000	0.129
Model 10	BMI			
	Firm Performance	0.379		
	Moderating Effect_Scope of Change	0.000	0.081	
	Scope of Change	0.250	0.122	0.000
Model 11	BMI			
	Firm Performance	0.379		
	Moderating Effect_Speed of Change	0.000	0.091	
	Speed of Change	0.472	0.304	0.000
Model 14	BMI			
	Firm Performance	0.379		
	Moderating Effect_Competetive Intensity	0.509	0.284	
	Competetive Intensity	0.000	0.138	0.000
Model 15	BMI			
	Firm Performance	0.379		
	Moderating Effect_Technology Turbulence	0.000	0.115	
	Technology Turbulence	0.512	0.242	0.000

Appendix C: Coefficient of determination (R^2)

Table C: Coefficient of determination (R^2) for tested models for modaration testing model

Model No.	Model objective is to test:	R^2 Adjusted
1	Direct relationship BMI & Performance	0.123
2	Moderating Effect of Employees Motivation	0.163
3	Moderating Effect of Employees Development	0.160
4	Moderating Effect of Effective Communication	0.138
5	Moderating Effect of Resistance to Change	0.164
6	Moderating Effect of Culture of Innovation	0.241
9	Moderating Effect of Degree of Novelty	0.172
10	Moderating Effect of Scope of Change	0.132
11	Moderating Effect of Speed of Change	0.151
14	Moderating Effect of Competetive Intensity	0.150
15	Moderating Effect of Technology Turbulence	0.132

Appendix D: BMI as found per industry sectors in research 2017

Table D-1: BMI as found per industry sectors in research 2017

Industry	Frequency	%
Accommodation and food service activities	35	6%
Administrative and support service activities	12	2%
Arts, entertainment, and recreation	13	2%
Construction	66	12%
Education	24	4%
Electricity, gas, steam, water, and air conditioning supply	20	4%
Financial and insurance activities	25	4%
Human health and social work activities	30	5%
Information and communication	16	3%
Manufacturing	91	16%
Professional, scientific, and technical activities	14	2%
Real estate activities	6	1%
Transportation and storage	14	2%
Wholesale and retail trade	82	15%
Other service activities	115	20%
Total	563	100%

Appendix E: BMI as found per industry sectors in research 2018

Table E-1: BMI as found per industry sectors in research 2018

Industry	Frequency	%
Accommodation and food service activities	40	9%
Administrative and support service activities	9	2%
Arts, entertainment, and recreation	12	3%
Construction	37	8%
Education	20	5%
Electricity, gas, steam, water, and air conditioning supply	10	2%
Financial and insurance activities	14	3%
Human health and social work activities	20	5%
Information and communication	18	4%
Manufacturing	73	17%
Professional, scientific, and technical activities	9	2%
Real estate activities	11	3%
Transportation and storage	12	3%
Wholesale and retail trade	71	16%
Other service activities	83	19%
Total	439	100%

Appendix F: Structural model assessment (f^2, Q^2, SRMR)

Table F-1: f^2 values for tested models in moderation analysis

Model No.	Model's objective is to test:	f^2
1	Direct relationship BMI & Performance	0.140
2	Moderating Effect of Employees Motivation	0.066
3	Moderating Effect of Employees Development	0.022
4	Moderating Effect of Effective Communication	0.015
5	Moderating Effect of Resistance to Change	0.013
6	Moderating Effect of Culture of Innovation	0.035
9	Moderating Effect of Degree of Novelty	0.050
10	Moderating Effect of Scope of Change	0.008
11	Moderating Effect of Speed of Change	0.011
14	Moderating Effect of Competetive Intensity	0.027
15	Moderating Effect of Technology Turbulence	0.014

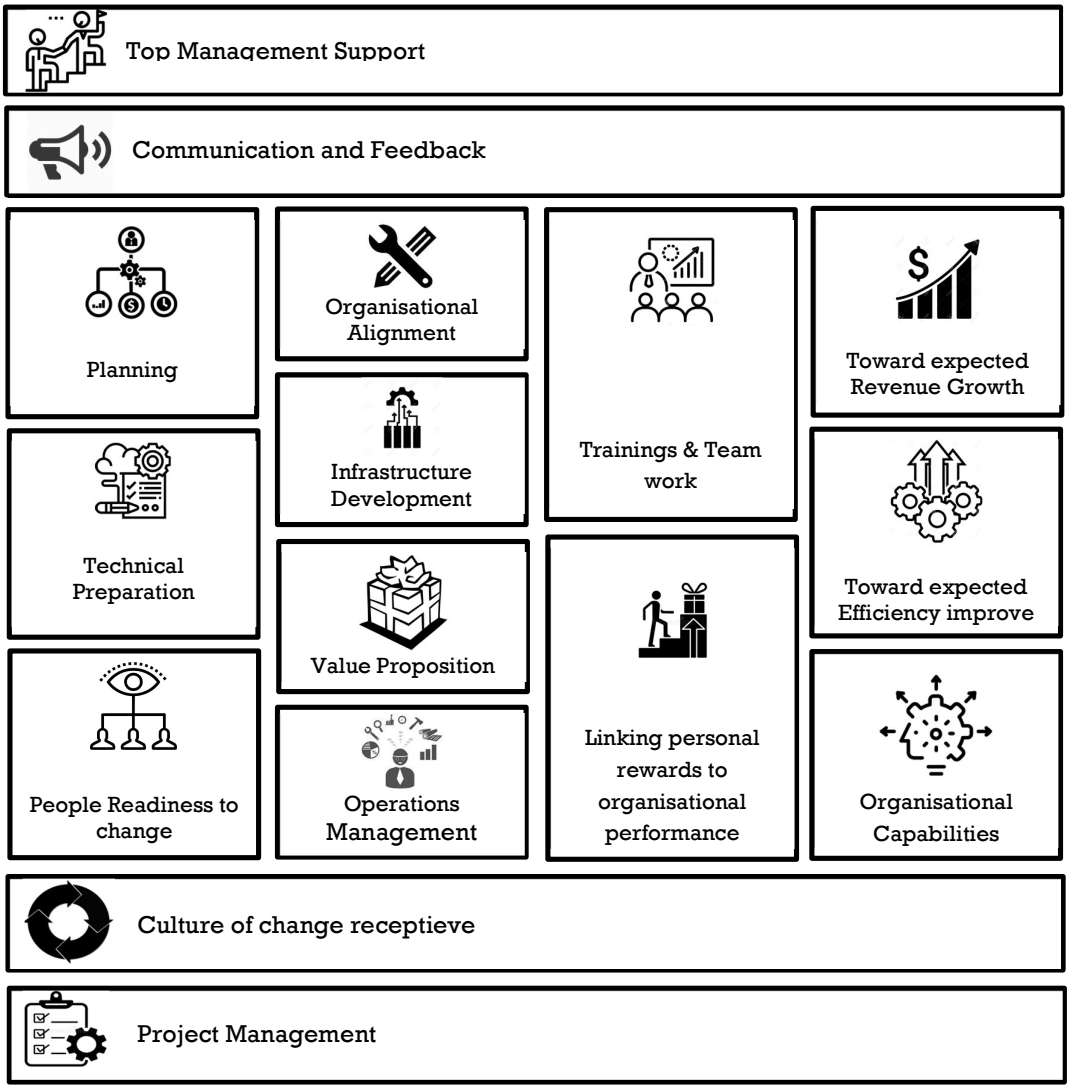
Table F-2: Q^2 values for tested interaction models

Model No.	Model's objective is to test:	Q^2
1	Direct relationship BMI & Performance	0.064
2	Moderating Effect of Employees Motivation	0.086
3	Moderating Effect of Employees Development	0.084
4	Moderating Effect of Effective Communication	0.072
5	Moderating Effect of Resistance to Change	0.085
6	Moderating Effect of Culture of Innovation	0.127
9	Moderating Effect of Degree of Novelty	0.088
10	Moderating Effect of Scope of Change	0.068
11	Moderating Effect of Speed of Change	0.075
14	Moderating Effect of Competetive Intensity	0.024
15	Moderating Effect of Technology Turbulence	0.055

Table F-3: Standardized root mean square residual (SRMR) for all tested models

Model No.	Model's objective is to test:	SRMR (Saturated)
1	Direct relationship BMI & Performance	0.070
2	Moderating Effect of Employees Motivation	0.066
3	Moderating Effect of Employees Development	0.065
4	Moderating Effect of Effective Communication	0.068
5	Moderating Effect of Resistance to Change	0.067
6	Moderating Effect of Culture of Innovation	0.064
9	Moderating Effect of Degree of Novelty	0.068
10	Moderating Effect of Scope of Change	0.068
11	Moderating Effect of Speed of Change	0.064
14	Moderating Effect of Competetive Intensity	0.067
15	Moderating Effect of Technology Turbulence	0.065

Appendix G: Implementation Canvas for Business Model Innovation (First edition)



Summary (in English)

Firms need to be innovative and adaptive in competitive business environments subject to technological advancement and rapid changes in regulations and customers' preferences. To do so, companies can innovate their products or their services, processes, marketing or organization. Since the advent of the Internet, business model innovation (BMI) has emerged as a new conceptual focus and a critical point to innovation. Compared to other traditional innovations, BMI is associated with high risk and uncertainty since it involves fundamental changes to the core components and/or the architecture of a firm's business model (BM). Therefore, if not handled properly, a well-formulated BM may fail to improve performance. Hence, knowing how and when to innovate a BM is a severe challenge for managers/owners of firms. Understanding the impact of BMI on performance requires clear identification of the causal mechanisms in the relationship between BMI and performance. This research aimed at opening the black box of implementing BMI by analysing mediating and moderating factors that enable firms to translate BMI into higher performance. Although most studies that combine strategic and innovation management with BMs mainly focus on large enterprises, the vast majority of firms worldwide (99%) are small and medium-sized enterprises (SMEs). According to a substantial body of research, SMEs significantly differ from larger businesses in many aspects such as management style, organisational structure, innovation management, human and financial resources, environmental context, and strategy-making process. Therefore, the experiences of large enterprises are not per se replicable for SMEs. Therefore, this thesis investigates how and under which circumstances SMEs can implement their business model innovation to improve their overall performance. This research focuses on the human and organisational side of implementation rather than the technical side. So, the research objective is: "*To develop and test a conceptual model for implementation of Business Model Innovation in SMEs that focuses on "human and organisational" factors to improve performance.*

Five research questions were formulated to realize the research objective:

RQ1: Which critical factors play a role in the different steps of the BMI process?

RQ2: Which factors related to the implementation of Business Model Innovation mediate and/or moderate the relationship between BMI and firm's performance?

RQ3: Is the relationship between BM Innovation and the firm's performance mediated by the herefore (RQ2) identified factors in SMEs?

RQ4: Is the relationship between BM Innovation and the firm's performance moderated by the herefore (RQ2) identified factors in SMEs?

RQ5: How do human and organisational factors mediate or moderate the relationship between BMI and firm's performance within the selected SMEs?

This research adopted a mixed-method approach to address the research questions and fulfill the research objectives. A mixed-method approach enables us to capture the unexplored complexity of human and organisational phenomena during changing processes related to BM Innovation implementation of a BM in SMEs. In this study, the mixed-method approach consisted of five phases, e.g., two literature reviews, two quantitative studies and one qualitative research study. The first two phases provided the required theoretical background for the research. In phases three and four, two

quantitative studies were carried out to test the proposed model derived from the literature review, and finally, in phase five, a qualitative study was performed to answer the fifth research question.

Since the topic of human and organisational factors is almost new to the field of BMI, the research began with two literature reviews in order to (1) explore the theoretical gap in managing the critical factors in the BMI process and (2) propose a conceptual model to fill the gap.

The first systematic literature review revealed that among the 75 critical factors in different phases of the BMI process, approximately 60% were related to the BM-Implementation phase. Among those factors which were associated with the BM-Implementation phase, only 33% were related to the technical side of implementing a BM, and the majority (almost 67%) were related to the human side of BM-Implementation, such as employee motivation, training, effective communication, change management skills, and cultural issues. The answer to the first research question (RQ1) highlights the importance of the implementation phase in the BMI process and, in particular, the need to pay attention to the human and organisational side.

A second systematic literature review was conducted to address the second research question and develop a conceptual model that explores the mediating and/or moderating relationships between BMI and the firm's performance. To understand the causal mechanisms under which BMI indirectly influences a firm's performance, twelve mediating factors were identified and classified into three sub-groups, e.g., efficiency growth, revenue growth, and enhancing organisational capabilities. This research was among the first studies to introduce organisational capabilities as a mediator in the relationship between BMI and a firm's overall performance. Furthermore, twenty moderating factors were identified and categorised in four sub-groups, i.e., firm characteristics, industry characteristics, BM implementation, and BM practices. These twenty moderating factors explain under which contingency factors, the relationship between BMI and firm performance can be affected. The findings provide an exhaustive reference model, consisting of 34 variables/constructs categorised in three mediating and four moderating sub-groups, explaining the relationship between BMI and firm performance. This model was used as a theoretical model in quantitative research (as conducted in 2017 and 2018). The two literature studies provided answers to RQ1 and RQ2.

In phase three of the research, the theoretical model developed in the previous phase concerning the mediation effects and how BMI indirectly influences SMEs' performance was empirically tested (RQ3). The research population was European SMEs that were engaged in BMI. Data from a cross-industry sample of 563 European SMEs were collected via a computer-assisted telephone interview in January 2017. Research hypotheses were examined by Structural Equation Modelling (SEM) techniques that enabled the analysis of several relationships simultaneously based on multiple variables and testing multiple relationships between constructs simultaneously. Smart PLS 3.3 software was used. The analysis showed that the path between BMI and firm performance is fully mediated through efficiency growth, organisational capabilities, and revenue growth. By introducing and examining organisational capabilities as a mediator, this study has extended prior literature on BMI, by showing that developing organisational capabilities are a stronger mediator than mediators with a focus on revenue and efficiency growth wich are often using in the contemprary literature. The findings demonstrated that the mediation effect of the organisational capabilities is five times stronger than efficiency growth and two times than revenue growth mediation effect to explain the firm's overall performance. This highlights the importance of organisational capabilities such as opportunity-seeking, risk-taking attitude, innovativeness, organisational learning and culture in implementing a BMI if we would like to achieve superior performance.

In phase four of the research, the theoretical model derived from RQ2, regarding the moderation effects, was empirically investigated to understand under which conditions human and organisational factors affect the relationship between BMI and SMEs' performance. The second quantitative study provided empirical evidence to answer RQ4. The population in the second quantitative study also consists of European SMEs that were engaged in BMI. Data from a cross-industry sample of 439 European SMEs were collected via a computer-assisted telephone interview in January 2018. Research hypotheses were examined by Structural Equation Modelling techniques making use of Smart PLS 3.3 software. The analysis revealed that among four moderating groups, the moderators related to the BM-implementation group (e.g., employees motivation, employees development, a culture of innovation, and effective communication) were the most relevant contingency factors. Although "using the BM tooling" in the BM-practices group, and "industry competition" in the Industry-characteristic group positively influenced the relationship between BMI and the firm's overall performance, the data did not support the moderating role of SMEs' size and age in our multi-group analysis. This research provided empirical evidence for hypotheses derived from the literature on change management. Therefore, we conclude that the theories and practices in the well-developed realm of organisational change management can be applied in managing the people side of implementing BMI. This suggests that scholars and practitioners can utilize existing management practices and tools to handle the implementation of BMI.

To accomplish the research objective, in phase five of the research, qualitative research was used to explain and clarify the outcomes of the quantitative analysis and explore new dimensions of implementing a BMI in SMEs. To assure a certain extent of external validity, a multiple case study design is used for collecting and analyzing the data. Four cases were selected based on content (theoretical) and practical considerations since we are interested in studying the human and organisational factors in the implementing stage of BMI in SMEs and have passed the initial stages of the BMI process, like formulation of what the BMI entails. Four Dutch cases were chosen from different industries, i.e., Manufacturing, Healthcare, and Publishing, as available as one of the 122 SMEs cases from the Envision project case repository. The data was collected using desk research and semi-structured interviews. An interview guideline was developed to conduct the interviews. The interview manuscripts were coded using Atlas.ti 9 software. The data were analysed on two levels, i.e. (1) within-case analysis in which the findings on the impact of the BM change on the employees are reported separately, and (2) cross-case analysis in which patterns, similarities and differences among the four cases are presented collectively.

Our in-depth analysis of the four cases revealed specific characteristics for BMI which differentiate BMI from organisational change. The case study analysis provided an explanation about the moderating factors in the relationship between BMI and a firm's overall performance. In this way, it yielded deeper insights into how those factors impact a firm's overall performance as well as how these factors influence each other. Key findings include the following. (1) To motivate employees to engage in implementing BMIthe focus should be on intrinsic motivations rather than on extrinsic motivations. (2) Visualization by using BM tooling, e.g., BM Canvas, STOF, and storytelling, play a vital role in communicating the change in BM and facilitating creating a shared vision between employees. (3) A culture of collaboration should play a dominant role in the BMI implementation phase. (4) The best leadership style in the implementation phase of BMI to reduce the resistance to change is to use a participatory leadership style. (5) To reduce the risks and give employees time to adapt to the new situation, well-established firms implement their new BM in parallel with the existing BM. (6) The development of a common culture among different groups of people from an existing and a new BM

(parallel BM) is considered the biggest challenge in implementing BMI. Having a plan for merging two different communities and fostering a culture of change receptive facilitates the cultural integration process.

This study contributed to the existing literature on BMI in several ways. Our comprehensive conceptual model helps researchers understand the causal mechanism under which BMI influences the overall firm performance. This model theoretically contributes to BMI research in several ways. First, it provides an answer to the call raised by scholars to develop a more nuanced model to explain how BMI influences the firm's performance. By considering 32 mediating and moderating factors, the model provides an in-depth view of the BMI phenomenon and serves as the grounding for empirical research in different types of companies, e.g., start-ups, SMEs, and large enterprises. This study was among the first to introduce the mediating role of organisational capabilities in the relationship between BMI and firm's overall performance. In addition, the conceptual definitions of two original/existing constructs, i.e., revenue growth and efficiency growth, were improved. Our conceptual model eliminates the shortcoming of transaction cost theory, which minimizes or ignores learning, resource accumulation, and long-term asset orchestration. As the fourth contribution, this study was the first to categorise moderation factors that affect the relationshipship between BMI and firm's performance into four groups: firm-characteristics, industry-characteristics, BM-implementation, and BM-practices. This way, four different lenses through which researchers can analyse the BMI in organizations have been introduced. Finally, case study research provided a deep insight into the human and organisational factors that managers can influence in the time of implementing a BMI. Since the human and organisational side of implementing business model innovation was highly unexplored, our findings help researchers to better implement BM innovation and to determine how BMI can better contribute to the firms' overall performance.

On a practical level, by considering mediating effects, our results have implications for practitioners, in particular owners and managers of SMEs, on how to implement a specific BM change that will lead to better performance. Apart from traditional ways of improving the firm's overall performance by improving business efficiency and increasing revenues, our results urge that SMEs' owners and managers who want to benefit from investing in their organisational capabilities, such as opportunity recognition and innovativeness and active organisational learning. Moreover, considering the firm size and firm age as contingency factors, the findings suggested that the owners and managers of micro-sized firms have to focus on efficiency-centred BMI, while it is better for the medium-sized enterprises to improve their performance through developing organisational capabilities.

Our results give SME owners and managers insight into possible contingency factors on expected performance effects of business model innovation by considering moderating factors. It underlines that the performance effect depends on a multitude of factors. Hence, it is necessary for a firm to regularly evaluate its specific organisational situation in depth to take appropriate measures to increase the effect of BMI on performance. Our findings recommend that among four contingency groups of factors, more attention should be paid to the factors related to BM-implementation and BM-practice so that they are more manageable by owners and managers. The moderating factors in the firm and industry characteristics can also be impactful but are less crucial because they usually are out of the company's control and cannot be changed by managers.

Overall, this thesis contributes to management literature and particularly in business model innovation research. This research analyzed BMI from different angles and developed a model to maximise business model innovation's impact on a firm's performance, especially from human and organisational

perspectives. While the business world is constantly changing in terms of technology, regulations, and customer needs, these results advance BMI research by opening the black box of the causal relationship between BMI and a firm's overall performance to understand the BMI phenomenon better.

Nederlandse samenvatting (Summary in Dutch)

Bedrijven moeten innovatief en flexibel zijn om te reageren op veranderingen in de omgeving. Deze veranderingen hangen samen met technologische veranderingen, veranderingen in regelgeving en de veranderende voorkeuren van consumenten. Om deze veranderingen het hoofd te bieden kunnen bedrijven hun producten, maar ook hen diensten, bedrijfsprocessen, marketing en organisatie innoveren. Met de komst van het internet wordt Business Model Innovation, in het vervolg afgekort met BMI, gezien als een nieuwe manier voor verandering van bedrijfsmodellen. Vergeleken met andere traditionele innovaties (d.w.z. product, service, proces, marketing en organisatie) wordt BMI geassocieerd met hoog risico en vele onzekerheden, omdat het fundamentele veranderingen in componenten al dan niet in combinatie met verandering van de architectuur van het bedrijfsmodel met zich meebrengt. Daarom zal een duidelijk geformuleerde wijziging in het bedrijfsmodel, als deze niet op de juiste manier wordt geïmplementeerd, niet leiden tot een verbeterde prestaties. Derhalve is het een uitdaging voor managers/eigenaren van bedrijven om te weten hoe en wanneer een BM te innoveren en deze veranderingen door te voeren. Om het effect van BMI op prestaties volledig te begrijpen, is het nodig om de causale relatie tussen BMI, implementatie van de veranderingen van het bedrijfsmodel en de prestaties nodig. Dit onderzoek is gericht op het exploreren, analyseren en testen van mediërende en modererende variabelen van de rol die de implementatie van BMI om de bedrijfsprestaties te verbeteren. Alhoewel het meeste onderzoek op het gebied van bedrijfsmodel innovatie vanuit een strategisch of innovatiemanagement perspectief is uitgevoerd, ligt de focus vooral op grote ondernemingen, terwijl de overgrote meerderheid van de bedrijven wereldwijd (99%) tot de categorie van midden en klein bedrijf (MKB) behoord. Het MKB verschilt aanzienlijk van grotere bedrijven op het gebied van managementstijl, organisatiestructuur, innovatiemanagement, omgaan met bedrijfsmiddelen, reageren op veranderingen en strategieformulering en executie. Daarom zijn de ervaringen van grote ondernemingen niet direct toepasbaar en bruikbaar in het MKB. Dit proefschrift bestudeert daarom hoe en onder welke voorwaarden MKB-bedrijven de verandering in hun bedrijfsmodel kunnen implementeren, met als doel om de prestaties te verbeteren. Dit onderzoek richt zich op de menselijke en organisatorische kant van de implementatie van de bedrijfsmodelinnovatie en niet op de technische kant. De doel van het onderzoek is derhalve: “het ontwikkelen en toetsen van een causaal model voor de implementatie van Business Model Innovation in het MKB met een focus op “menselijke en organisatorische” factoren gericht op het verbeteren van de prestaties. Om het onderzoeksdoel te bereiken, zijn de volgende vijf onderzoeksvragen geformuleerd:

OZ1: Welke factoren spelen een rol in verschillende stappen van het BMI-proces?

OZ2: Welke factoren met betrekking tot de implementatie van Business Model Innovation bemiddelen en/of modereren de relatie tussen BMI en de prestaties van het bedrijf?

OZ3: Zijn de geïdentificeerde medierende factoren in de relatie tussen BM Innovation implementatie en de prestaties van het bedrijf ook van toepassing voor het MKB?

OZ4: Zijn de geïdentificeerde modererende factoren in de relatie tussen BM Innovation implementatie en de prestaties van het bedrijf ook van toepassing voor het MKB?

OZ5: Hoe bemiddelen of modereren menselijke en organisatorische factoren de relatie tussen BMI en de prestaties van het bedrijf binnen de geselecteerde MKB's?

Om de onderzoeksvragen te beantwoorden en de onderzoeksdoelstellingen te bereiken, is in dit onderzoek een mixed-method benadering gevolgd. Een mixed-method benadering stelt ons in staat om de onontgonnen complexiteit van menselijke en organisatorische factoren te exploreren die een rol spelen bij BMI implementatie in het MKB domein. In dit onderzoek omvat de mixed-method-aanpak vijf fasen, die corresponderen met de vijf onderzoeksvragen. De eerste twee fasen hebben betrekking op de theoretische achtergrond van het onderzoek. Fase drie en vier omvatten twee kwantitatieve analyses en in fase vijf is een kwalitatief onderzoek uitgevoerd.

Aangezien het onderwerp van deze studie op het gebied van BMI relatief nieuw is, begint het onderzoek met twee literatuuronderzoeken om (1) de theoretische kloof over factoren van invloed op BMI te onderzoeken en (2) een conceptueel model te ontwikkelen.

Uit het eerste systematische literatuuronderzoek blijkt dat van de 75 kritische factoren in verschillende fasen van het BMI-proces, ongeveer 60% gerelateerd is aan de BM Innovatie implementatie. Van de factoren die werden geassocieerd met de BM-implementatiefase, slechts 33% gerelateerd zijn aan de technische kant van het implementeren van een BM, en de meerderheid (bijna 67%) gerelateerd is aan de menselijke en organisatie kant van BM innovatie implementatie, zoals gebrek aan motivatie bij medewerkers, onvoldoende training, niet effectieve communicatie, gebrekkige verandermanagementvaardigheden en culturele problemen. Het antwoord op de eerste onderzoeksvraag (OZ1) benadrukt de cruciale rol van de implementatiefase in het BMI-proces en in het bijzonder de rol die menselijke en organisatorische factoren spelen.

Om de tweede onderzoeksvraag te beantwoorden en een conceptueel model te ontwikkelen dat de mediërende en/of modererende relatie tussen BMI implementatie en de bedrijfsprestaties onderzoekt, is als aanvulling op de meer generieke positionering van het onderzoek een systematische literatuurstudie uitgevoerd. Om de causale mechanismen te begrijpen die een rol spelen bij de relatie tussen BMI en de prestaties van het bedrijf, zijn twaalf bemiddelende factoren geïdentificeerd en ingedeeld in drie subgroepen. Het betreft factoren gerelateerd aan efficiëntie, omzetgroei en hulpmiddelen (resources) en vaardigheden (capabilties) binnen de organisatie. Dit onderzoek is één van de eerste onderzoeken waarin organisatorische resources en capabilties werden geïntroduceerd als mediator in de relatie tussen BMI en de algehele prestaties van het bedrijf. Verder zijn twintig modererende factoren geïdentificeerd en gecategoriseerd in vier subgroepen, namelijk bedrijfskenmerken, industriekenmerken, de wijze van BM-implementatie en BM-praktijken. De twintig modererende factoren kunnen gebruik worden om te verklaren onder welke voorwaarden, de relatie tussen BMI en bedrijfsprestaties kan worden beïnvloed. De bevindingen leveren een uitputtend referentiemodel op, bestaande uit 34 constructen, c.q. variabelen gecategoriseerd in drie mediërende en vier modererende groepen, die een rol spelen in de relatie tussen BMI en bedrijfsprestaties. Dit model is gebruikt als conceptueel model in de kwantitatief studies (zoals uitgevoerd in 2017 en 2018). De twee literatuurstudies gaven antwoorden op OZ1 en OZ2.

In de derde fase van dit onderzoek is de (in de vorige fase) ontwikkelde theoretische model met betrekking tot de mediatie-effecten empirisch getest en is geanalyseerd hoe BMI indirect de prestaties van het MKB beïnvloedt (OZ3). De onderzoekspopulatie bestond uit Europese MKBs die daadwerkelijk een BMI traject hebben uitgevoerd. Gegevens uit een sector overschrijdende steekproef van 563 Europese MKBs zijn in januari 2017 verzameld gebruikmakend van een computerondersteund telefonisch interview. Onderzoekshypothesen zijn geanalyseerd met behulp van Structural Equation

Modeling (SEM)-technieken die de parallelle analyse van verschillende relaties tussen meerdere variabelen op hetzelfde moment mogelijk maakt. Smart PLS 3.3-software is gebruikt om de validiteit van de meetmethode voor de constructen te garanderen. De analyse toont aan dat het pad tussen BMI en bedrijfsprestaties volledig wordt bemiddeld door drie paden voor BMI met een focus op efficiëntie, omzetgroei en de inzet van organisatorische resources en capabilities. Deze studie is een van de eerste studies, die organisatorische capaciteiten introduceert en onderzoekt als bemiddelaar in de relatie tussen BMI en prestatie. Literatuur over bedrijfsmodel innovatie is uitgebreid door aan te tonen dat het ontwikkelen van organisatorische capaciteiten belangrijker is dan een focus op omzetgroei of efficiëntie. De bevindingen tonen aan dat het bemiddelingseffect van de organisatorische capaciteiten vijf keer sterker is dan efficiëntie en twee keer sterker dan een focus op omzetgroei in de relatie tussen bedrijfsmodel innovatie en de prestaties van het bedrijf. Onze bevindingen benadrukken het belang van organisatorische capaciteiten - zoals het zoeken naar kansen, het nemen van risico's, mate van innovativiteit, het belang van organisatorisch leren en een specifieke innovatieve cultuur bij het implementeren van een BMI - willen MKBs superieure prestaties bereiken.

In fase vier van het onderzoek is het theoretische model zoals afgeleid n.a.v. OZ2 met betrekking tot de moderatie-effecten empirisch onderzocht. Dit model is gericht op het begrijpen van welke omstandigheden gerelateerd aan menselijke en organisatorische factoren de relatie tussen BMI en de prestaties beïnvloeden. De tweede kwantitatieve studie levert empirisch materiaal die het mogelijk maakte om OZ4 te beantwoorden. De onderzoekspopulatie in de tweede kwantitatieve studie betreft eveneens Europese MKBs die zich actief bezig hebben gehouden met BMI. Gegevens uit een sector overschrijdende steekproef van 439 Europese MKBs zijn verzameld via een computerondersteunend telefonisch interview in januari 2018. De onderzoekshypothesen werden ook nu geanalyseerd met behulp van Structural Equation Modeling door gebruik te maken van Smart PLS 3.3-software. Uit de analyse blijkt dat de vier groepen van modererende variabelen de meest relevante contingentiefactoren zijn; namelijk motivatie van medewerkers, opleiding van medewerkers, een cultuur gericht op innovatie en effectieve communicatie. Hoewel "het gebruik van de BM-tooling" in de BM-practices-groep en "mate van concurrentie in de specifieke industrie" in de groep karakteristieken gerelateerd aan een specifieke industriesector een positieve invloed hebben op de relatie tussen BMI en de algehele prestaties van het bedrijf, ondersteunen de gegevens, gebaseerd op een multi-groepsanalyse, niet de modererende rol van de grootte van het MKB-bedrijf en hoe lang een bedrijf bestaat. Dit onderzoek levert empirisch bewijs voor hypothesen ontleend aan literatuur over verandermanagement. We kunnen concluderen dat theorieën en praktische kennis van het goed ontwikkelde domein van organisatieveranderingsmanagement kunnen worden gebruikt voor het managen van de menselijke kant van het implementeren van BMI. Dit suggereert dat wetenschappers en praktijkmensen bestaande managementpraktijken en -hulpmiddelen kunnen gebruiken bij de implementatie van BMI.

Om de onderzoeksdoelstelling te bereiken, is in fase vijf van het onderzoek aanvullend kwalitatief onderzoek uitgevoerd om de uitkomsten van de kwantitatieve analyse te verklaren en te verduidelijken. Vanwege externe validiteit, is in de kwalitatieve onderzoeksfase gebruik gemaakt van een multiple case study design voor het verzamelen en analyseren van de data. Vier cases zijn geselecteerd op grond van inhoudelijke en praktische overwegingen. Uitgaande van de 122 MKB-cases die beschikbaar zijn in de ENVISION-case database zijn vier Nederlandse cases geselecteerd uit drie verschillende sectoren, namelijk uit de industrie, gezondheidszorg en uitgeefsector. De gegevens zijn verzameld via desk research en semi-gestructureerde interviews. Voor het afnemen van deze interviews is een interviewrichtlijn ontwikkeld. De interviewmanuscripten zijn gecodeerd met behulp van Atlas.ti 9 software. Dit is specifieke software om kwalitatieve gegevensanalyse uit te voeren. De gegevens zijn

op twee niveaus geanalyseerd: (1) analyse binnen de casus waarin de bevindingen van de analyse van de casestudy over de impact van de BM-verandering op de werknemers afzonderlijk werd gerapporteerd, en (2) cross-case analyse waarin patronen, overeenkomsten en verschillen tussen de vier gevallen in samenhang werd gepresenteerd.

Onze analyse bracht voor de vier cases specifieke kenmerken aan het licht die BMI onderscheiden van andere organisatieverandering. De analyse van de cases helpt niet alleen om de eerdere kwantitatieve onderzoeksresultaten (de modererende factoren in de relatie tussen BMI en de algemene prestaties van het bedrijf) beter te begrijpen, maar levert ook diepere inzichten op in hoe deze factoren een impact hebben op de algemene prestaties van het bedrijf en hoe deze factoren elkaar beïnvloeden. Enkele belangrijke bevindingen zijn; (1) om werknemers te motiveren om deel te nemen aan het implementeren van BMI, moet de nadruk meer liggen op intrinsieke motivatie dan op extrinsieke motivatie; (2) visualisatie (met behulp van BM-tooling, bijv. BM Canvas, STOF et cetera) en storytelling spelen een cruciale rol bij het communiceren van de verandering in het bedrijfsmodel en het delen van visies tussen en met medewerkers; (3) een cultuur van samenwerking maakt de implementatie van een nieuw bedrijfsmodel makkelijker; (4) de beste manier om weerstand tegen verandering te verminderen, kenmerkt zich door een participatieve leiderschapsstijl; (5) om risico's te verminderen en de werknemers de tijd te geven om zich aan de nieuwe situatie aan te passen, is het aan te bevelen dat bedrijven hun nieuwe BM parallel aan de oude BM invoeren; (6) het overwinnen van culturele verschillen en het creëren van een gezamelijke cultuur is de grootste uitdaging bij de implementatie van BMI, met name wanneer er sprake is van twee BM's (oud en nieuw). Het hebben van een concreet plan voor het samenvoegen van twee verschillende culturen en het bevorderen van een open en veranderingsgerichte cultuur vergemakkelijkt het culturele integratieproces.

Dit onderzoek draagt op verschillende manieren bij aan de bestaande literatuur over BMI. Het conceptuele model helpt onderzoekers om het causale mechanisme waaronder BMI de algehele bedrijfsprestaties beïnvloedt beter te begrijpen. Dit model draagt op verschillende manieren bij aan BMI-onderzoek. Ten eerste biedt het een antwoord op de oproep van wetenschappers om een model te ontwikkelen om te verklaren hoe BMI de prestaties van het bedrijf beïnvloedt. Het referntiemodel biedt door de 32 mediërende en modererende factoren een diepgaand beeld van het BMI-fenomeen en kan dienen als basis voor nader empirisch onderzoek bij verschillende soorten bedrijven. Bijvoorbeeld om start-ups, het MKB en grote ondernemingen afzonderlijk van elkaar te onderzoeken. Deze studie is een van de eerste die de bemiddelende rol van organisatorische resources en capabilties introduceert in de relatie tussen BMI en de financiële performance van bedrijven. Daarnaast zijn de conceptuele definities van twee originele/bestaande constructs, namelijk omzetgroei en efficiëntie, nader geconceptualiseerd. Ons conceptuele model elimineert de tekortkomingen van de transactiekostentheorie waarin de rol van leren, de accumulatie van hulpbronnen en de orkestratie van activa op de lange termijn worden genegeerd. De vierde bijdrage is het introduceren van vier categorieen (bedrijfskenmerken (branchekenmerken, BM-implementatie en BM-praktijken) die de relatie tussen BMI en bedrijfsprestaties modereren. Zo zijn er vier verschillende lenzen geïntroduceerd waarmee onderzoekers de BMI in organisaties nader kunnen analyseren. Ten slotte heeft het case study-onderzoek dieper inzicht gegeven in de menselijke en organisatorische factoren die door managers kunnen worden beïnvloed als een BMI wordt geïmplementeerd. Aangezien de menselijke en organisatorische kant van het implementeren van bedrijfsmodelinnovatie nog zeer beperkt onderzocht is, helpen onze bevindingen onderzoekers om implementatie van BMI beter te begrijpen en te bepalen hoe BMI op termijn kan bijdragen aan de algehele prestaties van het bedrijf.

Het onderzoek heeft praktische implicaties voor het implementateren van BMI in het bijzonder voor eigenaren en managers van MKBs. Afgezien van traditionele manieren om de algehele prestaties van het bedrijf te verbeteren door de bedrijfsefficiëntie na te streven en de inkomsten te verhogen, laten de resultaten zien dat eigenaren en managers van MKBs beter kunnen investeren in hun organisatorische capabilities, zoals het herkennen van kansen, stimuleren van innovativiteit en promoten van actief leren binnen de organisatie. Door rekening te houden met modererende factoren, geven onze resultaten MKB-eigenaren en -managers inzicht in mogelijke contingentiefactoren in relatie tot verwachte prestatie-effecten van BMI. Het onderstreept dat het verbeteren van de prestatie van een groot aantal factoren afhangt. Daarom is het voor een bedrijf noodzakelijk om de specifieke situatie van het bedrijf in ogenschouw te nemen en om passende maatregelen te nemen om het effect van de BMI op de prestaties te vergroten. Onze bevindingen suggereren dat aan vier groepen van factoren, aandacht moet worden besteed, zodat ze beter beheersbaar zijn voor eigenaren en managers. De modererende factoren zoals specifieke bedrijfs- en branchekenmerken kunnen ook van invloed zijn, maar zijn minder belangrijk omdat ze doorgaans buiten de controle van het bedrijf liggen en niet door managers kunnen worden veranderd.

Dit proefschrift draagt bij aan de management literatuur en in het bijzonder aan het onderzoek naar BMI. Het werpt een blik op BMI vanuit verschillende invalshoeken en stelt een model voor gericht op het verhogen van de impact van bedrijfsmodelinnovatie op de prestaties van een bedrijf, waarbij aandacht dient gegeven te worden aan het menselijk en organisatorisch perspectief. Hoewel de organisaties voortdurend verandert in termen van technologie, regelgeving en de behoeften van de klant, helpen deze resultaten het BMI-onderzoek vooruit door het openen van de zwarte doos door het beschrijven van de causale relatie tussen BMI en de algemene prestaties van een bedrijf.

Publications by Author:

- **Latifi, M.,** Nikou. S., Bouwman, H., "Business Model Innovation and Firm Performance: A Causal Mechanism", *Journal of Technological Innovation, Entrepreneurship and Technology Management - TECHNOVATION,* doi:10.1016/j.technovation.2021.102274.
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- **Latifi, M.,** Bouwman, H., "A longtuidinal study on the impact of Business Model Innovation on SMEs' performance", Targeted journal: *Journal of Business Research*.

About the Author:

Mohammad-Ali Latifi was born on March 21, 1977, in Behshahr, Iran. In 1999, he earned a bachelor's degree in electrical engineering from Sharif University of Technology. He worked for more than twelve years in various power generation and Oil & Gas projects. After obtaining his M.B.A. in 2012, he joined the strategic management division at a large conglomerate company that operates in five diverse industries (Power, Oil & Gas, Transportation, Medical Equipment, and Finance). He has held a range of management skills in entrepreneurial settings and has been involved in the formation and growth of several technology-based innovations. He has coached several high-tech start-ups in their acceleration and scale-up stage (around 60 teams). In July 2016, Mohammad-Ali was awarded a doctoral scholarship from the Iranian Ministry of Science, Research and Technology to study at the Information and Communication Technology research group at the Delft University of Technology, Faculty of Technology, Policy, and Management. During his Ph.D., Mohammad-Ali co-supervised a master thesis on his research topic and authored a number of journal publications and conference papers. He was also involved in reviewing articles submitted to several journals and conferences, including the European Management Journal, Journal of Organizational Change Management, Asia Pacific Management Review, Electronic Market, PLOS ONE, International Symposium on Analytic Hierarchy Process, and Bled Conference.

Although business model innovation (BMI) can create a firm's competitive advantage and enhance its performance, many small and medium-sized enterprises (SMEs) fail to obtain the expected outcomes when innovating their business model. BMI leads to irreversible fundamental changes in key components of a company's business model, which means it entails a high level of risk, ambiguity and uncertainty. BMI can be seen as a double-edged sword, in that it can have very positive and negative consequences, and firms can experience substantial growth or go bankrupt, depending on whether or not the BMI is implemented correctly. Hence, knowing how and when to innovate a BM is a serious challenge for firm managers/owners. This study developed a model for implementing Business Model Innovation in SMEs focussing on "human and organisational" factors to improve performance. The model shed light upon our understanding of the managerial side of BM implementation by highlighting the role of managers and employees within organization as a key driver for any change in a BM. These findings provide guidelines to help company owners/managers implement informed decisions about the implementation of BMI based on their firm's strategies.

Keywords: Business model innovation, firm performance, organisational capabilities, motivation, organisational culture, collaboration, leadership, communication, mixed-method approach,stractural equation modeling, case study, SME.

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Propositions accompanying the thesis

Implementing Business Model Innovation: human and organizational perspectives

By Ali Latifi

1. The human and organizational side of implementing a BMI demands more of the capabilities of managers than the technical implementation of the BMI in business processes and IT. *(This proposition pertains to this dissertation)*

2. Opposite to a more open and innovation focused culture in the design phase of a BMI process, a culture of collaboration plays a key role when the changes on the BM are implemented. *(This proposition pertains to this dissertation)*

3. Intrinsic motivation is more relevant than extrinsic motivation in the implementation of a BMI. *(This proposition pertains to this dissertation)*

4. For communication purposes of the BMI, a simple graphical representation of the relevant human and organisational factors, processes and independencies between them, is too complicated to be modelled on a single page.

5. Although "implementation" of BMI is the last step in the BMI process, an effective "implementation" of BMI starts from the first e.g. design stage of the process of innovating a BM.

6. Business model experiments are expensive and time-consuming; however, having no experiments is more expensive due misalignment of resources and capabilities needed for implementation.

7. An organization composed of ordinary individuals who collectively seek growth, performs better than an organization composed of intelligent but unaligned individuals.

8. The change in the attitude of employees' and managers' adoption of ICT's solutions for home office would have required a lot of time, money and advertisement, if there was no Covid-19 pandemic.

9. Publishing a paper in an academic journal is more a matter of luck and perfect timing than only quality.

10. The number of clouds in the sky has a negative correlation with happiness, whereas for clouds in the IT domain, it is the opposite.

The propositions are regarded as opposable and defendable, and have been approved as such by the promoters Prof. dr. ir. M.F.W.H.A. Janssen and Prof. dr. W.A.G.A. Bouwman.