



Matthias Breier

# BUSINESS MODEL INNOVATION AS CRISIS RESPONSE STRATEGY



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## **BUSINESS MODEL INNOVATION AS CRISIS RESPONSE STRATEGY**

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# Abstract

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The world was hit by one of the hardest crises in modern history starting in December 2019, with the COVID-19 pandemic impacting companies and their business activities across the planet. Governments extensively restricted public, business, and social life, and as a result had to financially support companies to ensure their continued operation. Companies however cannot merely hope for government support during a crisis. They also have to analyze their situation, and define the changes necessary for creating a strategy that allows them to respond to their changed environment. Here, companies attempt to survive, and in the best case grow stronger in a crisis.

This doctoral thesis investigates how companies use business model innovation as a strategic response strategy to survive crises and profit from them; it consists of two parts. Part I addresses the background of the publications therein, establishing a synthesis of the results identified through them. Part II presents the four publications that comprise the foundation of this doctoral thesis.

This doctoral thesis applies different methodologies to investigate its overall research question regarding how business model innovation can be used as a crisis response strategy. A bibliometric analysis was conducted to do this, followed by empirical analysis based on expert interviews and multiple case studies.

The results highlight that business model innovation is often triggered by crises, and that this is a solution for companies of different industries and sizes to cope with them. These companies change their business model long-term, while also creating temporary business models in the short-term to overcome their crisis. Moreover, industry-specific enhancing and inhibiting factors influence whether companies follow a proactive strategy or not. The behavior of these companies is therefore strongly tied to external changes during a crisis. The results of this thesis furthermore suggest that the theories developed can support companies during normal, non-crisis times as well.

**Keywords:** business model innovation, business model, crisis management, crisis responses





## Acknowledgements

I want to thank all the people who crossed my path over the last years, and who helped improve this dissertation with their inspirational ideas and discussions. This “Thank you” is especially for those people not specifically mentioned in the following paragraphs. I enjoyed all of our discussions and the personal growth resulting from them. Thanks to all of you!

Special thanks are due to my supervisor *Prof. Dr. Dr. Sascha Kraus*. He has not only challenged me to pursue a dissertation, but has also accompanied and mentored me during my time completing my bachelors and masters degrees. Sascha, thank you very much for your time, valuable input, your determination, and the incredible speed of your work. I could not ask for a better supervisor, and I am glad to have walked this path together with you. Thank you, Sascha!

Even though the COVID-19 pandemic did not allow me to visit Finland as much as I would have liked, I am thankful to have met *Prof. Dr. Kaisu Puumalainen* during my first visit there. I am even more grateful that you agreed to accompany me as a supervisor during my dissertation. Kaisu, thank you for your support, from the first draft of my exposé, all the way to this final publication of my dissertation. I am pleased to have gotten to know supportive people like you during my time in Finland. Thank you, Kaisu!

When scrolling through my publications, one name keeps popping up: *Prof. Dr. Thomas Clauss*, expert in business model innovation, and probably the person I had the most contact with in the last years with the exception of my supervisor. Thomas, I want to thank you for all the calls we had in the past months, and your valuable feedback that was available at all hours of the day. Although I am truly sorry for all the dinners with your wife I made you late to, I am tremendously thankful for all your support and our ongoing discussions. Your enthusiasm helped me work late into the night on my papers. Thank you, Thomas!

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I would furthermore like to thank the former CSSP AG team and my new friends at FE fundinfo. You have not only been an important customer and financier of my dissertation during the last few years, but good friends as well. Thank you for allowing me to use your office to work on this thesis. Oli, Christoph D., Christoph J., Lars, and Maja, thank you for your support and your kind words all day, every day. Also big thanks to my new teammates in the product management team and the ones I work closest with. Thanks to you all!

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Thank you, all of you.

Matthias Breier  
April 2022  
London, United Kingdom

*This thesis started during crisis.*

*This thesis is about crisis.*

*This thesis ends during crisis.*

*Let us fight together for a future beyond crisis.*

*I dedicate this thesis to peace and everyone who joined me on  
my journey!*



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## List of publications

This doctoral thesis is based on four scientific publications. These are briefly presented in this chapter, showing how the author has contributed to them. The rights have been granted by the publishers to include these papers in this dissertation. All of them have been published in double-blind peer-reviewed journals that are listed in international journal rankings, or have an impact factor above a predefined quality threshold.

### Publication I

Filser, M., Kraus, S., Breier, M., Nenova, I., & Puumalainen, K. (2020). Business Model Innovation: Identifying Foundations and Trajectories. *Business Strategy and the Environment*, 30(2), 891-907.

The author supported the original conceptualization of this article. After a first data analysis, the author read through it to provide further insight and perform necessary changes. The author was the lead for this article's writing process. Moreover, he explicitly focused on its contributions to overcome a specific limitation of bibliometric analysis and provide scientific contributions for publication as a standalone article. Following submission, the author headed the responses to the reviewers and reworked the citations of the article.

### Publication II

Kraus, S., Clauss, T., Breier, M., Gast, J., Zardini, A., & Tiberius, V. (2020). The Economics of COVID-19: Initial evidence on how family firms in five European countries cope with the COVID-19 crisis. *International Journal of Entrepreneurial Behavior & Research*, 26(5), 1067-1092.

The author had the idea for this publication at the beginning of the COVID-19 crisis. He was responsible for the general development of the paper, conducting the majority of its interviews, and transcribing and analyzing all of its German-language interviews. The author created a matrix to analyze the interviews in Italian with the support of a co-author. The author was also involved in all aspects of the paper and its revision. The co-authors contributed to the theory and methodology, and were partially involved in data collection and analysis, as well in discussing the results.



**Publication III**

Breier, M., Kallmünzer, A., Clauss, T., Gast, J., Kraus, S., & Tiberius, V. (2020). The role of business model innovation in the hospitality industry during the COVID-19 crisis. *International Journal of Hospitality Management*, 92, 102723.

The author had the idea for this publication as a continuation of Publication II. The author and the supervisor assembled a team to implement this publication. The author was responsible for data collection, transcription, and evaluation. Moreover, he did most of the writing and conceptualization. The co-authors supported this paper with their methodological knowledge, writing parts of the theory section. Moreover, they contributed to its revision, improving the paper and discussion with their input.

**Publication IV**

Clauss, T., Breier, M., Kraus, S., Durst, S., & Mahto, R. (2021). Temporary business model innovation – SMEs' innovation response to the COVID-19 crisis. *R&D Management*, *accepted for publication*.

The idea for this publication was driven by the author and developed together with a co-author based on an earlier article of this thesis. The author was the main person writing this article and developing its ideas. Moreover, the author collected the data and was the primary researcher for the data analysis. Other authors supported the data analysis, with the author leading the discussions to improve it. In all discussions, the author led the team, developed the paper, and learned from the experienced co-authors. The author contributed to the results and the discussions with a special focus on pattern analysis. The reviews were mainly done by the author and driven by the entire team to secure the best possible outcome.

**Table 1:** Overview of the publications for this dissertation

Title	Finnish Publication Forum	VHB	Impact Factor 2020	Journal	Status
<b>Publication I</b> Business Model Innovation: Identifying Foundations and Trajectories	1	B	10.302	Business Strategy and the Environment	Published
<b>Publication II</b> The Economics of COVID-19: Initial evidence on how family firms in five European countries cope with the COVID-19 crisis	1	C	4.412	International Journal of Entrepreneurial Behavior & Research	Published
<b>Publication III</b> The role of business model innovation in the hospitality industry during the COVID-19 crisis	1	-	9.237	International Journal of Hospitality Management	Published
<b>Publication IV</b> Temporary business model innovation – SMEs' innovation response to the COVID- 19 crisis	2	B	4.272	R&D Management	Published

Table 1 provides an overview of the publications that comprise this dissertation. The table shows their title, Finnish Publication Forum ranking, VHB ranking, their impact factor, the journal itself, and publication status. To be included in this dissertation, all publications had to at least be accepted for publication in a respected journal.



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- Table 1:** Overview of the publications for this dissertation
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**Figure 5:** Company-level response through free capacities and enhancing and inhibiting factors

## Nomenclature

### Abbreviations

BM	Business model
BMI	Business model innovation
SLR	Systematic literature review
SME	Small- and medium-sized enterprises
TBMI	Temporary business model innovation



# 1 Introduction

## 1.1 Background and motivation

In 2018, Apple became the first company ever to reach a company valuation of one trillion US dollars. Today the company is worth more than \$2 trillion<sup>1</sup>. This incredible success is not only a result of product innovation or pure luck. It is built on the foundation of a solid change in Apple's business model (BM) that began at the beginning of the 2000s (Johnson, Christensen, & Kagermann, 2008; Porter, 2008). At the turn of the millennium, technology experienced groundbreaking change. Although the "dot com" crisis drove some technology firms into bankruptcy, some of them survived, from which innovative ideas began to emerge. In 2001, Apple presented its first iPod. Along with this product innovation, the business model innovation (BMI) of iTunes was born in 2003. This new BM uniquely combined the iPod hardware, its software, and a new service to download music for access anytime, anywhere (Johnson et al., 2008). The company had set a foundation for the upcoming years, creating a platform allowing historic growth and revenue. Perhaps more importantly, the company had changed its BM from hardware and software sales, emerging to operate within and lead a completely new market of selling music; it was the first ever pay-as-you-go music provider (David J. Teece, 2010).

Nespresso is one of Nestlé's most successful products. Its success is accomplished through a BMI based on the razor-razorblade revenue model (Matzler, Bailom, von den Eichen, & Kohler, 2013). The razor-blade system was created by Gillette at the beginning of the 20<sup>th</sup> century. Gillette started to give away cheap razors to the US army. From then on, all of these new users had to buy Gillette blade replacements, driving the company's sales as a result. Nespresso uses this systemic BM in their market, selling coffee machines at low prices to in turn sell expensive coffee capsules. Their BM has opened a market for people who do not want to purchase expensive coffee machines, and enjoy a variety of different flavors for the coffee they brew at home (Matzler et al., 2013; David J. Teece, 2010).

Smart BMIs have helped companies achieve growth and success in recent years. Uber is a publicly-listed ride-hailing company, even though it does not own vehicles; it has introduced an entirely new BM to an established market. A similar model is used by Airbnb that also does not own any hotels or rooms, but instead provides a platform for private room rental. And it's not only platforms that generate new BMs. Other companies have changed their BMs as well. BMI is a phenomenon an increasing amount of companies are working on and with. These companies hope for more stability, better sales or growth and, last but not least, survival in competitive environments via a BMI (Kraus, Clauss, et al., 2020).

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<sup>1</sup> BBC; The Guardian; Forbes



BMI is a young research field which has received attention only in recent years from practitioners and researchers (Clauss, 2017), with an increasing amount of literature reviews (Filser, Kraus, Breier, Nenova, & Puumalainen, 2020; Foss & Saebi, 2017; Kraus, Filser, Puumalainen, Kailer, & Thurner, 2020; Schneider & Spieth, 2013; B. Wirtz & Daiser, 2018) starting to synthesize the findings of the last two decades of BMI research. These look at numerous facets of BMI, including among other things BMI antecedents (e.g. Bock, Opsahl, George, & Gann, 2012; Clauss, Abebe, Tangpong, & Hock, 2019; Kraus, Clauss, et al., 2020; Y. Lee, Shin, & Park, 2012; Pateli & Giaglis, 2005), the processes of BMI (e.g. Johnson, 2010; Mitchell & Coles, 2004; B. Wirtz & Daiser, 2018), and its outcomes (e.g. Aspara, Hietanen, & Tikkanen, 2010; Clauss et al., 2019; Evans et al., 2017). These sub-areas of BMI will be considered in greater detail below.

The essential foundation of BMI is the BM itself, which is at the heart of the innovation activity of companies seeking to implement BMI. Today's definitions are close to the definition of Teece (2010) who defines a BM as the "design or architecture of the value creation, delivery and capture mechanisms" of a business (p. 172). Today, BM is often viewed from a strategic management perspective (B. W. Wirtz, Pistoia, Ullrich, & Göttel, 2016), with researchers clearly starting to work on the conceptualization of BM theory to differentiate strategy from BM (Casadesus-Masanell & Ricart, 2010). Specifically speaking, a strategy is based on a vision and a position against/among competitors and the business environment, while a BM can be seen as a centerpiece of planning for the future and a company's daily business (B. W. Wirtz et al., 2016). BM is a concept to achieve the visions and aims that a strategy targets, meaning that BM is the operationalization of a firm's strategy. This connects strategy and BM with one another long-term; changes here occur only tactically, and on smaller occasions (Casadesus-Masanell & Ricart, 2010).

BM literature is comprised of three different streams of research (Wirtz et al. 2016). In the first stream, BM is used to classify companies. It was used to delineate e-businesses from traditional ones, most notably at the beginning of the 21<sup>st</sup> century (Amit and Zott 2001). The effects of BMs on firm performance are investigated in the second research stream. BMs have a significant effect on firm performance, with some performing better than others (Malone et al. 2006). The third major research stream deals with the possibility of innovating BMs (Zott et al. 2011). This was founded in 2003 when Mitchell and Coles (2003) dealt with this topic. Despite these research streams, there still remain unanswered questions around BMI. Although BM research has created a vast amount of literature, the BMI literature body remains limited.

Several publications deal with the definition of BMI including various systematic literature reviews (SLR) (Geissdoerfer et al. 2018; Foss and Saebi 2017). Foss and Saebi (2017), one of these SLRs, describe BM from a complexity theory point of view as a complex system. Their definition focuses on the elements of a BM that can be innovated. For them, a BMI involves "designed, novel, and nontrivial changes to the key elements of a firm's business model and/or the architecture linking these elements"

(p. 216). Here they provide one of the most commonly-used definitions of a BMI seen in recent years; it will also serve as the foundation for use in this doctoral thesis.

Innovation itself is widely acknowledged in theory and practice as having positive effects on economies and firm performance. It can especially provide firms with the opportunity to survive (Cooper & Kleinschmidt, 2000). Company survival receives increased attention most notably during times of uncertainty and crisis. A crisis is defined as an unexpected change that threatens the future of a company (Greiner, 1989; Witte, 1981). Although the probability of a crisis is typically low, companies are often unprepared when they occur. Moreover, the time to make the right decisions during a crisis is limited, with large amounts of stakeholders sometimes involved to cope with it (Elliott & McGuinness, 2002; Hills, 1998; Kraus, Clauss, et al., 2020; Pearson & Clair, 1998).

Almost no situation in recent history is better described in this manner than the COVID-19 pandemic (Kraus, Clauss, et al., 2020). The pandemic continues as of this writing, with 464,724,503 cases and 6,063,104 deaths as of March of 2022<sup>2</sup>. The restrictions seen with past pandemics such as SARS, Ebola, or avian flu have paled in comparison to those implemented for COVID-19. Countries around the world have enacted strict regulations limiting and impacting how people interact, which has had very pronounced effects on companies. While companies do in fact prepare for any number of eventualities, there were few who expected a global health crisis of this magnitude. But in spite of its setbacks and problems, there have also been opportunities. This crisis was a chance to study corporate behavior during a crisis, as well as for companies to renew themselves.

The literature shows on the one hand that BMI is initialized by environmental changes that may affect businesses (De Reuver, Bouwman, & Haaker, 2013). On the other hand, innovation is generally a strategy enabling companies to survive long-term (Cooper & Kleinschmidt, 2000). On these grounds, and based on an analysis of crisis management literature, Wenzel et al. (2021) explain four general strategies for companies to cope with a crisis: *retrenchment*, *persevering*, *innovating*, or *exit*. This dissertation concentrates on the core of these innovation responses, analyzing how they can be used by companies, and what operative solutions they build on to overcome crises. To accomplish this, different populations were investigated from different perspectives to identify the strengths of BMI as a crisis response.

While most companies suffer during a global crisis, some also profit, which has been on impressive display during the COVID-19 pandemic. While airlines and travel agents have experienced all-time business lows, companies offering digital meeting or contact-free shopping have thrived to new heights. This thesis will address both sides of this issue, with a major focus on small- and medium-sized companies (SME) and family

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<sup>2</sup> Johns Hopkins University established the Johns Hopkins Coronavirus Resource Center very early in the pandemic. Its figures may vary from other sources. <https://coronavirus.jhu.edu/map.html> visited on March 17<sup>th</sup>, 2022.

firms that have used BMI as a response to the pandemic. SMEs do in fact face some larger problems than other companies during crises. Although their liability of smallness has in some cases seen the pandemic hit them harder than others (Eggers, 2020), their organizational structure and flexibility have also allowed them to react to the crisis more flexibly (Beliaeva, Shirokova, Wales, & Gafforova, 2020). They can respond to opportunities quicker than large multinationals. On the other hand, their liability of smallness does not allow them to follow a pure long-term retrenchment or perseveration strategy (Wenzel et al., 2021). Family firms are also viewed from a special perspective during a crisis due to their family shareholders and management. And although family firms received an enormous amount of attention for their innovative behavior during the COVID-19 crisis (Kraus, Clauss, et al., 2020), family firms nevertheless are more vulnerable than others because of their family centeredness (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). Similar to SMEs, they have less control over resources, with a crisis not only affecting the company, but the family itself, creating a very particular environment of interaction (Kim & Vonortas, 2014; Runyan, 2006; Sirmon & Hitt, 2003). Family firms are known for their long-term views and shareholder perspectives, providing them with a good foundation for overcoming crises (Lins, Volpin, & Wagner, 2013). In sum, they are optimal candidates for responding to crises via an innovation strategy.

The combination of a globalized world with today's technological advances, and a worldwide pandemic presents a new opportunity for research. The COVID-19 pandemic has eclipsed the 2008 financial crisis in terms of demand and supply shock (del Rio-Chanona, Mealy, Pichler, Lafond, & Farmer, 2020), making it a unique opportunity to study corporate BMI as a crisis response. Crisis management research is currently limited in its capacities to answer all questions arising with this topic. Research on the intersection of crisis management and BMI in particular can help companies increase their future resilience and prepare for further crises. The valuable benefits of BMI (performance effects, more strategic agility, long-term competitive advantage) could also help companies reduce the damaging effects of crises. Research on BMI has always been of interest for scholars and practitioners (Clauss, 2017; Pohle & Chapman, 2006; Zott, Amit, & Massa, 2011), and this intersectional research may help achieve proactive and innovative crisis responses via BMI.

Some examples of BMI during the pandemic will provide an understanding of the innovation achieved by companies to overcome the COVID-19 crisis. The companies described in the following were part of the studies that comprise the foundation of this thesis. A BMI often pursued during the pandemic has been the change from classic dine-in restaurants to take-away or delivery service. Some even started to provide meal boxes for dinners or special occasions. Another hospitality company started to distribute common goods like toilet paper, a short-term, reactive opportunity that altered processes and customer groups by creating a completely different value. While the hospitality industry was one of the hardest hit in the pandemic, they too implemented BMIs. Other companies began producing masks and disinfectants to keep up with growing or spiking demand. While these are short-term opportunities, companies furthermore also started to

think about long-term BMI changes to adapt to environmental changes, deeply analyzing their overall business approaches and how their BMs will be impacted by world trends following COVID-19.

In general, the aim of this thesis is to synthesize the existing literature on BMI and answer the research questions stemming from the empirical publications. This thesis will provide an overview of how companies use BMI as a strategy to respond to a crisis. It will highlight how a crisis triggers a BMI, shedding light on enhancing and inhibiting factors while investigating short- and long-term response strategies. Moreover, this thesis will show how and why companies pursue BMI in times of crisis, and what temporary BMIs (TBMi) are. These issues together will answer the main research questions clarified in Chapter 1.3.

## 1.2 Research gaps

This thesis has so far made clear the unique opportunity arising from the COVID-19 pandemic to investigate the relationship between BMI and crisis management. This intersection is one that basically did not exist prior to the pandemic, nor was it ever a specific BMI research topic. The brief insights into the literature have revealed the first connections between the individual topics. Above all, SMEs and family firms can benefit from successful crisis strategies that go beyond persevering and retrenchment. Their special family situation and its influence on their company, or SMEs' liability of smallness, are decisive for the successful innovation strategies that are necessary to ensure long-term survival, most notably during a crisis.

Bibliometrics is a widely-used review methodology in management research (Kraus, Breier, & Dasí-Rodríguez, 2020). It provides a general analysis of existing literature clusters, and explains what has been researched to date. It can be combined with trend analysis, representing future research trends. This review form is new in BMI, and allows new research opportunities to be highlighted. The general research question of this thesis was built on the opportunity arising with the COVID-19 pandemic; an initial glance at the bibliometric analysis and its underlying articles revealed missing research at the intersection of BMI and crisis management. The reasons for conducting bibliometrics are manifold. While SLRs are common in BMI research, and several researchers and journals have published SLRs on BMI (e.g. Evans et al., 2017; Foss & Saebi, 2017; Schneider & Spieth, 2013; Sorescu, 2017), there is no bibliometric available on BMI literature. This methodology allows new insights while contributing to the existing body of literature in an innovative way, most notably in light of how review methodologies to date have only used traditional reviews, SLRs, and meta-analysis (e.g. Lopez, Bastein, & Tukker, 2019). A bibliometric analysis can furthermore enhance the field, provide an overview of the most important foundational literature, and highlight upcoming trends in BMI research. It sets the foundation for exploration of the research gaps discussed below.

By the end of 2019, a new virus had been identified that would lead to the most significant global crisis in memory, and infect and kill millions. Government restrictions shut down companies and entire industries for extended periods. How would they respond? Wenzel et al., (2021) provided a first conceptual foundation regarding how these companies would handle the crisis, developing four different crisis response strategies: *retrenchment*, *persevering*, *innovation*, and *exit*. Their work was purely conceptual, requiring an empirical analysis as a result, and which would help companies better respond to crises. The more innovative responses here appear to be the most interesting, as these tend to be more proactive, and can also help companies improve during a crisis (Beliaeva et al., 2020). From this perspective, family firms in particular become an interesting research subject. Most companies in the world are family firms. Consistent with their definition, nearly 90% of them can be classified as such (e.g., Xi, Kraus, Filser, & Kellermanns, 2015). These companies therefore play an important role in any economy, employing countless people (Filser, Brem, Gast, Kraus, & Calabrò, 2016). Family firm specificities however make them especially vulnerable: autonomous and family-oriented (Gómez-Mejía et al., 2007; J. Lee, 2006), financially constrained (Kim & Vonortas, 2014; Sirmon & Hitt, 2003), and emotionally tied to their firm (Gomez-Mejia, Cruz, Berrone, & De Castro, 2011). Combined with the never-before-seen effects of a crisis, this makes them a significant research population with very unique characteristics; they comprise an important research opportunity that strongly contributes to the overall research question of this dissertation.

Kraus et al. (2020) empirically enhanced the crisis response framework Wenzel et al., (2021) proposed. Their more detailed approach showed that short- and long-term BMI is an actively-used strategy for responding to a crisis. While Kraus et al. (2020) focused on family firms and did not specifically analyze any industry groups, they in fact remain a potential opportunity for further research. For instance, almost no sector was comparably affected by the crisis more than the hospitality and tourism sectors. Governmentally-imposed contact restrictions and worldwide border closures led to a complete shutdown of the companies in these industries. These in turn had to actively engage in innovation to come up with new revenue streams to generate income. To do this, companies often followed short-term innovative BMI solutions (Kraus, Clauss, et al., 2020). While innovation literature in hospitality management is limited (e.g. Alonso-Almeida & Bremser, 2013; Chen & Elston, 2013; Pikkemaat, Peters, & Chan, 2018), specific BMI literature is nearly non-existent in this field. These three factors – the hospitality industry as the hardest hit during crisis; an increasing number of BMIs in the industry; and a limited amount of research on BMI – make this a research field requiring analysis to obtain a better understanding of BMI during crises in the hospitality industry, while simultaneously investigating BMI responses in general.

The COVID-19 pandemic rapidly increased the amount of literature on crisis management, with special issues on crisis management strategies in several journals including *R&D Management*, *Entrepreneurship: Theory and Practice*, *Journal of Small Business Management* and several others. All of these journals strove to answer the questions the pandemic created. These often included strategies to cope with crises,

such as innovative responses (Kraus, Clauss, et al., 2020). Articles during the course of the pandemic showed that these early responses were a proactive approach to finding answers (Wenzel et al., 2021). And while the general expectation for innovation has always been that it is for long-term purposes, research during the pandemic was able to highlight how short-term innovative behavior was possible. Kraus et al. (2020) explained for instance that BMI can be done temporarily as a short-term crisis response strategy. This is a rather new and special BMI finding, as the general literature otherwise has suggested BMs as having a long-term perspective that cannot simply change beyond strategy (Casadesus-Masanell & Ricart, 2010). This means that more research on temporary business model adjustments will be necessary to understand how and why these short-term BM changes are done and what effects they have. A special focus during the crisis was given to SMEs and their extreme vulnerability (Shepherd, 2003). SMEs only have limited access to resources due to their liability of smallness, which is especially hard for them during a crisis (Eggers, 2020). Pure retrenchment or persevering strategies (see Wenzel et al., 2021) are not a viable solution for SMEs once their revenue streams dry up. With a focus on only one BM, this situation is common among SMEs (Pal, Andersson, & Torstensson, 2012). Existing crisis management literature on SMEs furthermore highlights their strengths during crises, including their young age (Simón-Moya, Revuelto-Taboada, & Ribeiro-Soriano, 2016), market orientation (Petzold, Barbat, Pons, & Zins, 2019) and leadership (Giannacourou, Kantaraki, & Christopoulou, 2015). Moreover, SMEs are known for their flexibility (Dahles & Susilowati, 2015), innovative approaches, entrepreneurial orientation (Eggers & Kraus, 2011; Vargo & Seville, 2011), and their opportunity-driven approach during crises (Beliaeva et al., 2020). SMEs form a solid population for understanding TBMI. While they are often hit hard by a crisis, they remain innovative and flexible, attributes that most likely are necessary for engaging in the short-term innovation of a BM.

### 1.3 Research questions

Although research on BMI has increased in recent years, it is still a relatively new domain with a limited amount of high-quality articles. Most of the research that has been done on BMI to date is on a very high level, or very specific and driven by individual cases with limited research contributions. Usable suggestions for practice are often missing, with results that are too abstract, or only single-case driven without a strong integration into existing literature and theory. A rough overview of existing literature highlights how BMI is still not considered a solution during crisis management. In other words, the intersection between crisis management and BMI is clearly underdeveloped. However, because the COVID-19 created an environment that led companies to engage in innovation and BMI to respond to the crisis, this has been a perfect situation for investigating this relationship closer. This thesis therefore answers the research question:

*How can companies use BMI to their advantage during a crisis?*

The start of the COVID-19 crisis, and the bibliometric analysis of BMI literature published during the course of this thesis formed the foundation of this research question. While literature on crisis management is manifold, it generally has not integrated BMI as a potential solution. However, innovation in general is known to be a crisis response, suggesting that researchers should deal with BMI in detail as a response strategy. This dissertation is built on the four individual publications explained above that lay the foundation for answering this research question.

BMI's significance is increasing as the field continues its growth, with an increasing number of publications every year. Although there is already a large number of SLRs, to the knowledge of the author, no BMI bibliometric analysis has been conducted and published in a high-quality journal, in spite of the fact that this would allow the identification of core literature and emerging trends in this research domain. Publication I addresses this lack of understanding, analyzing the existing literature by describing the core publications and emerging trends. The following question emerges from it:

Sub-question 1: *What is the core literature of BMI, and what are the emerging trends in the BMI domain?*

Publication I highlighted the core BMI literature and trends. These results did not display a focus on the intersection of crisis management and BMI, and in turn motivated the overall direction of this dissertation, creating the foundation for Publication II. Publication II is based on a conceptual article by Wenzel et al., (2021) who explain how companies can respond to crises. It addresses this issue from an empirical perspective, and investigates how companies react during a crisis. Based on this, the paper empirically analyses the strategies of retrenchment, persevering, and innovation to answer the question below. It furthermore contributes to the overall question by highlighting the proactive role of BMI during crises in general, explaining a new form of BMI: *temporary business model adjustment*.

Sub-question 2: *How and by what means are family firms responding to the COVID-19 crisis?*

Publication II highlighted the importance of BMI from short- and long-term perspectives by showing that companies engage in two different forms of innovative behavior during a crisis. Both can be summarized using BMI: short-term *temporary business model adjustment* and long-term BMI (Kraus, Clauss, et al., 2020). Using this foundation, Publication III analyzes how BMI supports hospitality firms to overcome a crisis. As this industry has been severely impacted during the COVID-19 pandemic, it is especially interesting to investigate its crisis responses. The publication analyzes the supporting and preventing factors for a BMI in this sector, explaining how important external people (*stammgasts*<sup>3</sup> in German, or “regulars”) in the hospitality industry are. This publication contributes to the main question by explaining the important BMI

<sup>3</sup> A *stammgast* is a frequent guest on a first-name basis with staff and managers. Their personal relationship to the hospitality firm goes beyond pure consumption (Breier et al., 2021).

factors during crises in the hospitality industry, and highlights the importance of BMI in general.

Sub-questions 3: *Can BMI be used for overcoming the COVID-19 crisis in the hospitality industry?*

*What are the drivers of BMI in the hospitality industry during the COVID-19 crisis, and what is the role of stammgasts?*

The findings in Publication II created an empirical foundation for *temporary business model adjustment*. This finding served as the foundation for Publication IV that further investigated this specific and new form of BMI. It created a solid theoretical foundation for TBMI and empirically established further insights. This publication concentrates on SMEs that are forced to engage in proactive crisis responses, and therefore are more likely to engage in TBMI. This extended the existing theory, strongly contributing to the overall research question by showing that there is more than just traditional BMI, and that TBMI in particular can have positive, long-term effects on companies during a crisis.

Sub-question 4: *How do SMEs pursue temporary BMI in response to COVID-19, and what effects does this have?*

## 1.4 Overview and structure of the dissertation

This thesis is structured into two general sections. The first analyzes the principal research question, while the second section shows the four publications. Section one starts with the motivation for this research, an overview of its background, as well as practical BMI examples. Moreover, it provides insight into the research gap, deriving the necessary research questions from it. This section further analyzes the theoretical foundation based on an analysis of BMI and crisis management. This is followed by an overview of the methodologies used in each publication. Insights into the results of all single publications are also provided, with the general discussion section delivering the core contributions of this dissertation. This is followed by a conclusion that gives insights into the discussions, synthesizing the key contributions of the empirical articles.

The second section deals with the underlying publications of this thesis. These are the foundational research pieces used to answer its main research question. An overview can be found in Table 2.



**Table 2.** Summary of Section I and the publications in Section II

<b>Section I</b>	
Title	Research Question
Business Model Innovation - Crisis response and detailed examination	<i>How can companies use BMI to their advantage during crises?</i>
<b>Section II</b>	
Title	Research Question
<i>Publication I</i> Business Model Innovation: Identifying Foundations and Trajectories	<i>What is the core literature of BMI, and what are the emerging trends in the BMI domain?</i>
<i>Publication II</i> The economics of COVID-19: Initial empirical evidence on how family firms in five European countries cope with the corona crisis	<i>How and by what means are family firms responding to the COVID-19 crisis?</i>
<i>Publication III</i> The role of business model innovation in the hospitality industry during the COVID-19 crisis	<i>Can BMI be used to overcome the COVID-19 crisis in the hospitality industry?</i> <i>What are/were the drivers of BMI in the hospitality industry during the COVID-19 crisis, and what is the role of stammgasts?</i>
<i>Publication IV</i> Temporary business model innovation – SMEs' innovation response to the COVID-19 crisis	<i>How do SMEs pursue temporary BMI in response to COVID-19, and what effects does this have?</i>

## 1.5 Key definitions and concepts

**Business model** – A BM is based on the individual configurations of value proposition, value creation, and value capture (Clauss, 2017; Foss & Saebi, 2017).

**Value proposition** – The portfolio of all products or services a company offers, and the channels it uses to get to the customer. The value proposition takes environmental changes into account and concentrates on new opportunities (Johnson et al., 2008; Morris, Schindehutte, & Allen, 2005).

**Value creation** – Explains the processes and resources necessary to create the products and services offered to the customer. This dimension specifically deals with the competencies a company has to create value along the value chain (Achtenhagen, Melin, & Naldi, 2013).

**Value capture** – Explains how money is earned with the products and services a company offers to the customer, and how costs are distributed. This dimension can be shaped through new revenue logics or cost reductions (Clauss, 2017).

**Business model innovation** – This is the “designed, nontrivial changes to the key elements of a firm’s BM and/or the architecture linking these elements” (Foss & Saebi, 2017, p. 207).

**Temporary business model innovation** – These are BMIs that are rapidly implemented into the firm during a crisis for short-term reasons with potential long-term effects. These BMIs are based on core competencies, and can therefore be implemented within a short period of time. They do not have to be completely aligned with the company’s strategy from square one (Clauss, Breier, Kraus, Durst, & Mahto, 2021).

**Organizational crisis** – This is a situation Kraus et al. (2020) explain based on existing theory through its minor probability of occurrence, with large effects and the necessity for rapid action (Hills, 1998; Pearson & Clair, 1998). In this situation, the further survival of the company is endangered, with many stakeholders being influenced. It furthermore occurs among unforeseen, complex changes in the general system (Elliott & McGuinness, 2002; Greiner, 1989; Witte, 1981).

**Small- and medium sized organizations** – Are companies with not more than 250 employees (based on the European Commission, 2005).

**Family firms** – Are companies that are “governed and/or managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled by members of the same family or a small number of families in a manner that is potentially sustainable across generations of the family or families” (Chua, Chrisman, & Sharma, 1999, p. 25).



## 2 Literature review

This chapter summarizes the existing literature on BMs as a foundation for BMI. A special emphasis is given to the literature on BMI in general, with a focus on the triggers, antecedents, and effects of BMI. As this dissertation thesis focuses on the intersection of BMI and crisis management, one part of the literature review is dedicated to the existing knowledge there. The position of this dissertation within the wider research field will also be specified.

### 2.1 Business model

BM s have received increased attention in recent years because of their strong connection to sustainable competitive advantage (Johnson et al., 2008). The origin of the term is based on a publication by Bellman et al. (1957); this has been used to mean different things over time (Osterwalder, Pigneur, & Tucci, 2005). At the beginning of 2000s, the term and concept of BM was frequently used and criticized as a result. This criticism emerged into a starting point for working on the conceptualization of BM s, with a consistent definition of BM starting to flourish in recent years (B. W. Wirtz et al., 2016). At the beginning of this phase, Magretta (2002) defined BM s as the “stories that explain how enterprises work” (p. 87). This definition is important for the beginning of BM research, and is the foundation of various case studies that loosely describe BM s (Eurich, Weiblen, & Breitenmoser, 2014). A different explanation of BM s deals with taxonomies, with BM s described via criteria that differentiate various BM s (Eurich et al., 2014).

Today BM s are defined based on a component-based definition (Eurich et al., 2014; Foss & Saebi, 2017; B. W. Wirtz et al., 2016). While researchers for years were unable to reach an agreement on the number of BM components, today three core elements of BM are well-established: *value proposition*, *value creation*, and *value capture* (Clauss, 2017; Clauss et al., 2019; Foss & Saebi, 2017; Morris et al., 2005; Spieth, Schneckenberg, & Ricart, 2014). This common approach developed out of several definitions taking into account four components (Johnson et al., 2008), or up to 20 (Morris et al., 2005; Shafer, Smith, & Linder, 2005). Today common ground in BM research agrees that the individual combination of the three core elements define the overall logic an organization follows to create revenue (Breier et al., 2020; Hock-Doeppen, Clauss, Kraus, & Cheng, 2021; Martins, Rindova, & Greenbaum, 2015; David J. Teece, 2010).

	Value Proposition	Value Creation	Value Capture
<b>Description</b>	Is the portfolio of all products or services a company offers and of all channels it uses to get to the customer. The value proposition takes environmental changes into account and concentrates on new opportunities.	Explains the processes and resources that are necessary to create the products and services that are offered to the customer. This dimension specifically deals with the competencies a company has to create value along the value chain.	Explains how money is earned with the products and services a company offers to the customer and how costs are distributed. This dimension can be shaped through new revenue logics or cost reductions
<b>Company perspective</b>	What are the products and services I want to offer?	What do I need to know and have to create my products and services?	How do I make money with my products and services and what costs do I have?

**Figure 1:** Overview of the BM core elements

*Value proposition* describes the products and service portfolio a company wants to offer. It also deals with the delivery of a service or product, e.g. the channels used for delivery (Clauss, 2017; Morris et al., 2005; Osterwalder & Pigneur, 2010). The value proposition of a company is built around changes in the environment that bring up new market opportunities and the potential to fill these needs with new products and services (Weber & Tarba, 2014; Bucherer, Eisert, & Gassmann, 2012). Clauss et al. (2017) state that strategic sensitivity is necessary to realize small changes in the market, and address these changes through a change in the value proposition. Because value proposition directly deals with the needs a market emphasizes, it is connected to firm performance (Clauss et al., 2019; Han, Kim, & Srivastava, 1998). Careful analysis of the value proposition leads a company to know and understand what customers really want. It is the foundation for changes in a product or service portfolio.

*Value creation* explains how value is generated in the first place (Clauss, 2017). It deals with the operations and resources that are the foundation of the products or services offered to customers (Johnson et al., 2008). Matzler et al. (2013) explain the core competencies of a firm as the driving factors behind value creation. They define how value is created throughout the value chain based on the resources and competencies a company has internally and through external partners (Achtenhagen et al., 2013). Clauss (2017) highlights that value creation can be achieved through the new generation of capabilities, new technology or equipment, new processes, or through new partnerships. All of these elements can help a company further enhance its value creation by being able to establish new forms of value creation. Spieth, Schneckenberg and Ricart (2014) follow an open innovation approach in BMI (Chesbrough & Rosenbloom, 2002; Chesbrough & Bogers, 2014), highlighting that clients can contribute to value creation. However, a BM is not only defined by value creation, but by value capture as well. The authors do not see how clients can contribute to innovation via this element.

*Value capture* deals with how revenue is created (Morris et al., 2005). It defines the revenue model and logic that help a company achieve sustainable income and long-term performance as a result (Baden-Fuller & Haefliger, 2013; David J. Teece, 2010). Value

capture essentially takes revenues and costs into account, and finds a balance between both of them (Clauss, 2017). On the one hand, it tries to improve new revenue streams and concentrate on profitable streams more than others (R. H. Amit & Zott, 2010). On the other hand, this dimension attempts to cut costs and implement more effective solutions (Heij, Volberda, & Van den Bosch, 2014).

While the term BM was initially mostly used in technology orientation, today it is mostly applied from a strategic perspective (B. W. Wirtz et al., 2016). Its close relationship to strategy raises the question of where the differences among strategy and BM are. Casadesus-Masanell and Ricart (2010) explained BM as being a result of strategy, creating the underlying assumption that BMs follow a long-term strategic perspective. The authors further explain that through tactics, BMs can be adapted if necessary, although these adaptations need to happen within a given space, and cannot work diametrically to the strategy. The literature suggests that major environmental changes force companies first to adapt their strategy and then create BMs based on the new strategy. DaSilva and Trkman (2014) further enhance this perspective by explaining that, based on a strategy, a company creates dynamic capabilities which are the foundation of a BM. From their perspective, the strategy of a firm is the long-term approach of a potential future the company aims towards. The BM also explains the current situation of a company and how revenues are created today. Therefore, (short-term) BMs are the result of dynamic capabilities (mid-term), which are based on the (long-term) strategy (DaSilva & Trkman, 2014).

## 2.2 Business model innovation

*“BMI is the designed, novel, nontrivial changes to the key elements of a firm’s BM and/or the architecture linking these elements”*

*Foss and Saebi (2017, p. 201)*

Foss and Saebi (2017) proposed a definition of BMI that is built on the elements of a BM (value proposition, value creation, and value capture) and their links to one another. This definition can be built based on the *theory of the business* (Drucker, 1994) that relies on the three assumptions of a company’s environment, its mission, and assumptions regarding core competencies. On basis of this theory, a change in one of the assumptions would require a change to the BM, and the BMI as a result. This is often investigated by researchers in the instance of environmental changes that lead to BMI in companies (Clauss et al., 2019; De Reuver et al., 2013; Y. Lee et al., 2012; B. W. Wirtz, Schilke, & Ullrich, 2010). Here, changes in the overall assumptions that define business logic further lead to a change in the BM to address these changes, and adapt a company to their new environmental situation. This definition includes the fact that a BMI needs the consent of top management. The definition excludes random changes, and a BMI is driven by adaptations of the overall strategy. Foss and Saebi (2017) follow a complexity theory approach to create a foundation for their definition. From this perspective, a BM is a complex system (see Fleming, 2001; Levinthal, 1997;

Simon, 1991) defined through elements that interact with each other in a non-trivial way. These parts are the BM elements and their individual configurations. This is often seen in a system characterized by further subsystems. We can thus see a BM as a system that is shaped by the subsystems of value capture, value delivery, and their mechanisms (Foss & Saebi, 2017). This is further supported by authors that view BMI from the perspective of network theory (see Eurich et al., 2014). In this case, the BM is part of a network and embedded into its relations. Steiner (2009) created a foundation for the connection of innovation from a product and process perspective into complexity and system theory. Here a BMI is the effective change of a BM based on changes in the elements or their relationships. These changes are again driven by a change in the three assumptions of the theory of the business.

Researchers continue to discuss the number of components a BM needs to be called a BMI. While some authors claim that the adaptation of one component is enough (R. Amit & Zott, 2012; Bock et al., 2012; Santos, Spector, & Van der Heyden, 2009), other authors state that one or more components need to be adopted. Moreover, there are researchers that expect two or more parts of the BM to be part of an innovation (Lindgardt, Reeves, Stalk, & Deimler, 2009). Of note here however is that these articles were written prior to the broad consensus that BM only consists of three elements. Other researchers see BMI on a continuum, differentiating it based on the novelty of the innovation, the number of elements that change, and their relationships (Velamuri, Bansemir, Neyer, & Möslin, 2013; Yunus, Moingeon, & Lehmann-Ortega, 2010).

Based on this, Foss and Saebi (2017) defined their BMI typology that differentiates BMIs based on their scope (modular or architectural) and novelty (new to firm, new to industry). For this typology, they built upon Schumpeter (1911) to explain the different dimensions of an innovation. So looking at the BMI from this perspective, it can be separated into incremental and radical innovations (Foss and Saebi 2017), depending on the necessary adaptation to the new assumptions. The authors here created four different permutations of their typology: *evolutionary BMI* (modular/new to firm), *adaptive BMI* (architectural/new to firm), *focused BMI* (modular/new to industry), and *complex BMI* (architectural/new to industry). They point out that the antecedents of these different forms of BMI may be different. In their conceptualization, evolutionary BMI are smaller changes to single components of a BMI that merely occur over time, and are more incremental. Adaptive BMI is driven by architectural changes, which the authors often associate with environmental changes, i.e. if competitors have already made changes to their BM, an adaptive BMI will probably be new to the firm, but already known in the industry. With a focused BMI, a company proactively changes or brings a new BM into an industry. A focused BMI may only change single components, while a complex BMI completely restructures an existing BMI through architectural changes in a way the industry did not previously know.

### 2.2.1 Triggers and antecedents of BMI

This section deals with the prerequisites that lead to BMI, which can be differentiated into internal and external factors. From an external perspective, all changes to a company's environment can trigger a BMI, as these changes affect the overall assumptions a company has. New BMI is often brought into industries by new industry entrants (De Reuver et al., 2013; Robertson, 2017). This change in the competitive environment leads other firms in the market to also change or adapt their BM. Along with the competition, the ecosystem with other partners also drives BMI. Robertson (2017) explains this in the context of hardware firms that set the ecosystem for software firms to create new BMs. The coopetition and knowledge exchange here further enhance the value creation dimension (Dyer & Singh, 1998). New solutions in hardware also allow the creation of new value capture elements, such as NFC solutions or mobile wallets. Another change can be driven through general trends like globalization, which is another important driver of BMI (Y. Lee et al., 2012). While new entrants and globalization are individual triggers of BMI, they also enhance each other. This means that it is easier in a globalized world to enter into new geographic markets. An important trend along with globalization has been the rise of new technologies. Opportunities through technological changes, including new information and communication technologies, and behavioral changes of clients are drivers as well (Pateli & Giaglis, 2005; B. W. Wirtz et al., 2010). These changes in clients may vary across generations (Hershatte & Epstein, 2010), or as the result of unexpected situations like a crisis (Clark, Davila, Regis, & Kraus, 2020). Moreover, BMI can be initiated through an open innovation approach where clients suggest element innovations (Chesbrough, 2020a; Spieth et al., 2014) or crowdsourcing (Kohler, 2015). While BM is described as being stable during successful times, it is important to realize that environmental changes can lead to a unsustainable BM (Doz & Kosonen, 2010). The ability to react or proactively act on trends and changes is an important factor here; this strategic agility can help firms to anticipate changes and adapt BM to upcoming trends (Sambamurthy, Bharadwaj, & Grover, 2003; Sull, 2009).

Along with external triggers, company-internal factors are required for successful BMI. Strategic agility for example is developed by internal factors, and is a known BMI antecedent (Arbussa, Bikfalvi, & Marquès, 2017; Chesbrough, 2010; Clauss et al., 2019). A firm's capabilities are generally a result of BMI. Strong market orientation for example helps identify the potential values a customer is looking for (Robertson, 2017). Entrepreneurial capabilities are also necessary to drive innovation and be proactive towards opportunities on the individual (Kraus, Breier, Jones, & Hughes, 2019) and company levels (Covin & Slevin, 1989). The combination of both market orientation and entrepreneurial orientation is described in entrepreneurial marketing in general (Eggers, Niemand, Kraus, & Breier, 2020), which combines the necessary management capabilities to engage in BMI. Here, management and its ability to analyze situations are important BMI prerequisites. As mentioned in the definition, a BMI is a designed process that can only be started with the knowledge and consent of a company's top management (Foss and Saebi 2017). However, it's essential to keep in mind that the



individual employees are also potential developers of ideas and innovations (Björk, 2012; Eppler, Hoffmann, & Bresciani, 2011). Foss and Saebi (2017) claim that internal BMI antecedents have yet to be sufficiently investigated. They support the dynamic capability literature (David J Teece, Pisano, & Shuen, 1997) and open innovation research (Chesbrough, 2010) as useful supports in developing these internal factors.

### 2.2.2 Effects of BMI

BMI effects and their outcomes are an important area of research, especially when it comes to the relationship among BMI and performance. This has been addressed in a majority of the literature (Foss & Saebi, 2017). However, it is not the only linkage that is relevant for research. This chapter deals with the effects BMI has on industries and firms, most notably firm performance and other factors that are shaped by BMI.

Maturing industries develop a similar understanding of how products and processes should be. This dominant logic shapes products and services (Prahalad & Bettis, 1986), further defining the opportunities mature firms in the industry can detect, and how they can influence managers in the process of value creation. Strong mental models lead key actors here towards action (Hodgkinson, 1997). The effects of BMI on mature industries are different than with new and upcoming industries, as these are more innovative and driven by change. Sabatier et al. (2012) analyzed the effect of BMI on the dominant logic of an industry. Their results suggest that new BMs in an industry affect their dominant logic. The industry entrance of a new BM further leads to BM adaptations by existing organizations (Casadesus-Masanell, 2010). So in mature industries, a new BM either developed by an incumbent firm or by a new entrant creates a wave of further imitation, bringing innovative behavior back into a mature industry. This indicates that BMI in a mature industry stimulates entrepreneurial orientation and the innovation capabilities found there.

From a firm-level view, one of the questions most asked is the effect of a variable on firm performance. This relationship has been investigated in several studies. Aspara et al. (2010) compared companies that innovated with others that replicate BMs, finding that the companies that created new BMs outperformed the replicating ones. However, companies that had both innovation and replication showed even stronger financial performance. For small firms, this effect was the other way around. Small firms that engage in BMI alone without replication perform better in terms of growth (Aspara et al., 2010). These results are further supported by Cucculelli and Bettinelli (2015) who identified how entrepreneurial companies perform better after a BMI over some time. Denicolai, Ramirez and Tidd (2014) conceptualized a building block of BMI on the basis of knowledge through internal and external resources. They showed that both resource types increase growth. Their study also explains one of the general problems in BMI: the lack of a validated construct to measure BMI requires the use of proxies that do not explicitly measure BMI. Clauss (2017) further enhanced BMI research with the creation of a validated measurement model for BMI. His research supported the call for more generalizable results that go beyond the case studies that simply investigate BMs

in different companies. More generalizable quantitative research with BMI is possible to further investigate the performance relationship.

Scholars have also highlighted the positive effect of BMI on the competitive advantage of a firm (Casadesus-Masanell & Zhu, 2013; Marc Sosna, Nelly Treviño-Rodríguez, & Velamuri, 2009). Research suggests that the effects of BMI provide more long-term value than pure product and process innovations, as they are harder to copy (Robertson, 2017). Foss and Saebi (2017) further point out several effects of BMI (cost reduction, profitability, innovativeness). They also mention that research articles are often not able to show the clear effects of BMI on these issues, explaining this on the basis of the various elements of BMI. BMI being a complex change in a system makes it hard to follow all of the consequences a change in BM generates.

### 2.2.3 Business model innovation and crisis management

Literature on the intersection of BMI and crisis management is rare, which is the foundation of the research gap of this thesis. The general patterns and antecedents that lead to BMI are changes that often occur during/because of a crisis. Moreover, the results of a BMI during normal, non-crisis times would also be valuable during a crisis. A foundation of the BMI and crisis management intersection is established in the following.

The external factors that foster a BMI (new technology, new competitor, changing customer needs) are changes in the direct environment of a company. Here, a company tries to react to these changes via internal adaptation. A crisis has very similar effects and leads to changes in the environment of a company (Clark et al., 2020; Ferguson et al., 2020). Put differently, the changes a crisis creates are a solid foundation for companies to engage in BMI as a response. Wenzel et al. (2021) pointed out that innovation in general is a crisis response strategy. These authors created a foundation for proactive innovation-driven crisis responses along with reactive strategies. This result is based on the work by other authors that highlighted how managers search for new solutions in uncertain times such as crises (Reymen et al., 2015). A key insight of their summary is that, especially in crises that last longer, persevering and retrenchment strategies may not be enough, meaning an innovative strategy needs to be followed (Wenzel et al., 2021). However, a change of processes in a firm that doesn't work on improving or changing its operations or its products will not solve the problems at these companies. The most effective solution for them is to engage in BMI and create new sources of income. Uçaktürk, Bekmezci and Uçaktürk (2011) published one of the rare articles on the intersection of BMI and crisis management, highlighting the necessity to innovate BMs after a crisis due to situations that are different in comparison to the time prior to a crisis.

Even more particular is the situation of BMI and crisis management in family firms and SMEs. Family firms tend not to respond to crises properly with increasing family ownership (Faghfour, Kraczy, Hack, & Kellermanns, 2015). However, their long-term

focus does in fact help families through crises (Miller & Le Breton-Miller, 2005) as they fight for their survival (Lins et al., 2013). This emotional attachment (Berrone, Cruz, & Gomez-Mejia, 2012) can influence their crisis responses (Arrondo-García, Fernández-Méndez, & Menéndez-Requejo, 2016). Due to their ownership structure, family firms face lower capital costs (Aronoff & Ward, 1995), which helps them secure liquidity during crises. Research further points out the importance of quick decision making during crises, noting how this can help companies act innovatively (Dowell, Shackell, & Stuart, 2011). In family firms, this quick response is secured through fewer formalities and family control (van Essen, Strike, Carney, & Sapp, 2015). Based on the possibility stemming from these rapid responses, family firms are capable of responding to a crisis through innovation and BMI.

SMEs are different. They are generally bound to their liability of smallness and a lack of resources (Aldrich & Auster, 1986). This constraint even increases during times of crisis, as their liquidity is smaller, and they only have limited access to credit (Eggers, 2020). SMEs as a result can typically endure only a limited time of pure perseverance or retrenchment, and at some point have to change to a more proactive approach. The entrepreneurial orientation of SMEs further supports their potential to respond with innovation to crises (Beliaeva et al., 2020). SMEs are also shaped by smaller hierarchies and a clear ownership structure, making them able to make decisions in uncertain times more quickly, allowing them to respond to a crisis more effectively (Dowell et al., 2011). These factors generally support the hypothesis that SMEs engage in BMI during a crisis, and use it to survive and improve their situation.

### 2.3 Positioning of the doctoral thesis

This doctoral thesis is positioned in the research field of BMI and strategic management, with a focus on crisis management. This intersection is new in BMI research, and provides a fruitful foundation for new research insights. The thesis identifies how BMI is used as a strategic response to crises in companies in general. The empirical articles in detail analyze this from the perspectives of family firms, SMEs, and hospitality firms. Each publication contributes to the overall research question by providing answers to sub-questions. These results contribute to their individual population's literature on family firms, SMEs, and hospitality companies. The final contribution of this thesis is built on a synthesis of the individual empirical articles, which explains how companies react short-term and long-term to a macro-level change, and then in more detail on a company level based on their available capacities. These two general contributions explain how companies respond through BMI to external changes and how this can be used for a successful crisis response. The general contribution is within BMI and crisis management: while Publication I is purely positioned in the BMI literature, it is used to identify a research gap and highlight existing literature streams in BMI. The empirical Publications II, III, and IV are positioned at the intersection of BMI and crisis management. Publication II further contributes specifically to family firm responses, Publication III to hospitality firm

responses, and Publication IV to SME responses. While Publication I provides the overall foundation of the research question, the results of Publication II shaped the research questions of the following empirical articles. Within BMI, the articles and the thesis view BMI from a strategic perspective (Foss & Saebi, 2017).



## 3 Methods

The next chapter provides an overview of the methodologies used for this thesis and its underlying publications. The general research design is described, followed by each method being explained in detail including the data collection of the articles, their analysis, and the general quality criteria set for this dissertation. All empirical articles used different data sets.

### 3.1 Research design strategy

This dissertation focuses on BMI and how it can be used as a response strategy during a crisis. Several studies were developed to answer the main question. First, these studies set the foundation for understanding BMI in general via a bibliometric analysis. Based on this, empirical articles deal with the relationship of BMI in crisis management. Among this heterogeneity in the individual sub-questions for the development of the dissertation, a wide variety of research methods and research designs were also used. Table 3 provides an overview on the methodologies used in the individual articles.

A key part of this dissertation is to provide a detailed overview of the BMI literature (Publication I). This first analysis lays the groundwork for deriving further research questions and aligning the empirical articles with existing research. To do this, a bibliometric analysis was performed and published as a standalone article. BMI as a strategic response during crises is a newly-emerging research thread within BMI and crisis management. Here, an explorative approach was used to investigate the connection between BMI and crisis management. Publication II empirically investigated the potential approaches a company can follow during a crisis. This qualitative study was based on interviews. After a first indication that BMI can in fact be a suitable crisis response strategy, further research based on case studies was conducted in different industries. Both Publication III and Publication IV used a multiple case study approach to investigate different research questions at the intersection of BMI and crisis management.

BMI has seen a large increase in literature in recent years, which allows quantitative empirical research as a result. However, the intersection of BMI and crisis management is rather new. So while innovation as a crisis response is more commonly investigated (Wenzel et al., 2021), short- and long-term BMI is a new research thread here. The investigation of TBMI in particular suggests applying qualitative empirical research to create an early understanding of relationships; of important note is that it still is missing a solid theoretical foundation. This is why primarily qualitative research was used to build new theory and extend upon existing theory (Bansal & Corley, 2012; Brand, Tiberius, Bican, & Brem, 2019; Eisenhardt, 1989).

**Table 3:** Overview of the methodologies used

	<b>Aim</b>	<b>Method and analysis</b>	<b>Population</b>	<b>Data</b>
<b>Publication I</b>				
Business Model Innovation: Identifying Foundations and Trajectories	Identify the foundations and trends of BMI.	Bibliometric analysis based on citation and trend analysis	n/a	380 BMI articles and analysis of publications from 2019
<b>Publication II</b>				
The Economics of COVID-19: Initial evidence on how family firms in five European countries cope with the COVID-19 crisis	Identify the response strategies of family firms.	Qualitative study, interview	Mixed industries, family firms, all sizes	27 semi-structured expert interviews
<b>Publication III</b>				
The role of business model innovation in the hospitality industry during the COVID-19 crisis	Show how BMI helps hospitality firms overcome a crisis.	Qualitative study, multiple case study approach (polar analysis)	Hospitality industry	Six in-depth case studies
<b>Publication IV</b>				
Temporary business model innovation – SMEs innovation response to the COVID-19 crisis	Explain TBMI as a new form of BMI and highlight its importance for SMEs during crises.	Qualitative study, multiple case study approach (pattern analysis)	Mixed industries, SMEs, non-digital	Five in-depth case studies

Different methods were used for these qualitative analyses. On the one hand, a standard qualitative empirical study was done that was built on several interviews with key informants (Eisenhardt, 1989). On the other hand, a multiple case study approach was used to investigate the detailed use of BMI as a response strategy, and aimed to improve robustness compared to a single case design (Eisenhardt & Graebner, 2007; Robert K Yin, 2017). While two publications used multiple case studies as a research approach, they were different in some details. Publication III is built on a polar case analysis (Eisenhardt, 1989) that shows how two different poles in the same industry respond differently to the same situation. Publication IV on the other hand used a multiple case study research design to identify patterns in groups of companies that in turn are investigated in detail.

Along with the different use of the methodologies, this dissertation also investigated various industries in its empirical articles. The first empirical publication investigating the use of BMI as a crisis response was from a heterogeneous sample of different industries to identify whether the respective response strategies are used throughout all industries. Publication III is a single industry study, and concentrates on the hospitality and tourism industries, two areas hit especially hard by the COVID-19 pandemic (e.g. Anson, 1999; Biggs, Hall, & Stoeckl, 2012; Butler & Baum, 1999; Alonso-Almeida & Bremser, 2013). Publication IV analyzed companies of different industries; all of them were companies in low-tech industries, i.e. the ones most strongly impacted by the COVID-19 crisis. Only the first empirical analysis (Publication II) also dealt with companies that reported mostly positive effects during the crisis. These limitations will be further defined in a later stage of this dissertation and the single studies.

This dissertation is built on different methodologies that are used to investigate research questions in heterogeneous and homogenous populations. The explorative approach and the various situations allowed new theory to be built, and existing theory about BMI to be generally extended upon, with several BMI and crisis management relationships examined in greater detail.

## 3.2 Method description and data collection approach

The methods used for the single publications are clarified below. Each method is described first, followed by the collection of data and its analysis approach. The different methods for each publication are defined by the underlying research question and aims of the publication.

### 3.2.1 Bibliometric analysis

A bibliometric analysis is a review methodology that analyzes past contributions in a research field (Rauch, 2019). It analyzes countable facts, focusing mostly on citation, trend, or content analysis (Garfield & Welljams-Dorof, 1992). A bibliometric analysis follows a systematic and data-driven approach with a strong focus on transparency. The data collection applied here is most likely identical to a SLR (Kraus, Breier, et al., 2020). The foundation for bibliometric analysis traces its roots back to 1961 with the implementation of the Science Citation Index at a time when the analysis of citations started to flourish (MacRoberts & MacRoberts, 1989). For citation analysis, the citation of a defined set of articles are extracted and analyzed. Citation analysis has a bias towards recent publications because they have not had the possibility to be cited as often as more established articles; this is why they are combined with trend analysis. For trend analysis, the latest published articles are analyzed and grouped according to their core topics, allowing the topic trends of recent years to be derived.

*Publication I: Detailed methodological approach – data collection and analysis*



The first publication of this dissertation is built on bibliometric analysis, which is a review methodology for obtaining a detailed understanding of BMI as a research domain. Data identification for the bibliometric analysis followed a systematic process as described by Kraus et al. (2020), and was performed in March 2020, identifying all publications released prior to 2020. The authors defined key strings for their search. The string “business model innovation” was searched in the title field only, with only English-language articles used for ongoing analysis. The authors searched in electronic databases only, including EBSCO, ScienceDirect or Mendeley (Kraus, Breier, et al., 2020). A final sample of 380 publications with 22,973 references were ultimately identified here. The references were entered into a database and analyzed to identify the 30 most- frequently cited publications for analysis (see Gundolf and Filser 2013; Xi et al. 2015). Clusters were identified based on content similarity, and all articles were sorted into the clusters by the team. To overcome the common bibliometrics bias (new articles have much fewer citations than older ones (Zupic & Čater, 2014) we also did a qualitative trend analysis. For this, all articles of the sample published in 2019 were analyzed. In an explorative approach, keywords were defined that describe these articles, and grouped accordingly, with the largest groups of the articles published in 2019 signifying the emerging trends in BMI research.

### 3.2.2 Qualitative study

Qualitative expert interviews are often used to answer research questions in social sciences (Kvale, 1983; Neergaard & Uhløi, 2007). These research designs are applied to understand new processes in organizations (Bluhm, Harman, Lee, & Mitchell, 2011; Gioia, Corley, & Hamilton, 2013). An increased number of interviews allows for more generalizable results, and helps to create robust theory (Eisenhardt & Graebner, 2007). Qualitative research is suitable for new research questions that follow an explorative approach to build and extend theory rather than prove it (Bansal & Corley, 2012; Bluhm et al., 2011; Graebner, Martin, & Roundy, 2012). Qualitative interviews therefore help obtain a closer understanding of a situation and identify the ad-hoc behavior of the interview partners (Denzin & Lincoln, 2008). Data analysis is commonly started directly after the first interviews are conducted. In general, data collection continues until saturation is reached, signaling that further interviews do not provide new insights (Boddy, 2016; Guest, Bunce, & Johnson, 2016; Morse, Barrett, Mayan, Olson, & Spiers, 2002).

#### *Publication II: Detailed methodological approach – data collection and analysis*

The necessary insights for this publication were collected through the generation of a purposive sample (Guest, Bunce, & Johnson, 2006; Morse et al., 2002) that addressed key informants (Carney, 2005). These were people from top management, or managers working in a field that were able to answer the study’s questions. A high level of heterogeneity was achieved by analyzing companies of various industries and different sizes (three to 3,800 employees). All companies had in common that they were family firms. The data was collected during the worldwide COVID-19 pandemic. Companies

suffering through the pandemic were analyzed, along with a small group of companies that reported a positive development during the pandemic. During the sampling process, we did not differentiate whether companies reported positive or negative business results due to the crisis.

A semi-structured interview guide was created for data collection. Using these questions, the authors started data collection on March 26<sup>th</sup>, 2020, reaching saturation after 27 interviews on April 10<sup>th</sup>, 2020. The interview guide was used as a general guideline, and allowed for spontaneous questions (Eisenhardt & Graebner, 2007; Neergaard & Ulhøi, 2007). The data collection was performed during a lockdown, and therefore done using online communication tools.

The interviews were recorded and transcribed for analysis. The transcription was done word for word, ignoring gap words like “hmm” to allow for focused content. The transcription and analysis started during the data collection, a common practice with qualitative expert interviews (Boddy, 2016). The data was then analyzed in several iterations until clear, common issues could be identified. For reliability and validity reasons (Sousa, 2014), coding and analysis of the interviews took place independently. We analyzed the measures companies followed to survive their crisis for the detailed analysis, listing them based on the conceptual framework Wenzel et al. (2021) proposed. We refined their framework, separating into long- and short-term solutions. However, because our research was done at the beginning of the COVID-19 pandemic, we were unable to investigate the exit strategies companies pursued.

### 3.2.3 Multiple case study

Multiple case studies are a qualitative research method best suited for generating new knowledge through explorative work. These cases help to understand complex situations and new phenomena (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Robert K Yin, 2017). Case study research is used to extend theory (Bansal & Corley, 2012; Brand et al., 2019; Flyvbjerg, 2006) and answer real-life “how” and “why” questions (Robert K. Yin, 2009). While single case studies allow a more detailed analysis, multiple case studies help to create more robust results (Eisenhardt & Graebner, 2007; Robert K Yin, 2017). However, this robustness does not create generalizable evidence. It instead places emphasis on new findings, therefore helping to extend theory and provide a solid foundation for quantitative studies (Bengtsson & Hertting, 2013; Lincoln & Guba, 2000). This methodology is often used in BMI research (Bolton & Hannon, 2016; Ghezzi & Cavallo, 2020; Yang, Evans, Vladimirova, & Rana, 2017), allowing work with quantitative research. Of note here is that the special focus on the analysis of BMI and crisis management highlights a lack of theory and understanding, therefore justifying the use of a multiple case study design.

*Publication III: Detailed methodological approach – data collection and analysis*

The sample analyzed hospitality firms that were selected through purposive (Guest et al., 2016; Morse et al., 2002) and theoretical sampling (Eisenhardt & Graebner, 2007). All companies were situated in Austria and reported a strong affectedness resulting from the COVID-19 pandemic. The sample was restricted to hard-hit tourism and hospitality companies. Due to local lockdown situations and closed borders, these companies either had to close completely, or were strongly restricted, and could only reach a very narrow group of customers, if any at all. Austria ranks fifth among the 29 tourism regions in Europe, making it a good location for conducting an analysis in this sector. The main sample investigated restaurants and bars that also have local guests. As a comparison object, a hotel was investigated as well, allowing for pole comparisons and creating more robust results (Guest et al., 2016). The selected companies further differentiated themselves with their age, size (seats and employees), and the food and drinks served at their establishments.

We interviewed two people per case company for data collection, focusing first on the owner or director, and a guest of the company for the second interview. The interviews were done from the beginning of May 2020 to the middle of June 2020. With the use of additional data, saturation was reached with five cases (Eisenhardt, 1989; Morse et al., 2002). Homepages, review platforms, social media sites, and newspapers were used as secondary data.

Data analysis started with the transcription of the interviews, and was followed by coding the interview and secondary data (Miles, Huberman, & Saldaña, 2014; Corbin & Strauss, 2014). This was done individually to improve validity and reliability. On basis of these results, we conducted a within-case analysis of the cases, which was followed by a cross-case analysis (Eisenhardt, 1989) to identify similarities, differences, and general issues through several loops. Moreover, general background information was provided to highlight the special circumstances of the COVID-19 crisis regarding the hospitality sector. The within-case analysis addressed the affectedness of the company, the measures they took to respond to the crisis, an analysis of whether a BMI was done, and if so, what kind. Moreover, the effect stammgasts played during the crisis was analyzed. The cross-case analysis investigated the importance of BMI to overcome the crisis, analyzed the enhancing and inhibiting factors for the implementation of a BMI, and defined the stammgast and its role in the hospitality sector.

#### *Publication IV: Detailed methodological approach – data collection and analysis*

This publication built on a case study approach to analyze the TBMI as a crisis response in SMEs. The sample included five SMEs from Austria, Germany, and Liechtenstein that reported a BMI as their response to the COVID-19 crisis. Cases were selected here through theoretical sampling. All case companies came from low-tech industries, as these were more strongly affected by the pandemic, requiring them to respond with innovative approaches. To analyze the temporary BMI, the companies had to follow the innovation crisis response described by Wenzel et al. (Wenzel et al., 2021). They furthermore had to introduce a TBMI as a crisis response (Kraus, Clauss, et al., 2020).

With the help of local Chambers of Commerce, a total of 12 potential case companies could be investigated, of which five agreed to participate.

Multiple sources were used to build the final cases for data collection. Primary sources were semi-structured interviews and follow-up calls with key informants at the case companies. These helped us to understand the TBMI at their companies. Moreover, archive data was used, including e-mails, internal reports, company presentations, homepages, the social media pages of the companies, as well as visits to the companies, and observations of their implemented BMs. On this basis, the interview data was triangulated with further resources. The interviews were based on a semi-structured format with a guide that asked about the companies' crisis response, the measures taken, their temporary BM, how implementation was done, and which consequences the new BM had. A total of eight interviews were held between April 30<sup>th</sup> and May 6<sup>th</sup>, 2020, and done during local lockdown situations via digital communication tools.

To analyze the data, the interviews were first transcribed and independently coded. For analysis, a list of predefined topics was searched for in the interview data. These included the difference between the existing and the new BM, an analysis of the changed elements, and the time perspective for which the BM was introduced. The individual cases were first described and then analyzed in a within-case analysis. Following this, a cross-case analysis was done with a focus on the trigger of temporary BMs, their process and implementation, their consequences, and a pattern analysis of temporary BMs. With connection to the literature, the main focus was the analysis of TBMI (Kraus, Clauss, et al., 2020), an integration of the BMI typology (Foss & Saebi, 2017), and the BM elements (Clauss, 2017).

### 3.3 Research quality criteria

Quality in research is an important factor for defining good-quality articles. While a first indication can always be the journal an article is published in – high-quality double-blind reviewed journals with a ranking (Kraus, Breier, et al., 2020) – other indications include reliability, validity, and generalizability (Miles et al., 2014). However, quality criteria undoubtedly vary with regard to their applied research methods, and pursue different aims and approaches. This dissertation is built on review methodologies (Publication I), and qualitative research (Publications II, III, and IV).

Kraus et al. (2020) explain in their methodological article how SLRs are done. This foundation is also important for bibliometric analysis, and is further supported by other methodological articles on reviews in management (Rauch, 2019; Snyder, 2019). Based on their understanding of review articles in management, these should be systematic, reproducible, transparent, and admit to their limitations. All these criteria for high quality in review articles are considered in Publication I. The methods section explains a systematic and reproducible process that is built on database searches, thus allowing other researchers to rebuild the sample used for publication. Moreover, the methodology or bibliometrics itself is driven by the analysis of quantitative data points in the

references. The explanations in the methodology section help researchers analyze the results achieved.

Tracy (2010) defined eight quality criteria to address the needs of qualitative research: *worthy topic*, *rich rigor*, *sincerity*, *credibility*, *resonance*, *significant contribution*, *ethical* and *meaningful coherence*. The following section will explain the expectations for each of the eight quality criteria, and how the three qualitative publications respond to them. Table 4 provides an overview of the publications and how they respond to the quality criteria.

*Worthy topic* expects that the research conducted (a) is relevant for the scientific and practical community, (b) based on good timing, (c) significant for the communities, and (d) interesting (Tracy, 2010). All three qualitative publications score high in terms of this quality criteria. Both scientific and practical communities see good reason for investigating crisis response strategies in general, and for the COVID-19 pandemic specifically. The worthiness of this topic can be seen with the numerous calls for papers in the research community, and the high availability and interest among practitioners to be part of these studies.

*Rich rigor* concentrates on the methodology and theoretical foundation. It expects studies to work with appropriate theory, data, samples, contexts, and analysis methods (Tracy, 2010). All three publications support this rigor through their different aspects. The publications collected data until a high level of saturation was achieved, and no further insights were expected from further interviews (Eisenhardt, 1989; Morse et al., 2002). Moreover, the case study designs (Publications III and IV) were built on multiple cases instead of single case studies to improve robustness (Guest et al., 2006). To improve rigor during the analysis, the data was individually coded by the authors prior to interpretation of the final results (Corbin & Strauss, 2014; Miles et al., 2014).

*Sincerity* is reached through the use of transparent methodologies and reflection on researcher bias (Tracy, 2010). In the single publications, the authors provided a transparent overview of the methodologies and the analysis. Moreover, whenever possible, and due to word count limitations, the authors tried to publish details on cases and questions, or at least shared them with the respective double blind reviewers and journal editors. Bias and limitations were reported in the publications as well, and combined with potential solutions to overcome them in the future.

*Credibility* as the fourth criteria can be met through solid description and details in an article. Moreover, data should be triangulated, and reflection should be done by all researchers (Tracy, 2010). This criteria was met through direct interviewee quotes in the text; through data triangulation with different sources, especially in our case studies; and the fact that the authors individually coded the data prior to interpretation.

*Resonance* is described by the influence and effect of the publication on the reader or the general community through visual explanation of the results, transferability of

findings, and generalizations (Tracy, 2010). The publications responded to this criteria by building and extending theory, which was visualized in the publications. The contributions of the articles were therefore embedded into the literature to support generalizability. Moreover, the resonance of Publication II and Publication III among the scientific community can be seen with their increasing number of citations.

*Significant contribution* must be achieved through conceptual, theoretical, practical, moral, methodological, or heuristic contributions (Tracy, 2010). The qualitative publications are all empirical, and contribute to practice with a special section on practical implications. Even more important is their theoretical contribution through the extension and development of new theory. This theory is the extension of the Wenzel et al. (2021) framework of strategic crisis responses (Publication II), the connection of BMI as a short-term crisis solution for hospitality firms and its enhancers and inhibitors (Publication III), and the empirical and theoretical foundation of TBMI (Publication IV).

*Ethical* considerations also form quality criteria for qualitative research. Here, researchers have to consider procedures, situational and cultural specificity, relational ethics, and exiting considerations (Tracy, 2010). To secure high ethical standards, the interviewees were anonymized, with the identification of the participating companies remaining very limited. Moreover, the researchers informed all participants about the research objectives, and the use of their data and responses. No data was used without the express consent of the interviewees. Regarding cultural issues, the interviews in the respective areas were always conducted by researchers familiar with the respective local customs and practices.

*Meaningful coherence* is achieved if the study is able to explain what it claims to do; if suitable methods are used to answer the research question; and if connection between the existing literature, results, and research questions is achieved (Tracy, 2010). The publications reached this quality criteria thanks to their solid foundation of results in the existing literature, and a further connection of their contributions to existing theory. As BMI in crisis management is a new topic, with Publication II highlighting further research questions for the other publications, the qualitative research methods were suitable for answering these questions that attempted to extend rather than prove theory.

**Table 4:** Summary of the publications fit to quality criteria (based on Tracy, 2010)

	Publication II	Publication III	Publication IV
Worthy Topic	Scientific: 195 Citations Practical: several media announcements, two practical sub-publications in English and German	Scientific: 45 Citations, university course Practical: Media publications	Published recently, addresses relevant topics in times of the COVID-19 pandemic
Rich Rigor	27 interviews until saturation has been reached	Multiple case study to improve rigor	Multiple case study to improve rigor
Sincerity	Transparent overview of limitations and applied methodology	Transparent overview of limitations and applied methodology	Transparent overview of limitations and applied methodology
Credibility	Quotes in text	Quotes, triangulation, detailed overview of case companies	Quotes, triangulation, detailed overview of case companies
Resonance	195 citations and use in several media posts	45 citations and use in several media posts	Practical results and visualizations for SMEs to overcome crisis
Significant Contribution	Solid theoretical foundation and scientific contributions	Solid theoretical foundation and scientific contributions	Solid theoretical foundation and scientific contributions
Ethical	Interviewees anonymized and informed about the research objectives. They received access to the resulting publication and practical spinoffs	Interviewees anonymized and informed about the research objectives. They received access to the resulting publication and practical spinoffs	Interviewees anonymized and informed about the research objectives. They received access to the resulting publication and practical spin offs
Meaningful Coherence	Qualitative methods used for theory extension, and results are founded in the theory	Qualitative methods used for theory extension, and results are founded in the theory	Qualitative methods used for theory development, and results are founded in existing and new theory

## **4 Description and results of publications**

This chapter provides an overview of the four publications from this dissertation thesis. Each sub-section summarizes a short description, the most important results, and the research contribution of each publication. The most important information is mentioned in Table 5 at the end of this chapter.

### **4.1 Publication I – Business model innovation: Identifying foundations and trajectories**

#### ***Background and objectives***

Publication I lays the groundwork for the overall research gap of this doctoral thesis. The publication deals with the sub-question “*What is the core literature of BMI, and what are the emerging trends in the BMI domain?*” and is conceptualized as a review article based on a bibliometric analysis. While several SLRs have been published in the BMI domain, this is the first bibliometric analysis found here. It is based on high-quality articles from peer-reviewed journals. The study analyzes the existing output and core literature, further describing the trends within current BMI research.

#### ***Main results and contributions***

The study showed the growing interest in BMI research and its evolution from the beginning of 2000 until the end of 2019. A total of 380 high-quality articles could be identified, highlighting the top journals for the research domain. The results of the bibliometric citation network analysis explained that the BMI literature is based on four clusters with another two sub-clusters from Cluster A. These clusters deal with literature streams on *value creation through BMI*, *strategic BM concepts*, *the connection of BMs to entrepreneurship*, and *the BM strategy intersection*. Value creation is one of the three core elements of BMs. While there are also other elements, this aspect has received the most attention in research, leading to an underrepresentation of the other elements. In general, the study highlighted that although the core literature in BMI is strongly driven by the BM literature, it can be assumed that the number of BMI-specific articles will increase over time.

A second analysis concentrated on all of the publications from 2019, the last year of the investigated publications. The trend analysis searched for patterns in these publications, identifying three trends: *sustainability*, *dynamic capabilities*, and *SMEs*. Sustainability in BMI was determined to be the most important trend in BMI publications, with a total of nine publications in 2019. This trend is driven by sustainable BMs for the sharing and circular economy. The concepts of BMI and the circular economy are very close to one another, helping to explain this trend. Dynamic capabilities are a further concept showing connections to both sustainability and BMI, forming the second trend with six publications. The existing studies dealing with the intersection of BMI and dynamic



capabilities show limited intersections. They often highlight capabilities that are very specific for individual BMs or firms. A common factor in these articles is the call for more quantitative empirical articles on this. The final trend in BMI deals with SME research in combination with BMI. Scholars here repeatedly mention the limited research on SMEs, which is their research foundation in the SME context for analyzing different BMI concepts.

A general model for BMI could be developed as an outcome of this publication, constituting a foundation for the development of further theory based on the core literature and BMI trends. Moreover, the bibliometric analysis provides information about core authors and clusters, fostering a deeper understanding of BMI. These trends will probably have a strong effect on the future BMI core.

#### **4.2 Publication II – The economics of COVID-19: Initial empirical evidence on how family firms in five European countries cope with the Corona crisis**

##### ***Background and objectives***

Publication II deals with the sub-question “*How and by what means are family firms responding to the COVID-19 crisis?*” and sets the foundation for later articles by empirically explaining how companies design their response strategy during a crisis. The article identifies these strategies on the conceptual basis of Wenzel et al. (2021), addressing family firms as an important part of economies.

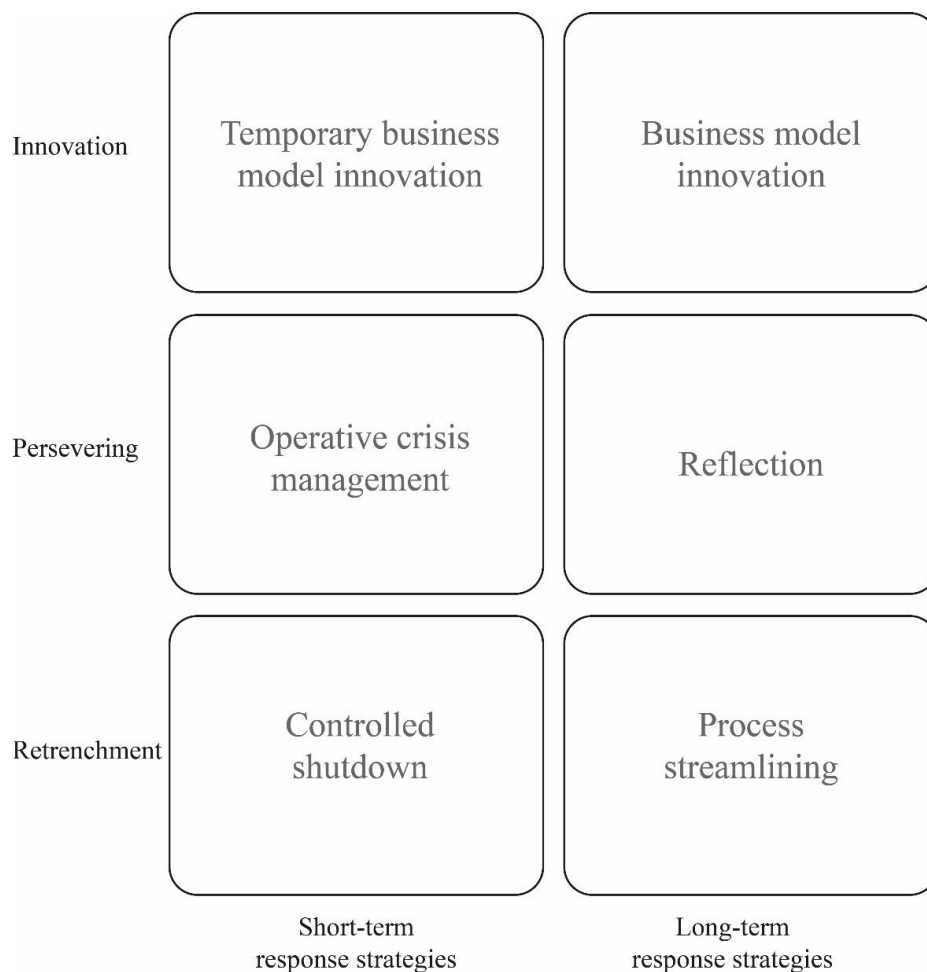
##### ***Main results and contributions***

The findings highlight the potential reactions of family firms with regard to the COVID-19 pandemic. We were able to establish five core crisis issues. At the beginning of a crisis, family firms concentrate to secure their liquidity for unseen developments. Second, the firms take measures to secure the existing operations with the idea of maintaining revenue streams. Moreover, the interviewees highlighted the necessity of securing communication. This was especially important during the COVID-19 crisis in light of the increase in work from home. With regard to BMs, this publication highlights how at the beginning of a crisis, companies start to rework and conceptualize their BMs, aiming to create a better foundation for the time after a crisis. As a final finding, the research highlights the cultural change during the course of the crisis, with greater solidarity among staff, and increased use of digitalization.

The publication contributes to research by extending the Wenzel et al. (2021) conceptual model of crisis responses. Its study highlights how companies build a strategy out of a mixture of all strategic responses, from both long- and short-term perspectives. Moreover, it is highlighted that there are some responses that are never followed in and of themselves. For example, no company in our study followed a pure retrenchment or innovation strategy. Companies therefore respond to an environmental

#### 4.2 Publication II – The economics of COVID-19: Initial empirical evidence on how family firms in five European countries cope with the Corona crisis 53

change via several internal changes to cope with a new situation. The model of crisis interventions (Figure 2) explains in its six fields the potential strategic solutions, ranging from *controlled shutdown* as a short-term retrenchment strategy, to *BMI* as a long-term innovation strategy. A special emphasis on the innovation strategies is seen here. This study was the first to highlight the *temporary business model adjustment* as a short-term strategy.



**Figure 2:** Model of strategic crisis responses from a short- and long-term perspective.

Besides contributing to the crisis management literature, this publication contributes to family firm research from a crisis perspective. The literature highlighted the long-term perspective of family firms by noting the importance of safeguarding liquidity. Another

finding is the solidarity family firms have with their employees, who attempt to get through a crisis together, with the employees being supported, and supporting their company by working from home. A final contribution is seen with innovation and digitalization. The COVID-19 pandemic forced family firms to switch to digital tools, further increasing their acceptance of technology. Furthermore, the crisis changed the general environment of firms, leading them to engage in BMI. Through the reduction in their operations, companies had more time for strategic changes, allowing them to rethink their BMs; to secure long-term survival, they applied their core competencies to establish new BMs.

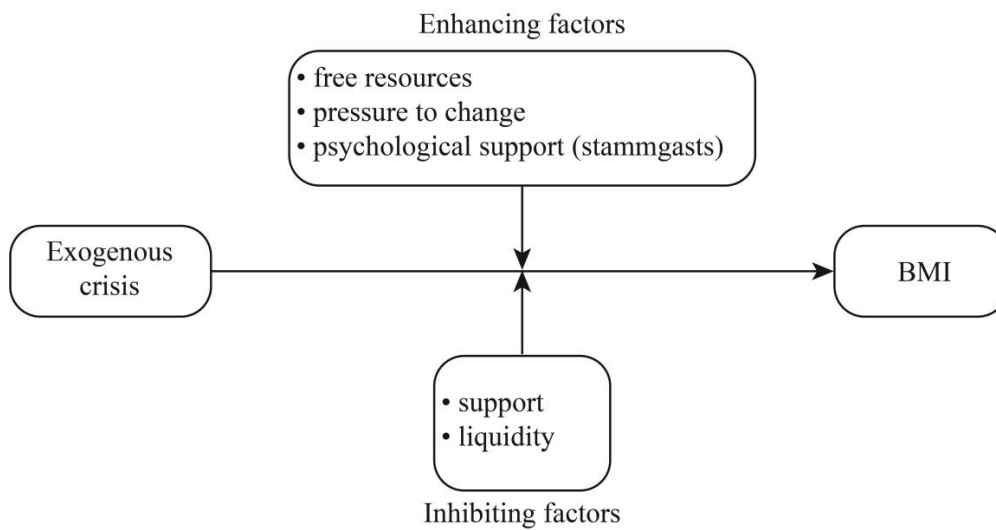
### 4.3 Publication III – The role of business model innovation in the hospitality industry during the COVID-19 crisis

#### *Background and objectives*

Publication III addresses the two sub-questions “*Can BMI be used for overcoming the COVID-19 crisis in the hospitality industry?*” and “*What are the drivers of BMI in the hospitality industry during the COVID-19 crisis, and what is the role of stammgasts?*” Both questions contribute to the overall aim of the doctoral thesis, investigating how BMI can be used to overcome a crisis. This publication investigates one of the hardest-hit industries during the pandemic, with hospitality firms losing almost all of their revenue streams (Baum & Hai, 2020). The publication investigates these firms’ responses and BMIs during the crisis.

#### *Main results and contributions*

The results highlight that hospitality companies used BMI to overcome the crisis and create new revenue streams after their existing ones were prevented due to the pandemic and/or government measures. Companies pursued evolutionary and focused BMIs based on the Foss and Saebi (2017) definitions. This publication further highlights a number of enhancing and inhibiting factors in the industry that drive BMI behavior, and which could stop companies from pursuing them (Figure 3). While enhancing factors like *free time resources*, *pressure to change*, and *stammgasts* support companies in pursuing BMI, other factor prevent them, such as *extensive support* and *high liquidity*. A special role in all of these relationships is seen with stammgasts. The publication first defines the stammgast, describing them as sources of ideas, supporting liquidity, and as having an extraordinary psychological effect on owners.



**Figure 3:** Influencing BMI factors during the crisis in the hospitality sector.

While existing crisis literature on hospitality management has primarily focused on terrorism, disasters, and the financial crisis (Anson, 1999; Butler & Baum, 1999), this publication sheds new light on this industry. It contributes to crisis management in hospitality firms by extending existing theory and highlighting BMI as a response during crises to secure survival after original BMs have been blocked or prevented. The study illustrates how BMI during a crisis can enhance the liquidity of a company, while also creating long-term flexibility through implementation. Companies that take on the opportunities arising through environmental change during a crisis can further make use of their new BM in the future. Adding to existing results by Covin, Eggers, Kraus et al. (2016), the study shows that customers are not always the source of new ideas in hospitality firms. The special situation of lockdowns and limited personal contact with customers created an environment that prevented customer-driven innovation. Even more importantly however, the positive support of customers further encourages managers to pursue their ideas and keep going during a crisis. This publication also contributes to BMI literature. While existing literature that claims external shocks and change lead to BMI is supported, we further enhance this thinking by explaining that this may not be sufficient for initiating a BMI. Our study showed that inhibiting factors such as extensive government support or a high level of liquidity limit the need for BMI, and support a retrenchment and persevering strategy, as described by Wenzel et al. (2021).

#### 4.4 Publication IV – Temporary business model innovation – SMEs' innovation response to the COVID-19 crisis

##### *Background and objectives*

Publication IV builds on the findings of Publications II and III. This publication deals with the sub-question “*How do SMEs pursue temporary BMI in response to COVID-19, and what effects does this have?*” This publication takes into account the theory developed for temporary business model adjustments from Publication II, and the fact that short-term BMIs can also be implemented long-term, as seen in Publication III. This publication investigates this issue with SMEs, as they are one of the trending research objects of Publication I, and can be especially hard-hit by a crisis due to their smallness (Eggers, 2020). This publication strongly contributes to the overall research question by highlighting the ways that companies use BMI to overcome a crisis situation.

##### *Main results and contributions*

This publication found that SMEs engage in TBMI during a crisis. Crises are generally the trigger for these TBMI, and the source of innovation is not only management, but employees as well. During integration, freed-up capacities of the prevented/blocked original BM are an important factor for implementing the new one. Moreover, the TBMI should never harm the existing BM. The empirical research also explains the first effects of TBMI. While pursuing a TBMI, companies concentrate on their core competencies in an attempt to leverage them to create new revenue streams. In especially hard-hit companies, new BMs are typically very different from the existing one as they hopefully generate new revenues without being limited by the same issues that prevented the original BM. In terms of core effects, this paper mentions how the existing network of the company increases through new clients and partners. Moreover, the strategic flexibility of companies is improved, as the work on innovative solutions and creative capabilities in managing a crisis are enhanced through innovation.

This publication contributes to both the SME and BMI literature streams. As SMEs are limited by their size and resources (Eggers, 2020), they cannot pursue every single strategic crisis response. Ongoing prevention or limitation of existing revenue streams would most likely lead to an exit strategy for these firms. This is why these firms engage in BMI to create new sales. In terms of BMI, this article creates a theoretical foundation and first empirical insights into TBMI as a new form of BMI, highlighting how this form of innovation is suitable for SMEs. Moreover, the study explains patterns and integrates the findings into existing BMI and strategy intersections to overcome theoretical limitations.

## 4.5 Overview of all publications

This chapter provides a final overview (Table 5) of all the publications. It concentrates on the objectives of the publications, their main findings, and final contributions.

**Table 5:** Overview of the publications for this dissertation

<b>Objectives</b>	<i>Publication I:</i> Business model innovation: Identifying foundations and trajectories
	- Set gap for overall thesis research gap
	- Analyze BMI literature
<b>Main findings</b>	- Three research clusters in BMI
	- Three main trends in recent articles
	- No specific focus on crisis management in BMI
<b>Main contribution</b>	- Understanding of BMI research field from a bibliometric perspective
	- Identify increasing importance of BMI literature within the core literature of BMI
	- General model of BMI based on scientific foundation and trends
<hr/>	
<b>Objectives</b>	<i>Publication II:</i> The economics of COVID-19: Initial empirical evidence of how family firms in five European countries cope with the corona crisis
	- Empirical investigation of crisis responses described by Wenzel et al. (2021)
	- Analyze potential of BMI as crisis response
<b>Main findings</b>	- Establish five core topics during a crisis
	- Identification of TBMA and BMI as innovation-driven strategies
	- Empirically explaining how strategic responses are not used individually but in combination with one another. The study highlights that TBMA and BMI are innovation strategies that are used by companies to overcome a crisis.
<b>Main contribution</b>	
<hr/>	
<b>Objectives</b>	<i>Publication III:</i> The role of business model innovation in the hospitality industry during the COVID-19 crisis
	- Investigate BMI as a crisis response strategy for hospitality firms
	- Identify the role of stammgasts for BMI in hospitality firms
<b>Main findings</b>	- Hospitality companies engage in BMI to create new revenue streams
	- Identification of enhancing and inhibiting factors for the start of a BMI

<b>Main contribution</b>	<ul style="list-style-type: none"> <li>- Extension of existing theory by adding BMI as a response strategy during crisis to generate new revenue streams. Moreover, the study highlights the important psychological support of stammgasts that help managers pursue their BMI.</li> </ul> <hr/>
<b>Objectives</b>	<p><i>Publication IV:</i> Temporary business model innovation – SMEs' innovation response to the COVID-19 crisis</p> <ul style="list-style-type: none"> <li>- Set a theoretical foundation for TBMI in SMEs</li> <li>- Empirically investigate the TBMI foundations</li> <li>- TBMI is used in SMEs to overcome a crisis</li> </ul>
<b>Main findings</b>	<ul style="list-style-type: none"> <li>- The publication sets a theoretical and empirical foundation for TBMI. It explains patterns and analyzes its process. The article shows how TBMI can be integrated into the existing theory of BMI.</li> </ul>
<b>Main contribution</b>	<hr/>

## 5 Conclusion

The following sections join the results of the individual publications by answering the overall research question of this doctoral thesis. This is followed by a look at the theoretical implications for research, and the practical implications for managers and companies. The limitations of the thesis and potential future research are also discussed.

### 5.1 Answering the research question

This doctoral thesis has aimed to identify the relationship between BMI and crisis management. It worked to answer the question “*How can companies use BMI to their advantage during a crisis?*” In answering this question, this thesis analyzed how BMI is used in a crisis situation among different populations and variations of BMI. Moreover, its thesis analyzed the potential effects BMI as a response to a crisis has. The different publications and their sub-questions all contribute to the thesis’ overall research question.

The first sub-question analyzes the existing literature to identify research gaps and the theoretical foundation of BMI, raising the following question: “*What is the core literature of BMI, and what are the emerging trends in the BMI domain?*” Publication I answered this question, providing insight into the core of BMI literature and its trends. These are mainly driven by BM literature, and highlight the clusters with a focus on value creation, strategic BM concepts, the design of a BM, and its connection to strategy. The core literature does not directly deal with crisis management, however. In Cluster D, crisis management can and could be integrated into the existing foundational literature. The literature in this cluster can be viewed as the foundation of the crisis management-BMI intersection. Moreover, the individual findings of the following publications further highlight the contributions of the existing clusters. In general, the articles highlight that there is only limited knowledge about the potential use of BMI as a crisis response. The trend analysis based on the latest publications identified that crisis responses were not a specific research trend in 2019; while it was seen that there is still a gap, the existing trends were used in the other publications for ongoing analysis as well, with a focus on SMEs and the interconnection of capabilities and core competencies investigated in terms of BMI.

The second question “*How and by what means do family firms respond to the COVID-19 crisis?*” generally investigated the crisis response strategies of companies, and identified the importance of BMI and TBMI. In general, this question was answered by the five overarching topics the publication identified: securing liquidity as a first response; ensuring that business operations can continue; making sure communication is still possible; analyzing and assessing BM; and analyzing cultural changes that emerge through the crisis. These core topics have generally guided how family firms respond to the COVID-19 crisis. The results further highlighted how firms almost never go with the single strategies proposed by Wenzel et al. (2021). Companies instead



combine their potential strategic responses based on their necessities and individual situations. Part of these responses are *TBMA* short-term, and *BMI* long-term. *TBMA* includes two different situations. In situation one, companies' *BM* is reduced or prevented due to a crisis or its direct and indirect effects. In the second situation, the crisis creates new opportunities which can be used by companies through a short-term adaptation to the *BM* to create new revenue streams and profit from cultural changes. The research question here is basically answered by highlighting the different potential response strategies. As it regards this thesis, emphasis is given to the importance of *BMI* and *TBMA* as innovative short- and long-term strategic responses, which also serve as the foundations for the following publications.

The third publication further enhanced the results of Publication II and dealt with the questions “*Can BMI be used for overcoming the COVID-19 crisis in the hospitality industry?*”, “*What were/are the drivers of BMI in the hospitality industry during the COVID-19 crisis?*”, and “*What is the role of stammgasts?*” This publication analyzes the use of *BMI* during a crisis in a sector strongly hit by the overall COVID-19 situation. Only those companies that reported negative effects of the crisis were investigated, which stands in stark comparison to Publication II that also investigated companies that reported positive developments as they reacted to the pandemic. During a crisis, hospitality companies use *BMI* to create new revenue streams after existing ones are limited or stopped completely. The results further highlight that there are specific inhibitors and enhancers that support or prevent companies from pursuing *BMI*. The psychological importance of stammgasts is analyzed as an important factor to convince managers on a personal level to keep fighting and engaging in *BMI*. These insights help to answer a part of the general research question.

With SMEs analyzed as a research trend in Publication I, and in light of how their responses differ compared to other companies – due to limited access to financial support, not all strategic response strategies are suitable for SMEs – they are an interesting crisis research object. With this in mind, Publication IV asked: “*How do SMEs pursue temporary BMI in response to COVID-19, and what effects does this have?*” This research question was answered by presenting a theoretical and empirical foundation for *TBMI* and how SMEs engage with them. Based on the case studies in this publication, the trigger and reasons for *TBMI*, their integration process and banding effects, and the effects therein are investigated. A pattern analysis conducted on the basis of the cases further highlights detailed results. The research question here can generally be answered by noting that SMEs do in fact pursue *TBMI* as a response to a crisis to either profit from new opportunities or create new revenue streams, while old ones are prevented. They in turn build their *BM*s on their core competencies, and can even enter new markets without harming the original *BM*. This has positive effects for SMEs as they create new *BM*s that can also have long-term effects by increasing their strategic agility through the newly-found competences arising from company change. Moreover, the stronger network that emerges through work in new industries or stronger cooperation with partners creates positive effects for the future.

All of these publications and their sub-questions together build the foundation for answering the research question of this doctoral thesis. A reflection on the individual research questions first showed the importance of research at the BMI and crisis management intersection. The question can be answered with a focus on Publications II, III, and IV that highlighted how companies can use different forms of BMI in the short- and long-term to overcome a crisis and weather it better. From a short-term perspective, companies use TBMI to create new BMs. This is done by companies that are severely affected by a crisis and have to create new BMs to generate new revenue. This strategy is more likely used by companies with limited financial reserves and access to them. Larger companies on the other hand tend to have enough financial capacities to make it through a crisis without temporarily changing their BM. The second reason for a TBMI includes new opportunities that arise during a crisis. Companies here navigate a crisis as they identify these opportunities. From a long-term perspective, companies here engage in BMI in general by integrating these short-term changes into their long-term business, or by further enhancing their BM to create a more crisis-resilient one. In general, a BMI allows these companies to proactively make the most of a crisis. They can profit from new opportunities and the positive effects of TBMI, which include increased strategic flexibility that arises through the adaptation and extension of new networks. Additionally, severely affected companies can survive a crisis thanks to new income streams.

BMI and TBMI are used by different companies in accordance with their size, age, and industry to survive their respective crisis and emerge stronger after it. This identifies BMI as an important strategic response to a crisis, and sets a foundation for further investigation into the BMI and crisis management intersection. The detailed insights in this doctoral thesis and its individual publications set the first foundation for this intersection, providing theoretical and practical implications.

## 5.2 Theoretical implications

The theoretical implications of this doctoral thesis are found with the individual contributions of the studies conducted for it and the knowledge emerging from the combination of these studies. Publication I contributes primarily to BMI literature, strategic management, and crisis literature, as well as to the specific literature of family firms and SMEs. Bringing all of these topics together, this thesis provides strategic TBMI and BMI approaches to overcome a crisis.

### 5.2.1 Contribution to BMI literature

The publications in this doctoral thesis are built around the concept of BMI and its capability as a crisis solution. Along with this core contribution and aim, the results further enhance the overall BMI literature. This is why the author also highlighted the antecedents of BMI and the influencing factors that drive BMI as enhancers or

inhibitors during crises. We furthermore set a foundation for TBMI, developing the relationship between BMI and strategy in greater depth.

#### *BMI as crisis response*

Crises create uncertain situations for companies, making rapid action necessary to overcome them as best as possible (Hills, 1998; Witte, 1981). The latest research suggests four different response strategies during crises: *retrenchment*, *persevering*, *innovation*, and *exit* (Wenzel et al., 2021). While all these strategies have their strengths and weaknesses, Publication II highlighted that these are typically not used individually, but always in combination. While the paper by Wenzel et al. (2021) established the response strategies on a conceptual basis, the empirical analysis in Publication II identified more details, especially in terms of BMI. This research highlighted the importance of short-term BM adjustment, which was developed to TBMI in Publication IV and the long-term crisis response through general BMI. On this basis, Publication II enhanced existing theory, introducing BMI and TBMI as response strategies during a crisis. This is in line with research on the antecedents of BMI in general. BMI often is a response to changes in the overall environment of a company (Clauss et al., 2019; De Reuver et al., 2013; Y. Lee et al., 2012; B. W. Wirtz et al., 2010). When environmental changes occur, either new opportunities emerge or changes are necessary to maintain competitiveness. This reaction to environmental changes could be identified in Publications II, III, and IV. The behavior of people changes based on the environmental changes occurring around them (Clark et al., 2020). Governments in turn have to intervene (Anderson, Heesterbeek, Klinkenberg, & Hollingsworth, 2020; Ferguson et al., 2020), and companies need to adapt. A crisis can have different effects on a company. While some are not impacted at all, others lose their entire revenue streams. These are the companies that have to react and engage in BMI. Two different drivers are identified here. Publication II explains that on the one hand, the limitations in the original BM free up time resources in companies which can be used for more strategic initiatives and the reconceptualization of the own BM. Secondly, the dramatic situation of a crisis threatens the survival of a company. In this case, companies and their employees work tightly together to identify solutions. With no status quo to maintain, this situation drives companies to be more open, which itself is another important foundation for BMI.

All three empirical articles showed that BMI is used as a crisis response strategy. They also shed further light on other factors such as the antecedents of BMI. These are described by Publication III for hospitality firms in particular. Existing research on open innovation analyzes external stakeholders as the providers of innovative ideas (Chesbrough & Bogers, 2014; Chesbrough, 2020b). In the hospitality industry, this has also been investigated by other scholars with a focus on the client as an idea giver (see Binkhorst & Den Dekker, 2009; Kallmuenzer, 2018). Publication III however does not share this result, perhaps due to the special situation arising during the COVID-19 pandemic where clients and managers generally did not have personal contact. Nevertheless, the publication identified an important antecedent. Its empirical results

suggested that the psychological support of stammgasts is an important factor that convinces managers to fight through a crisis and engage in BMI to secure the survival of their company. While this study only investigated the hospitality industry, psychological support as an antecedent could also be important in other industries. Along with unexpected psychological factors, the study also suggests that there are industry-specific enhancing and inhibiting factors that lead companies to engage in BMI. This is best seen with companies that do not suffer liquidity issues. These companies tend not to engage in BMI as Publication III suggested. This is a factor that further enhances the contributions of Publication II. Small companies have to engage in something other than pure retrenchment strategies, as they do not have access to money or reserves due to their liability of smallness (Eggers, 2020). Both scenarios describe companies that have limited liquidity, and therefore have to engage in innovative behavior to create new revenue streams.

#### *Temporary BMI*

According to theory, innovating BMs is a complex and radical process with a long-term implementation into a firm's strategy (Berends, Smits, Reymen, & Podoynitsyna, 2016; Casadesus-Masanell & Ricart, 2010; Snihur, Thomas, & Burgelman, 2018). For a BMI however, not all of its components need to change, meaning that even incremental updates are possible (Foss & Saebi, 2017; Velu, 2016). Research streams suggest that experimentation with new BMs can have positive effects on a company (Andries, Debackere, & Van Looy, 2013; M. Sosna, Trevinyo-Rodriguez, & Velamuri, 2010). Publication II discovered in an empirical investigation that companies engage in temporary BM adaptation during crises. These are short-term adaptations to the BM to create new revenue streams or pursue opportunities during a crisis. Publication IV builds on these findings and creates a theoretical and empirical foundation for TBMI, which are BMs that at least at the beginning are not intended for permanent integration. TBMI is used to create new revenue streams in adjacent markets (Zook & Allen, 2003) which are based on existing competences and capabilities.

Publication IV could establish TBMI as an enhancement of BMI theory. It provides several new insights into theory, showing various benefits for companies. SMEs are especially suited to weather a crisis via the development of a TBMI and create new revenue streams. SMEs with a high level of entrepreneurial orientation are able to identify opportunities during crises (Beliaeva et al., 2020) and have to engage in innovation to survive in changing environments (Le Nguyen & Kock, 2011). As they also lack financial reserves (Eggers, 2020), SMEs cannot follow pure retrenchment or perseveration strategy (Wenzel et al., 2021). During the time an exogenous crisis impacts the existing BM, these companies try to find new ones. The closer they identify the new BM as being related to the old one, the more positive effects a company can take from its implementation in the long-run, including for the original business.

TBMIs are built on the core competencies of companies, and can be implemented quickly. No large changes are possible on this kind of foundation, and companies can

only build new BMs in adjacent markets (Zook & Allen, 2003). However, the stronger an original BM is prevented or completely stopped, the greater the difference the new BM can have in creating new revenue streams that are not prevented by a crisis. Building on this existing knowledge and resources, TBMI contributes to the resource-based view (Barney, 1991) that sees unique resources being used to generate a competitive advantage for companies. This contribution highlights the importance of knowledge regarding the core competencies of a firm.

While the TBMI theory is developed with a focus on crisis response, it can also be a solution leading to the general improvement of a company's BM. Through an experimental approach, companies can incrementally change their existing BM to test new BMs. Doing this makes it important that the existing BM is not negatively impacted the new one, which is a foundation for TBMI in general. By setting a foundation for several BMs at the same time, the publication contributes to the idea of ambidextrous use of BMs (Markides, 2013), which allows companies to use multiple BMs at the same time (Winterhalter, Zeschky, & Gassmann, 2015) while keeping the option open to always go back to a single BM.

#### *BMI and strategy*

The intersection of BM and strategy has been frequently investigated and conceptually driven by different scholars (Casadesus-Masanell & Ricart, 2010; Casadesus-Masanell & Zhu, 2013; Doz & Kosonen, 2010; McGrath, 2010). Moreover, Publication I identified it as one of the clusters within BMI literature. In general, the theory explains BMIs as complex and radical by nature (Clauss et al., 2019; Foss & Saebi, 2017), and which have to be in line with the strategy of companies; they can only be adapted through tactics (Casadesus-Masanell & Ricart, 2010). On the other hand, in turbulent environments like crises, the strategy of a firm can be disrupted through emergent strategy once the underlying expectations placed on the general strategy are no longer valid (Mintzberg, 1978). These emergent strategies lay a foundation for TBMI during crises. Publication IV therefore theoretically integrates TBMI into the field, with the existing classification of BMs being the operationalization of a strategy requiring reconsideration, as short term changes that go beyond single tactical changes can be done through TBMI.

#### **5.2.2 Contribution to strategic management and crisis management**

Crisis management is a sub-field of strategic management that investigates how companies can handle crises to survive them. This doctoral thesis investigated how crisis management can be done based on BMI, with the individual empirical publications investigating different populations to identify coping strategies for them. These populations are family firms, hospitality firms, and SMEs, of which the latter two were severely affected by the COVID-19 pandemic, allowing the coping mechanisms of these companies to be properly and effectively investigated.

Existing research has explained the different crisis response strategies of retrenchment, persevering, innovation, and exit (Wenzel et al., 2021). This doctoral thesis concentrated on these strategies, placing a special focus on innovation by highlighting BMI as a successful response strategy. Its core contribution to the theory is its general understanding that the response strategies mentioned above do not occur separately, but instead are used as individual bundles that are combined to meet a company's needs. Large companies can for the most part easily follow retrenchment strategies and push through a crisis without TBMI due to their higher liquidity and easier access to external financing. They still however consider general BMI during a crisis to increase crisis resilience and adapt to changed environments once the crisis is over. On the other hand, SMEs face more problems, and need to engage in the creation of new revenue streams once their original ones are restricted. The bundles they create therefore should help companies survive a crisis and grow stronger in the process. Crises are also a known trigger for adaptation to new situations and innovation (Archibugi, Filippetti, & Frenz, 2013; Seeger, Ulmer, Novak, & Sellnow, 2005). Entrepreneurially-oriented companies in particular are driven by opportunity recognition (Beliaeva et al., 2020), giving them the optimal foundation for engaging in a BMI during a crisis.

For crisis management in the hospitality industry, this doctoral thesis first of all supported existing research, arguing that the industry needs governmental support to survive a crisis (Mansfeld, 1999). While this has been investigated for other crisis types such as terrorism, disasters, and financial meltdowns (Anson, 1999; Butler & Baum, 1999), this is also supported in the context of a pandemic. Hospitality companies engage in innovative behavior and with established BMIs, as described in Publications II and III. On these grounds, the thesis establishes how on the one hand, governmental support is necessary for hospitality firms to survive when large portions of their revenue dry up, while also showing that excessive support is an inhibitor of innovative behavior and BMI in particular. Along with negative impacts, the industry also takes advantage of crises, which helps it to be better prepared for future ones. Not all BMs are impacted the same way during a crisis. For example, companies specializing in delivery could profit from a crisis situation such as a pandemic. With this in mind, digital BMs also play an important role, with the pandemic clearly driving digitalization. The pandemic has clearly helped to identify digital solutions to manual processes, which in turn is driven by their cultural adaptation by employees (see Clark et al., 2020; Venkatesh, Morris, Davis, & Davis, 2003), an antecedent of digital BM creation through the use of these new capabilities (Nambisan, Lyytinen, Majchrzak, & Song, 2017; Tilson, Lyytinen, & Sørensen, 2010). Nevertheless, a company cannot just hope that BMs achieve innovation on their own. Improving the overall situation will require companies in all industries to think about the inhibiting factors that prevent them from engaging in BMI, and actively support enhancing factors. In the hospitality industry, these most notably include communication with stammgasts, psychological support, and freeing up time for strategic planning, which allow companies to improve their enhancing factors while following pathways towards innovation (Iglesias-Sánchez, López-Delgado, Correia, & Jambrino-Maldonado, 2020).

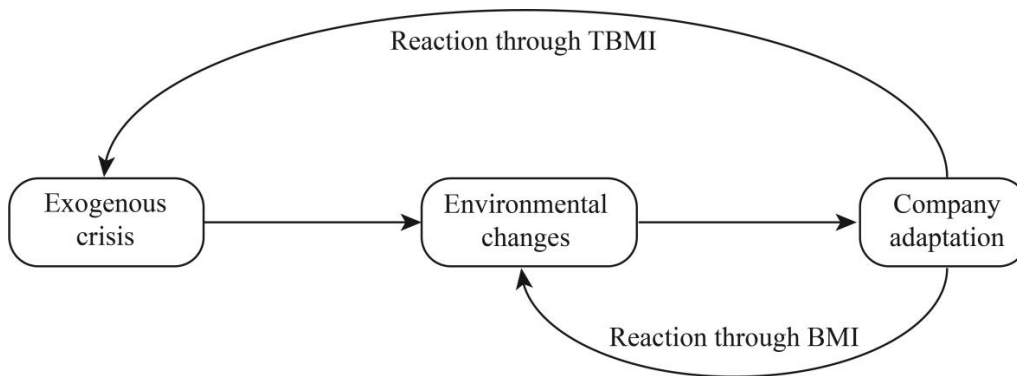
Similar to hospitality firms, the crisis has also been very difficult for SMEs due to their liabilities (Aldrich & Auster, 1986). Limited access to financial reserves during crises limits the strategic options for these companies (Eggers, 2020). With these limitations in mind, SMEs have to follow more innovative approaches, which other studies have suggested as a response strategy (Eggers & Kraus, 2011; Vargo & Seville, 2011). TBMI as a new strategic opportunity provides a new form of crisis response for SMEs. The adaptation of a BMI can be done with a focus on core competencies, allowing these firms to innovate into industries that are less restricted during a crisis, and improve their liquidity as a result. A focus on their core competencies allows companies to react faster to a crisis and implement their TBMI within a short period of time. Moreover, quick adaptation improves strategic flexibility, and this kind of proactive approach secures long-term crisis resilience (Ates & Bititci, 2011). While TBMI is a strategic solution during crises, it might also be good for companies to engage in TBMI during non-crisis times as well. The effects resulting from it would allow companies to be more flexible and adapt to situations even more effectively. Moreover, if a new TBMI does not harm the original BM, the BM can be put back in place, with the company engaging in an experimental approach to identify new opportunities. This in turn can be used to build new revenue streams based on existing core competencies in markets and domains that are close to the own ones (Zook & Allen, 2003).

### 5.2.3 Overall contribution of the doctoral thesis

All of publications in this doctoral thesis contributed to the overall understanding of how companies can overcome crisis situations, and even benefit from them. The three empirical publications (II, III, IV) in particular contributed to a new and better understanding of how BMI can be used. This final section of theoretical contributions discusses the synthesis of these three empirical articles from a macro perspective where an exogenous crisis changes the environment and forces a company to adapt. The common results of the articles will also be tied together into a company-level analysis to achieve a model for crisis responses via TBMI and BMI.

#### *Macro-level understanding of crisis and company adaptation*

Not every crisis creates the same problems for a company. While an endogenous crisis is driven by internal problems (Bundy, Pfarrer, Short, & Coombs, 2017), an exogenous one is induced by external changes. These can vary, and include natural disasters (Park, Hong, & Roh, 2013; Runyan, 2006), financial crises (Alonso-Almeida & Bremser, 2013), war (Widmaier, Blyth, & Seabrooke, 2007), or a pandemic such as COVID-19. While an endogenously-driven crisis lets internal situations be identified and coped with, only overall adaptation to the situation is possible with an exogenous crisis.



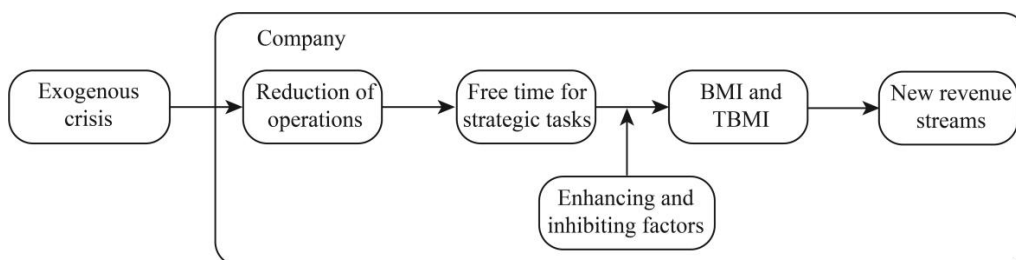
**Figure 4:** Macro-level overview of companies TBMI and BMI responses

Figure 4 explains the macro effects of an exogenous crisis on the environment and company, which reacts through TBMI to crisis-induced changes, and with BMI to the long-term changes of the environment. Put more specifically, an exogenous crisis has massive effects on a company's environment. Decisions and changes in this environment create further pressure on a company, forcing it to adapt. During the COVID-19 crisis, these changes included legislative regulations that attempted to limit the spread of the virus (Ferguson et al., 2020). Here, governments enforced non-pharmaceutical solutions like the closure of schools, restaurants, and much of the public sphere to restrict human interaction (Bootsma & Ferguson, 2007). These kinds of state-driven measures force a company to adapt and decide upon a strategic response. A proactive strategic response for the short-term problem (the crisis) leads to TBMI. On the other hand, a global crisis like COVID-19 is not only driven by short-term changes such as non-pharmaceutical interventions, but long-term behavioral changes in society and the environment in general (Clark et al., 2020). During the pandemic, these included the intense use of digital tools to connect with colleagues and friends. These changes can be long-lasting and force companies to think about their future during a crisis, and can have a significant effect on a company's BM long-term. This is not only something that needs to be considered by severely affected companies, but also by companies that profit from a crisis, especially when considering that their overall environment will most likely not be the same as it previously was once a crisis ends. Generally speaking, companies have to consider whether positive effects are driven by the short-term impact of a crisis, or through the long-term environmental changes a crisis leads to. A careful analysis can help companies identify long-term opportunities, and pursue only the ones that are worthy of being pursued, creating a clear competitive advantage for these companies once they channel their resources into the right ideas.



### *Company-level perspective*

Adding to this macro-level perspective, these results can also be synthesized on a company level. A core part of this synthesis (Figure 5) is how a crisis can foster a company to do a BMI, which in turn helps it create new revenue streams. While other researchers have emphasized this connection (Archibugi et al., 2013; Foss & Saebi, 2017; Seeger et al., 2005), this synthesis has also shown that the strong reduction in operative tasks is an important factor that drives BMI, as it frees up new resources to think strategically. In SMEs and companies that do not have strategic departments, a strong reduction in daily business allows and forces them to engage in strategic initiatives. The free time they obtain through this can be used to analyze the environment and identify new opportunities. On these grounds, companies here should attempt to reserve some time for strategic processes in an effort to engage in innovative behavior, even during normal, non-crisis times to ensure continual innovation. Large companies have increased their time dedicated to strategic thinking and analysis to properly respond to crises. The synthesis furthermore shows that companies proactively engage with and work on innovative behavior, which supports other research identifying entrepreneurial orientation as an important factor during crises (Beliaeva et al., 2020). The publications in this thesis could not identify any special behavior attributable to risk. While attempting to find solutions to their situations, companies often follow experimental approaches, while ensuring that TBMI does not harm the existing BM in the process.



**Figure 5:** Company-level response through free capacities, and enhancing and inhibiting factors.

TBMI are an important factor discussed in the empirical articles. While BMI is used to adapt to the long-term environmental changes that stay in place after a crisis, TBMI is used to respond to the short-term effects of a crisis that prevent or restrict existing BMs. These TBMI are used to create new revenue, and are an addition to the existing strategy, because the overall assumptions about a company's core strategy changes during a crisis, sometimes making an emergent strategy necessary (Mintzberg, 1978). Companies can overcome liquidity bottlenecks via their core competencies and a focus on adjacent markets (Zook & Allen, 2003). Moreover, these TBMI can have long-term effects, meaning that once they are closer to the existing BM and strategy, a long-term integration is feasible. However, achieving this means the macro-level perspective

needs to be observed to prevent an investment in opportunities that are only driven by short-term environmental changes. Along with the use of TBMI during a crisis, there is also the opportunity to engage in BMI during non-crisis times. Here, a company has to free up resources for employees to identify potential adjacent markets and their own core competencies. Multiple BMs can be implemented in these cases (Winterhalter et al., 2015) without harming the core BM.

### 5.3 Practical implications

The publications in this doctoral thesis support two general practical implications. They provide solutions for companies to survive a crisis, while providing insights into potential solutions in non-crisis times.

#### 5.3.1 Practical crisis response strategies

Crises create an environment of change to which companies have to adapt. Widespread crises like COVID-19 or financial crises impact companies globally. These in turn force companies to change to ensure their survival. The publications in this doctoral thesis address this problem, explaining strategies for companies to survive a crisis. This thesis proposes several practical strategic components a company should build its strategic response upon, including how companies should mix the different response strategies of retrenchment, persevering, and innovation (see also Wenzel et al., 2021). Moreover, practical examples are highlighted in the general model for long- and short-term solutions. These are the foundation of a corporate crisis response strategy, and can be adapted further to a company's situation. Once a crisis starts, a company first has to secure its liquidity and reduce unnecessary costs. The creation of new revenue streams can help to overcome additional problems and keep employees working. One of the key factors during a crisis is communication. While this kind of situation creates fear on a company level, it also of course influences the employees personally. Personal situations further highlight the importance of psychological support during a crisis; it is an antecedent of BMI during crises in the hospitality industry. Hospitality companies as a result should actively engage in relationship building with their stammgasts. Moreover, this study clearly emphasizes how BMI is something companies can create once they have time to engage in strategic analysis. A final practical suggestion includes the emphasis during crises on short-term opportunities that can be used to improve liquidity. To have this possibility, companies need to ensure that they know their core competences, and have sufficient resources to engage in TBMI. These TBMI during a crisis can further improve a company's overall situation. TBMI create an improved network through the engagement with new partners and clients, supporting the strategic agility of a company by collecting experience about the own core competencies and building innovation capabilities. All of these situations generate increased crisis resilience which secures better crisis responses in the future.

### 5.3.2 Strategies to enhance BMI capabilities in non-crisis times

While the core question of this thesis analyzed the relationship of BMI during a crisis, the results clearly indicate that some patterns should also be used during non-crisis times to improve BMI in companies. Publication I showed that employees started to use digital tools during the COVID-19 crisis. This adoption of digital technology is an antecedent of the creation of digital processes and BM (Nambisan et al., 2017; Tilson et al., 2010). Companies as a result should start to support their employees in opportunity recognition, laying the groundwork for pursuing upcoming BMs in light of newly-gained digital opportunity recognition capabilities. This publication also highlighted how companies should strive to trim unnecessary costs and streamline their processes, realigning their resources to achieve innovative behavior. A pattern of efficiency can help a company reduce its costs in the long run. Publication III clearly identifies that hospitality firms are very reactive, and only take time for strategic thinking once their operations are limited. To increase their BMI capabilities, these companies should start to actively create situations where the operative tasks are secondary. This could allow hospitality companies to improve and increase their crisis resilience and strategic pathways. Existing research (Mansfeld, 1999) was supported here, especially regarding how governmental support is the most important crisis solution for hospitality firms. This clearly shows that crisis resilience in hospitality companies is low compared to other sectors. Engaging in BMI as a result could improve their situation, perhaps reducing their dependency on governmental support. This research also explains that enhancing and inhibiting factors are the reason why these companies do not engage in BMI. To increase proactivity and engage in BMI, they should attempt to explicitly support enhancing factors and restrict inhibiting ones. This is something where regional management can support hospitality companies, and attempt to nudge them into BMI. Publication IV finally supports the idea that the forced implementation of TBMI can help companies to increase their strategic agility, networks, and understanding of core competencies. The research suggests that companies should force themselves to follow an open experimental approach to identifying potential new BMs. Moreover, the results highlight that in contrast to existing research, TBMI does not have to be totally aligned with the strategy, and can also be achieved with limited resources. The positive effects of these TBMI should therefore be customized and used by consultants to increase companies' awareness of opportunity recognition and core competencies. Not harming the existing BM in the first place is the only limitation these TBMI have, allowing full concentration to return back to the existing BM in cases where this is necessary or wanted.

### 5.4 Limitations and future research

All research has its limitations that lay the foundation for future study, and this doctoral thesis is no exception. The first publication is built on a reviewing methodology, meaning it is limited by the number of papers it analyzes. Articles published after the deadline for this publication could not be integrated into it. Ongoing additional analysis

of BMI literature will continue to be pertinent in this field. Future literature analysis can build on existing literature for comparative, hopefully more insightful results. Another limitation in our review of methodologies was the collection and restriction of data. While only articles with full access could be integrated into our analysis, the restriction to journal articles may have created additional bias. Important to note however is that this concentration on journal articles and online databases is common practice in management research (Kraus, Breier, et al., 2020), and ensures a high level of quality. Another limitation is seen with our search string of “business model innovation”. Different search strings could arrive at other results that influence the final analysis, making it important to carefully consider search strings in research. This can be overcome by future research through the use of different strings, or by performing the search according to more than title only. For example, BM adaptation could also be integrated as a clearly related field. This is said while keeping in mind that for a manual analysis of papers, a set of too many articles becomes problematic. And for this publication, we explicitly wanted to identify the underlying articles for BMI, and not for other constructs. A common problem in citation analysis is the fact that not every citation is applied from a positive perspective. Some are used in negative ways, with the methodology not taking this into account due to the quantitative nature of the study (Brew, 2009). This is a known limitation of this methodology (Kraus, Filser, Eggers, Hills, & Hultman, 2012) that can only be overcome by the use of additional, more qualitative review methodologies that achieve different outcomes.

The empirical articles are furthermore based on the qualitative research methods of expert interviews and multiple case studies. A general limitation of empirical research is sampling. The three samples of the empirical publications in this thesis are very different in how they try to reduce the limitation by building on a more solid foundation. The articles only investigated a small population, allowing no final evidence to be derived. This limitation could be overcome by the further use of quantitative methodologies to create an increased overview. Moreover, most of the publication focused on companies that were negatively influenced by the COVID-19 pandemic. Only a few companies reported positive developments. While it was the idea to investigate how companies use BMI as a response to crises, no further information can be provided on how the other companies saw the pandemic, and whether they identified its potential opportunities. In general, the COVID-19 crisis had a very special character with its different waves, making it important to see each publication in its specific time context of the data collection. This is why the descriptions of the overall situation were very carefully written. Qualitative research can be biased by the subjective interpretation of data. To reduce this limitation, the data in the individual publications were coded by several authors, with the analysis carefully performed. Quantitative research is nevertheless still necessary to support these qualitative findings. While these publications investigate the possibility of using BMI as a response to crises, and first results have indicated positive effects, no long-term investigation of them has been performed to date. Future research should attempt to investigate surviving firms and retrospectively ask them whether they engaged in innovation and BMI. Companies and managers that followed an exit strategy could be asked about their reasons for exiting.

The research conducted for this doctoral thesis also highlights new research opportunities to overcome its limitations and further develop the scientific field of BMI and crisis management, as well as family firm and SME research. Review articles such as a citation analysis are especially strong in describing new research opportunities. While the review explained three trends for the future – sustainability, dynamic capabilities, and SMEs – it also highlights areas where no research has been performed so far. One of the research areas where no core contributions could be identified includes studies on the BMI and crisis management intersection. This doctoral thesis attempts to fill this gap, with calls for more empirical papers on SMEs.

The empirical publications investigated how companies use BMI as a response strategy during crises. Further studies should focus on the long-term effects these responses have. This could provide detailed insights into the positive and negative effects of BMI and TBMI on firm performance. Here, empirical results could further support the theory describing the importance of innovative crisis responses. Moreover, the results clearly indicate that some results and strategies could be used during times of non-crisis. While the first theoretical analysis supports this integration, empirical analysis and case studies should analyze how TBMI for example can be integrated during non-crisis times to profit from its positive effects.

Research has further explained the enhancing and inhibiting factors that lead to the integration of BMI. These factors have been investigated from a hospitality sector perspective. Different industries are expected to have individual aspects that support or prevent the work of BMs. Researchers should further investigate the different situations that lead to a BMI or prevent it. This would give managers a blueprint to prevent situations that might limit their innovation capabilities. Moreover, the publication on hospitality response showed the important psychological support from stammgasts that encourages managers to engage in BMI. It's reasonable to expect this psychological effect in other industries. While other industries do not necessarily have this kind of close relationship to clients, hospitality firms do, and they may be furthermore supported by family, friends, or strategic partners. Especially in SMEs that are less professionally led, this psychological factor may be important, especially when noting that some decisions here are driven by individuals and influenced by their emotions.

Publication IV empirically investigated TBMI and set a theoretical foundation for them. This new contribution to the research raises several new questions. The publication formulated five propositions (Table 6) regarding TBMI and their establishment in theory.

**Table 6:** Summary of propositions in Publication IV

Proposition 1	Temporary BMI is particularly appropriate for SMEs during crises.
Proposition 2	An exogenous crisis serves as an initiator of temporary BMI in SMEs.
Proposition 2.1	If an exogenous crisis strongly affects an existing BM, this leads to the implementation of a temporary BMI through adaptive BMI.
Proposition 2.2	Under circumstances where an exogenous crisis affects an existing BM, only a temporary BMI has positive effects on the existing BM, strategic flexibility, and increased business network.
Proposition 3.1	Temporary BMI that are closer to the traditional BM of SMEs show potential for long-term integration, and may thus be a basis for long-term BMI.
Proposition 3.2	Temporary BMI that are far from the traditional BM of SMEs are only implemented for the short-term.
Proposition 4	After an exogenous crisis, core competencies leveraging is used for temporary BMI in SMEs.
Proposition 5	Temporary BMI should be done without harming the existing BM.



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## **Publication I**

Filser, M, Kraus, S., Breier, M. Nenova, I., and Puumalainen, K.  
**Business model innovation: Identifying foundations and trajectories**

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## RESEARCH ARTICLE

# Business model innovation: Identifying foundations and trajectories

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## Abstract

Business model innovation is an emerging hot topic in management research. It has been developing steadily for 20 years and has gained enormous momentum in recent years. A solid basis has been created, and the first literature reviews summarize the topic. However, an analysis of the core literature and the general foundation of business model innovation literature is missing. This gap is closed with this bibliometric. It analyzes 30 core articles referenced in 380 business model innovation publications. From this, a total of four research clusters can be delineated. This foundation of the research area is supplemented with a trend analysis of recent publications, which identifies three trends for the future of this research stream. The analysis highlights that sustainability, dynamic capabilities, and small- and medium-sized enterprises are the most promising trends in business model innovation. Based on the results, we present a general model for business model innovation.

## KEYWORDS

bibliometrics, business model, business model innovation, citation analysis

## 1 | INTRODUCTION

In today's world, business models (BMs) are adopted by every enterprise, either explicitly or implicitly (Teece, 2010). Innovation is seen as one of the three most important elements for BMs (Zott, Amit, & Massa, 2011). In that vein, Chesbrough (2007) stated that innovation goes beyond incorporating solely technology and research development and included the BM. Belussi, Orsi, and Savarese (2019) even highlighted that business model innovation (BMI) is a growing field of discussion in BM research, and BMI is an important issue in innovation research. In recent years, researchers have largely agreed that BMs consist of three main elements: value proposition, value creation, and value capture (Hock-Doeppen, Clauss, Kraus, & Cheng, 2020). In the course of a BMI, these three elements or their relationship to each other are innovated (Foss & Saebi, 2017).

The topic of BMI is highly relevant for enterprises, as it needs to be well understood and practiced. Additionally, it is critical to understand the base of BMI theory, as well as the state of the art. For

further research, it is also important to recognize the emerging trends in this field, to be able to keep up with the new theories that are created. This understanding could help practitioners and researchers by showing where they can focus on future business actions and studies. Scholars, such as Foss and Saebi (2017), have attempted to map the state of the art of BMI based on a systematic literature review. However, their main goal was only to identify and address gaps in the BMI research field, not to illustrate its foundations. Therefore, there is still no clearly identified core research overview of BMI. Although literature reviews synthesize the literature, they neither highlight the core pieces nor analyze emerging trends. With the first bibliometric analysis of the BMI domain, this paper addresses this research gap and helps to create an understanding of the core literature and future trends for researchers and practitioners. Therefore, the paper addresses the following question: *What is the core literature of BMI, and what are the emerging trends in the BMI domain?*

This research contributes to BMI theory through the development of a general model for BMI. This can further be used to develop

theory based on existing core and emerging trends. The bibliometric in general provides researchers an overview of the core authors, the research clusters, and a deeper understanding of the current literature by quantifying it. This study highlights that sustainability is the most important trend besides dynamic capabilities and small- and medium-sized enterprises in BMI. Therefore, the study perfectly integrates into the research intersection of sustainability and innovation, which is also investigated in other recent publications (Rahman, Aziz, & Hughes, 2020).

In the methodology section, we create a transparent overview of our search and analysis. This section is followed by our findings. We describe the published articles and then the citation network analysis and the trend analysis. After presenting the findings, we discuss the results and present the general model for BMI, before we conclude the paper.

## 2 | RESEARCH DESIGN AND METHODOLOGY

### 2.1 | Bibliometric citation analysis

Bibliometric methods have been gaining importance in the literary field and are used to map the state of the art of scientific fields and disciplines (Zupic & Čater, 2015). Bibliometrics quantify and statistically evaluate literature so that interconnections between publications can be identified, and topics such as research trends and growth of knowledge, authorship, and past, present, and future publishing trends can be recognized (Mas-Tur, Kraus, Brandtner, Ewert, & Kürsten, 2020; Sengupta, 1992).

In the first step, in March 2020, we identified key documents. The original dataset was determined by publications published before 2020, which included the phrase "business model innovation" in the title. We focused on a title search with the term "business model innovation" to ensure that we identified only literature that actually deals with BMI. We searched databases such as ABI Inform/ProQuest, EBSCO, Emerald, Google Scholar, ingentaconnect, JSTOR, MEN-DELEY, ScienceDirect, Scopus, and Springer. These databases represent major academic search engines in the social sciences. We selected them to provide a broad identification of publications that match the search criteria. The search returned 380 publications with 22,973 references. We then manually transferred the author names, year of publication, publication title, output channel/journal, and reference type of each publication selected for analysis, as well as the cited references, to an Excel sheet. By manually entering the data, we could check for consistency, and we identified and corrected citation errors. In addition, the procedure was a necessary step to create an electronic database, which could then be analyzed with network analysis software.

The analysis software then identified the 30 most frequently cited publications, the number of citations, and the most frequently cited journals. Concentrating on the 30 most frequently cited publications helps achieve the goal of clarity, compactness, and practicability

overall (on similar approaches, see, e.g., Gundolf & Filser, 2013; Xi, Kraus, Filser, & Kellermanns, 2015). We then identified topic clusters based on similarities in content. We individually examined the subject matter, research question, and results of the most frequently cited articles and created topic clusters. We then assigned each article to one of the clusters and compared the results. In cases where the assignments were inconsistent, we discussed the differences to reach an amicable decision. We then discussed the contents in each cluster and reflected on them.

### 2.2 | Qualitative trends analysis

One disadvantage of the bibliometric citation analysis is that it neglects newer publications, as their citation rates do not develop at a high speed (Zupic & Čater, 2015). Therefore, to identify emerging trends, a bibliometric citation analysis alone is not ideal. Thus, to answer the second research question and discover emerging trends in the field of BMI, we took a different approach for the second step.

We conducted qualitative trend analysis to answer the second research question. For this one, we understand trend as a general development.<sup>1</sup> This analysis was conducted in a similar manner as the citation analysis. However, we focused on the published articles rather than the articles' references. Therefore, the data to answer the second part of the research question consist of all articles published in 2019 from the bibliometric analysis for the first research question. Thus, they are already linked to BMI as the titles include the keywords. As the second criterion, we identified additional reoccurring themes and topics and grouped them based on similar keywords in the title (other than BMI). We defined these keywords exploratively to cluster as many of the trends into representable groups as possible. The largest groups are considered an emerging trend, as these groups indicate the most recent, relevant, and popular topics in the BMI research field. They make up a substantial percentage of the total amount of BMI literature published in 2019. We quantified this percentage to ensure the major trends are covered. We elaborate and illustrate the discovered emerging trends based on the main contributions.

### 2.3 | Framework modeling

To provide an illustrative overview of these findings, we arranged all core literature clusters and emerging trends in a simple framework. This framework helps summarize the clusters and discuss the main contributions in combination with the emerging trends toward the end of this paper. Finally, we discuss how the clusters might relate to each other and how the framework might be applied to current research and business practices. This may require a rearrangement of the framework along with practice needs and the findings.

<sup>1</sup>Cambridge Dictionary: <https://dictionary.cambridge.org/dictionary/english/trend>.



### 3 | RESULTS

#### 3.1 | Evolution of published articles and most publishing journals

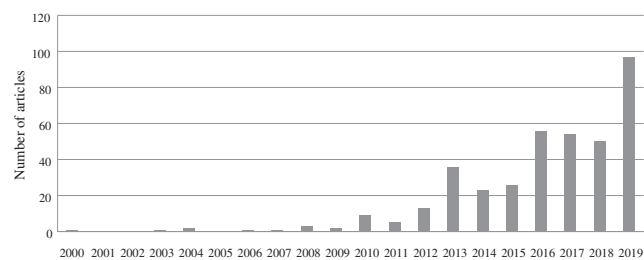
In total, we manually collected 380 articles with 22,973 references in a data collection sheet. The evolution of published articles confirms that BMI research is increasing constantly. The graph in Figure 1 shows that there were three peak years, which contributed greatly to the current research. The years 2013, 2016, and especially 2019 show a significant increase in peer-reviewed articles about BMI. It is remarkable that from 2016 to 2018, the number of published articles plateaued at roughly 50 articles per year. This plateau was followed by a great leap from 2018 to 2019, when the number of published articles nearly doubled. This substantial increase indicates that this topic has become more popular over the last 2 years.

Figure 2 shows the top 10 journals in which these articles appeared. For this evaluation, at least six articles had to appear in a respective journal to be included in the top 10. This analysis indicated

that a vast variety of journals address the topic of BMI. Five of the top 10 journals are dedicated to innovation/technology management, and one of the top two journals focuses on BMs. The other top 10 journals show BMI is a relevant topic in general business and management journals, as well as sustainability and environmental management journals. Therefore, this illustrates that BMI is being adapted and used in many different fields that are not limited to business and management research fields. Eighty percent of all published scientific content in BMI are articles.

Figure 3 provides an overview of the top 10 most-cited journals. Each was cited more than 280 times within the 380 articles. The journal *Long Range Planning* is the most influential, as this journal is by far the most cited. Most of the other most-cited journals are high-impact general management journals. Therefore, although BMI has been adopted in many fields, the understanding and information are based on business and management research fields.

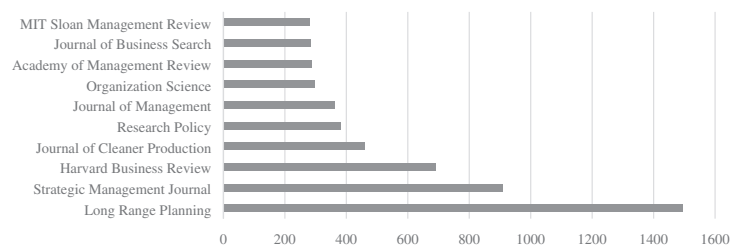
The citation analysis also focused on the top 30 most-cited literature publications, which contribute to the foundation of BMI theory. The fact that these publications have been cited so often indicates



**FIGURE 1** Total number of published articles per journal from 2000 to 2019



**FIGURE 2** Top 10 journals according to number of published articles from 2000 to 2019



**FIGURE 3** Top 10 journals according to total number of citations



**TABLE 1** Overview of the 30 most-cited publications

Rank	Citations	Authors (year)	Title
1	212	Teece (2010)	<i>Business Model, Business Strategy and Innovation</i>
2	176	Chesbrough (2010)	<i>Business Model Innovation: Opportunities and Barriers</i>
3	165	Zott et al. (2011)	<i>The Business Model: Recent Developments and Future Research</i>
4	138	Osterwalder and Pigneur (2010)	<i>Business Model Generation—A Handbook for Visionaries, Game Changers, and Challengers</i>
5	137	Chesbrough and Rosenbloom (2002)	<i>The Role of the Business Model in Capturing Value From Innovation: Evidence From Xerox Corporation's Technology Spin Off Companies</i>
6	133	Amit and Zott (2001)	<i>Value Creation in E-Business</i>
7	120	Johnson, Christensen, and Kagermann (2008)	<i>Reinventing Your Business Model</i>
8	109	Zott and Amit (2010)	<i>Business Model Design: An Activity System Perspective</i>
9	99	Chesbrough (2007)	<i>Business Model Innovation: It's Not Just About Technology Anymore</i>
10	98	Sosna, Treviño-Rodríguez, and Velamuri (2010)	<i>Business Model Innovation Through Trial-and-Error Learning: The Naturhouse Case</i>
11	92	Amit and Zott (2012)	<i>Creating Value Through Business Model Innovation</i>
12	91	Morris, Schindehutte, and Allen (2005)	<i>The Entrepreneur's Business Model: Toward a Unified Perspective</i>
13	88	Magretta (2002)	<i>Why Business Models Matter</i>
14	86	Casadesus-Masanell and Ricart (2010)	<i>From Strategy to Business Model and Onto Tactics</i>
15	85	Demil and Lecocq (2010)	<i>Business Model Evolution: In Search for Dynamic Consistency</i>
16	77	Zott and Amit (2008)	<i>The Fit Between Product Market Strategy and Business Model: Implications for Firm Performance</i>
17	73	Osterwalder, Pigneur, and Tucci (2005)	<i>Clarifying Business Models: Origins, Present, and Future of the Concept</i>
18	67	Schneider and Spieth (2013)	<i>Business Model Innovation: Towards an Integrated Future Research Agenda</i>
19	68	Foss and Saebi (2017)	<i>Fifteen Years of Research on Business Model Innovation: How Far Have We Come, and Where Should We Go?</i>
20	65	McGrath (2010)	<i>Business Models: A Discovery Driven Approach</i>
21	58	George and Bock (2011)	<i>The Business Model in Practice and Its Implications for Entrepreneurship Research</i>
22	57	Baden-Fuller and Morgan (2010)	<i>Business Models as Models</i>
23	56	Zott and Amit (2007)	<i>Business Model Design and the Performance of Entrepreneurial Firms</i>
24	54	Doz and Kosonen (2010)	<i>Embedding Strategic Agility: A Leadership Agenda for Accelerating Business Model Renewal</i>
25	54	Spieth, Schneckenberg, and Ricart (2014)	<i>Business Model Innovation—State of the Art and Future Challenges for the Field</i>
26	53	Casadesus-Masanell and Zhu (2013)	<i>Business Model Innovation and Competitive Imitation: The Case of Sponsor-Based Business Models</i>
27	51	Markides (2006)	<i>Disruptive Innovation: In Need of a Better Theory</i>
28	51	Bucherer, Eisert, and Gassmann (2012)	<i>Towards Systematic Business Model Innovation: Lessons From Product Innovation Management</i>
29	46	Bocken, Short, Rana, and Evans (2014)	<i>A Literature and Practice Review to Develop Sustainable Business Model Archetypes</i>
30	43	Shafer, Smith, and Linder (2005)	<i>The Power of Business Models</i>

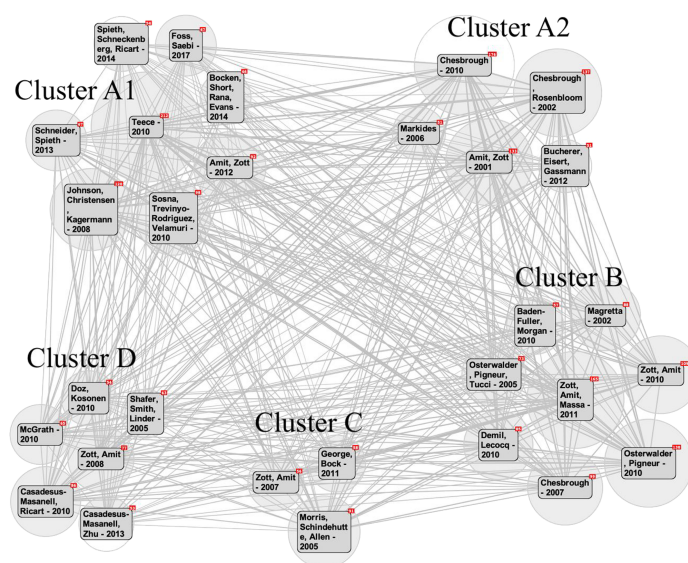
that they, as well as their authors, are influential in BMI. In Table 1, the top 10 most-cited publications are listed. The fact that Amit and Zott and Chesbrough take six of the top 10 rankings highlights that they are the most influential authors regarding BMI. Almost all of these publications are peer-reviewed articles, and the citation rates vary from 46 to 212 per article.

### 3.2 | Citation network analysis

Figure 4 visualizes the results of the network analysis. The figure shows the publications in their defined clusters. The size of the circle around the publication represents its number of citations. The lines

between the nodes (publications) represent the direct citations of the publications between each other. This figure highlights that there is significant cross-referencing within but also between clusters, especially between clusters A1 and B. This shows high interdependency between the clusters.

The clusters suggest that there are four core literature streams within the research field of BMI (Table 2). The first stream focuses on value creation through BMI, the second highlights strategic BM concepts, the third shows how the BM is connected to entrepreneurship, and the fourth demonstrates how the BM is related to strategy. In particular, the clusters with the most publications are "value creation through business model innovation" and "strategic BM concepts."



**FIGURE 4** Citation matrix: Top 30 most-cited publications [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

**TABLE 2** Cluster contributions

Cluster	Contribution
A: Value creation through BM innovation	
A1: Value creation from an organizational perspective	Organizational learning and experimentation Readjusting business design elements to create a new customer value proposition Future directions for practitioners and researchers
A2: Value creation through product and technology innovation	Importance of aligning and understanding the BM with technological innovations Leadership and experimentation for technological innovation Difference and similarities to product and technology innovation
B: Strategic BM concepts	
	BMs as the base of a firm BM as how a firm does business The necessity for (continuous) change Importance of combining and understanding many BM elements
C: Design of the BM and its connection to entrepreneurship	
	Dimensions where entrepreneurs can intervene and create value for the BM Novelty-centric BM design
D: Interrelation of the BM and strategy	
	Strategy as a contingency plan Leadership and experimentation as a strategic tool Maintain a competitive advantage

### 3.2.1 | Cluster A: Value creation through BMI

Value creation is considered one of the main elements of BMI. Within this cluster, the literature streams can be split into two funnels: *value creation from an organizational perspective* and *value creation through product and technology innovation*. Both funnels show that among the findings, organizational learning, experimentation, and understanding the BM are significant drivers for value creation through BMI.

### 3.2.2 | Cluster A1: Value creation from an organizational perspective

Cluster A1, *value creation from an organizational perspective* consists of three streams: organizational learning and experimentation (Sosna et al., 2010; Teece, 2010), BM design elements (Amit & Zott, 2012; Bocken et al., 2014; Johnson et al., 2008; Teece, 2010) and future directions for managers, organizations, and researchers (Foss & Saebi, 2017; Schneider & Spieth, 2013; Spieth et al., 2014). In this cluster, two articles, by Teece (2010) and Sosna et al. (2010), showed how value creation from an organizational perspective is connected to the BM design and organizational learning. Teece (2010) synthesized many relevant topics, such as strategy, innovation management, and economic theory, and their connection to the BM and BMI. Moreover, further attention is drawn to the organizational perspective of BMI, which is linked closely to the BM design and plays a significant role. The core of designing a new BM lies in understanding customer desires, customer assessments, their behavior, and competitors, which goes beyond traditional market research. Additionally, identifying alternatives, analyzing the value chain, and delivering the new value at a cost-efficient rate contribute to a good BM design. Regardless of the innovation, the BM should always be aligned with these elements and should be ready to adapt to and implement new changes. To keep evolving the BM while creating value and capturing success, the organization (and the BM) must be open to experimenting, learning, and adapting. Finally, developing dynamic capabilities will assist the organization in adapting to changing environments (Teece, 2010). Sosna et al. (2010) also focused on two phases of BMI: experimentation and exploration, and exploitation. Through trial-and-error learning, companies can create new BMs and gain new perspectives on their BMs in different markets with different customers. Experimentation and exploration allow failure to occur; however, this is acknowledged as an opportunity to gain knowledge and awareness about the BM and to improve it. Once a new base is built, exploitation can help scale up the BM. When exploitation is combined again with experimentation, incoming internal and external factors can be confronted (Sosna et al., 2010). Furthermore, to enable trial-and-error learning, the organization must be open to experimentation on all levels, and in some cases, reorientation of the BM design will help overcome the traditional mindset (Sosna et al., 2010). Additionally, the motivation for experimentation and openness of the CEO and/or senior managers will further motivate other employees and can accelerate the success of the new BM. Finally, experimenting at a low expense is also

considered a key factor for organizations, which is why in some cases established firms develop a parallel BM to experiment while capturing value from the traditional BM (Sosna et al., 2010).

Johnson et al. (2008), Amit and Zott (2012), and Bocken et al. (2014) agreed with Teece (2010) concerning BM design. However, these articles offer frameworks and different definitions of the BM design elements. Nonetheless, from an organizational perspective, the focus in these articles is the new customer value proposition, which plays the most important role in reinventing the BM and readjusting the core elements of the BM. Johnson et al. (2008) proposed four elements, which contribute to a successful BM: customer value proposition, profit formula, key resources, and key processes. These elements must be addressed and adapted when a new BM is created. Additionally, in agreement with Sosna et al. (2010), breaking old habits, experimentation, patience, and in some cases, leading more than one BM might be beneficial to gain insight into how to innovate the BM (Johnson et al., 2008). Furthermore, the article highlights five situations for organizations, which can be seen as an opportunity to innovate a company's BM. This includes addressing a large, left-out customer group, incorporating new technology simultaneously with a new BM, addressing a different customer need, defending oneself from low-end disrupters, and/or responding to competition (Johnson et al., 2008).

On a similar note, based on previous work dedicated to creating value for e-businesses, Amit and Zott (2012) showed how enterprises can innovate their BMs. According to Amit and Zott (2012), changing and readjusting the foundation design elements of the BM, such as adding novelty activities, for example, through integration (content), linking activities in new ways (structure), and changing who performs the activities (governance), can lead to BMI. The value creation can be increased by actions such as novelty, lock-in, complementarities, and efficiency. However, some synergies of these elements have a greater impact on the value creation within a new BM (Amit & Zott, 2012). Additionally, Amit and Zott (2012) proposed six questions concerning the new customer value proposition, revenue, and design elements, which should help managers and organizations expand the traditional view of the BM and guide innovation.

Finally, Bocken et al. (2014) offered organizations a perspective on how to create value by incorporating social and environmental aspects. According to Bocken et al. (2014), for organizations, the topic of sustainability is increasing continuously, as regulations change, resources become scarce, and environmental and social pressures increase. Based on this judgment, Bocken et al. (2014) offered a framework of eight archetypes for how to integrate sustainability into BMI. In their article, the BM design elements are defined as the value proposition, value creation and delivery (key activities, resources, and partners), and value capture (cost structure and revenue streams). Thus, they show some similarities to the elements identified by Johnson et al. (2008) and Amit and Zott (2012). The archetypes are described along with these elements, highlighting what advantage is pursued. Examples are given for how the archetypes have been implemented (Bocken et al., 2014). Finally, the archetypes should inspire enterprises to create sustainable value and offer managers and



organizations guidance for discovering new opportunities (Bocken et al., 2014).

The final three articles of this cluster present future directions for organizations to expand their research, to gain insight into how they can keep evolving and innovating their BM. Schneider and Spieth (2013) emphasized the need for a better understanding of BMI enablers, drivers, processes, financial perspectives, and firm capabilities. For organizations, these findings could highlight which elements and processes correlate with different BMs and capabilities and will, therefore, be beneficial for future implementations (Schneider & Spieth, 2013). Similarly, Foss and Saebi (2017) recognized gaps and future research directions in BMI for organizations. In particular, an empirical search is required to build taxonomies and identify key interdependencies, as well as to better understand the external antecedents and the outcomes of BMI (Foss & Saebi, 2017). Additionally, Foss and Saebi (2017) identified the greater need to investigate boundary conditions of BMI in the fields of entrepreneurship, open innovation, servitization, and sustainability. The last article in this cluster, by Spieth et al. (2014), offers various perspectives that identify similar future possibilities for the field of BMI. By categorizing the business in three perspectives (explaining the business, running the business, and developing the business), Spieth et al. (2014) agreed with the notion to conduct further research on topics such as the external environment, organizational capabilities, connections to product and process design, and openness.

In summary, this sub-cluster indicates that organizational learning, as well as experimentation, contributes to value creation from an organizational perspective. These two aspects allow organizations to learn by investigating and implementing new ways to create, deliver, and capture value. Additionally, value creation occurs from an organizational perspective, when BM design elements are changed and combined in a new way to offer a new customer value proposition. However, although the BM elements themselves are not the same among scholars, as the elements are named and/or combined in different ways, significant similarities among the themes can be observed, such as process, resources, capabilities, and revenue. Scholars agree that these themes can be changed to drive BMI. Finally, future directions are proposed for managers, organizations, and researchers, which implicate what specific areas or questions remain unanswered but if researched would offer great value to further understanding of BMI. These topics include the process, capabilities, and different boundary fields of BMI.

### 3.2.3 | Cluster A2: Value creation through product and technology innovation

Cluster A2, *value creation through product and technology innovation*, consists of five articles, which show that value can be created either through product and/or technology innovation. The articles by Chesbrough (2010) and Chesbrough and Rosenbloom (2002) contributed to technology innovation. Amit and Zott (2001) took a technological

approach to e-business. Last, Markides (2006) and Bucherer et al. (2012) elaborated on product innovation.

Chesbrough (2010) focused on opportunities and barriers in BMI. Opportunities arise when new value can be created through technological innovations; however, to profit from this value, it must be captured accordingly. The lack of understanding and the inability to incorporate innovation in the existing BM leads to one of the biggest barriers in technological innovation. To overcome this barrier, Chesbrough (2010) proposed experimentation, effectuation, and organizational leadership. Through experimentation and organizational change, the firm will understand which processes are the right fit for them, and how these processes can be aligned and adjusted with the current BM (Chesbrough, 2010). Chesbrough and Rosenbloom (2002) also emphasized the importance of experimentation and organizational leadership. They show that new technological value can be captured only if the BM is aligned with technological innovations (Chesbrough & Rosenbloom, 2002). The article additionally illustrates that the BM is between technological inputs and economic outputs; thus, the BM delivers value to customers through technological innovation (Chesbrough & Rosenbloom, 2002).

Amit and Zott (2001) took a different approach to technological innovation. Their article focuses on value creation in the e-business market. Through the new technological aspect of virtual markets, businesses had to find a new way to create value. Therefore, Amit and Zott (2001) created a value-drivers model, which contributes to increasing value creation in e-businesses. Four key sources play a role, specifically novelty, lock-in (switching costs, network effects), complementarities (bundling), and efficiency (Amit & Zott, 2001). The authors also propose a framework that includes the dimensions BM structure, BM content, and BM governance, where the four sources mentioned above can be leveraged to create value and exploit opportunities in BMI and, in particular, in the e-business market.

Finally, the last two articles in this cluster focus on the difference between BMI and product innovation (Bucherer et al., 2012; Markides, 2006). Markides (2006) included technological innovation in this analysis and proposed that the difference among BMI, product innovation, and technological innovation lies in the different kinds of market impacts, as well as the managerial implications. An innovative BM focuses on economic growth within the market by gaining more customers and changing existing products or services, rather than innovating them as product and technology innovation would (Markides, 2006). Additionally, BMI can create a newly competitive market, which leads to competitors, which, in the long run, desire to copy the new innovative BM. In contrast, technological innovation can be either incorporated and adopted or ignored, as this type of innovation does not have the potential to take over the whole market (Markides, 2006). In connection to product innovation, this is supported by a supply-push process, which focuses on product creations that are new to customers, markets, and competitors. These new products should provide a new value proposition, which will change customer behavior. Additionally, in product innovation, a niche market can be scaled up. This can, therefore, be identified as a different managerial implication, especially for entrepreneurs, in contrast to

the BM and technological innovation (Markides, 2006). Similarly, Bucherer et al. (2012) additionally highlight the similarities and differences between BMI and product innovation in five dimensions: origins of innovation, innovation process, organizational implementation, organizational anchoring, and degree of innovativeness. The main similarities lie in the internal and external triggers for innovation, the difficulty of the process, the organizational units required, and the market breakthrough (Bucherer et al., 2012). Furthermore, the differences can be seen in the process steps, the degree of senior management involvement (high for BMI), and the type of market breakthrough, technology (product innovation) versus industry (BMI) (Bucherer et al., 2012). Finally, managerial implications are offered when it comes to conducting BMI, such as the constant adjustment to internal and external changes, parallel implementation to mitigate risk and to choose the best practice, the importance of corporate culture, and the importance of incorporation with the company strategy (Bucherer et al., 2012).

In conclusion, this cluster highlights the barriers to and opportunities for technological innovation, as well as the importance of experimentation, leadership, and alignment throughout the organization. During BMI, this will assist firms in capturing the value created through the technological innovation. This finding is slightly similar to that for cluster A1; however, the focus of value creation and capture lies in technological innovation. Furthermore, this cluster indicates that BMI and product innovation have some similarities; however, they are perceived as independent components for value creation, as they have different impacts on markets as well as different managerial consequences.

### 3.2.4 | Cluster B: Strategic BM concepts

Cluster B is made up of eight publications that focus on strategic BM concepts. Zott et al. (2011) provided an overview of the broad scope of the term "business model." Amit and Zott (2010), Chesbrough (2007), and Magretta (2002) elaborated on one of the topics summarized by Zott et al. (2011). Additionally, Osterwalder and Pigneur (2010), Demil and Lecocq (2010), and Baden-Fuller and Morgan (2010) developed visual models for a BM. Finally, Osterwalder et al. (2005) offered a different approach to the BM.

Zott et al. (2011) identified that scholars use the term BM in many ways and conclude that a clear definition is missing. In particular, BMs are often brought in connection with e-business, strategy (value creation, competitive advantage, and firm performance), and technology and innovation management. Zott et al. (2011) discovered common ground among researchers and categorized four common themes. These themes indicate that the BM can be used as a tool of analysis, can emphasize how firms conduct business from a holistic approach, is a firm-centric, boundary-spanning activity system, and focuses increasingly on value creation rather than value capture (Zott et al., 2011).

Three articles in this cluster show a connection to either the first three defined silos or to the four emerging themes mentioned above by Zott et al. (2011). Zott and Amit (2010) identified BM design as an

activity system. The activity system includes the firm itself as well as stakeholders, such as partners, customers, and suppliers. The interdependent activities within this system allow the firm to create value for its stakeholders. At the same time, these activities create an opportunity to capture some of this value for themselves (Zott & Amit, 2010). Furthermore, based on Zott and Amit's (2010) previous work on value creation for BMs in the e-business market, their framework can be adapted for the BM. According to Zott and Amit (2010), activity systems can be designed along with two parameters; design elements, which are content (new activities), structure (link between activities), and governance (changing who performs the activities), and design themes, which are novelty, lock-in, complementarities, and efficiency. The design elements are different from the design themes. The elements focus on how a firm does business and creates a foundation for the BM, whereas the design themes emphasize the drivers for value creation in the BM (Zott & Amit, 2010). This framework is presented mainly for managers and entrepreneurs and can be used to create a bigger picture of the firms spanning boundaries if the BM is mapped along with the two parameters (Zott & Amit, 2010).

Chesbrough (2007) connected the BM to technology and innovation. Magretta (2002) highlighted the definition of a BM and distinguished it briefly from strategy. Chesbrough (2007) emphasized that BMs are necessary for technology and innovation and that understanding them plays an important role. Therefore, Chesbrough (2007) offered a broad definition of a BM as well as an overview of different types of innovative BMs. First, a BM focuses on value creation and value capture. However, BMs also incorporate a focus on market segmentation, a structured value chain, revenue generation mechanisms, a definite position within its ecosystem, and a competitive strategy (Chesbrough, 2007). Additionally, the author presents six BM types, which show the evolution of an innovative BM. The first type is an undifferentiated BM that can be copied easily. This includes BMs for restaurants or hairdressers. Gradual innovation stages are proposed for every BM type. Finally, the sixth type of BM is presented as an adaptive platform, which allows experimentation and interconnections between stakeholders. This type of BM can be seen in companies like Microsoft (Chesbrough, 2007). This process allows companies to identify where they stand and how they can move forward through these evolution stages (Chesbrough, 2007).

Finally, Magretta (2002) agreed with Zott et al. (2011) in identifying a deficit in the understanding of the definition of a BM. Additionally, Magretta (2002) highlighted that understanding the BM as well as adjusting it when change is needed is essential and, therefore, important for the success of a company. Magretta proposed two tests, which can help identify the reason BMs fail. The "narrative (storytelling) test" implies that a BM tells a story of how the firm works and provides insight into the customers, customer value, revenue, and value delivery process (Magretta, 2002). The "numbers test" can identify whether a BM is successful by assessing the profit and losses. In this case, large losses can suggest that customer behavior is not understood well enough and that the BM should be adjusted according to the customers (Magretta, 2002). Additionally, when a new BM is created, the story is



rewritten, and the value chain is adjusted either by activities that make something or that sell something (Magretta, 2002). Finally, Magretta (2002) identified a clear difference from strategy, as strategy focuses on the competitive advantage.

Similar to Magretta's (2002) storytelling approach, publications by Osterwalder and Pigneur (2010), Demil and Lecocq (2010), and Baden-Fuller and Morgan (2010) focused on the BM as a canvas, a blueprint, or a recipe. Osterwalder and Pigneur (2010) and Demil and Lecocq (2010) emphasized how a BM can evolve and propose specific procedures for doing so, whereas Baden-Fuller and Morgan (2010) focused on BM characteristics. Osterwalder and Pigneur (2010) provided a handbook for practitioners, which can help build a BM based on topics such as the canvas, patterns, design, strategy, and process. Nine proposed building blocks that cover the main areas concerning the customers, offer, infrastructure, and financial viability are said to be the core of the BM. Guiding questions for each building block assist practitioners in creating their own BM (Osterwalder & Pigneur, 2010). The authors also suggest types (patterns) of BMs, tools and techniques, as well as strategies, and can assist practitioners to create and implement a (new) BM (Osterwalder & Pigneur, 2010). Demil and Lecocq (2010) acknowledged two different approaches for the BM: as a blueprint for the core components of a business and as a tool for addressing change and innovation either in the organization or in the BM. According to Demil and Lecocq (2010), a BM is naturally always evolving due to internal or external factors or due to voluntary or emerging change. Therefore, the authors propose a framework, which highlights the interactions within and between the BM core components (resource and competences, the organizational structure, and the value propositions) and shows their importance in the evolution of a BM, as well as how their interaction may lead to change itself (Demil & Lecocq, 2010). In addition, the interaction of the core components can lead to firm performance. However, to acquire sustainable performance, dynamic consistency is needed, as this allows a firm to identify and implement change in the BM (Demil & Lecocq, 2010).

Baden-Fuller and Morgan (2010) offered a similar concept of a BM, which suggests that it can be created step by step. This presents another way for a BM to be copied; however, there are many generic ways in which a BM can be created, as it consists of many elements, such as resources, capabilities, and products, which can be combined in many different ways. This contributes to the firm's success and can lead to many different results depending on the combinations. Therefore, this leaves room for variation as well as innovation (Baden-Fuller & Morgan, 2010). Baden-Fuller and Morgan (2010) also categorized BMs as a scale model (copies of things) or as a role model (models), which are to be copied.

The last article in this cluster, by Osterwalder et al. (2005), offers insight into the BM concept, its use, and its connection to information systems. In the article, the BM concept is defined as "a conceptual view of a particular aspect of a specific company" (Osterwalder et al., 2005, p. 3). The BM concept is based on two levels. The first is a conceptual level, which highlights how firms do business and what elements are part of the BM. In addition, taxonomies (classifications

and commonalities) play an important role. The second level, called "the instance level," represents real-world BMs (Osterwalder et al., 2005). The BM concept is essential for businesses as it helps understand the business logic. Additionally, the BM can be useful in analysis, supports the management especially in times of change, will offer prospects and support, and increases innovation and readiness (Osterwalder et al., 2005).

### 3.2.5 | Cluster C: Design of the BM and its connection to entrepreneurship

Entrepreneurship and the BM design play an important role in the BM core literature. Three articles constitute cluster C. The first article, by Morris et al. (2005), provides a framework for entrepreneurs that will assist them to build, design, and analyze a BM for any type of company. The framework is based on six BM literature streams, which include topics such as value creation, customers, resources, competition, and revenue (Morris et al., 2005). The authors investigate these streams in three dimensions that can be directly influenced by entrepreneurs: foundation (basic components), propriety (unique combinations), and rules (guidelines). Finally, the authors make a connection to the strategy, as this is important to maintain a competitive advantage (Morris et al., 2005). Similarly, in the second article, George and Bock (2011) identified three dimensions for entrepreneurs; however, these dimensions are based on the BM and the organizational structure. George and Bock (2011) proposed a resource structure, a transactive (transactions with stakeholders) structure, and a value structure, which build the BM structure and can be seen as a building block for the entrepreneurs' process. George and Bock (2011) saw the BM as an opportunity-centric design that helps entrepreneurs identify and implement opportunities. This leads to the last article in this cluster, by Zott and Amit (2007), which tests entrepreneurial firms' performance with an efficiency- and novelty-centric design. This article identifies that a novelty-centric model design is more valuable for entrepreneurial firms, as it discovers new ways for economic transactions. Linking this to the findings by George and Bock (2011), the novelty-centric design incorporates the opportunity perspective, as opportunity development can be part of the process (Zott et al., 2011). However, combining novelty- and efficiency-centric BMs may be counterproductive (Zott et al., 2011).

### 3.2.6 | Cluster D: Interrelation of BM and strategy

Cluster D includes six articles that outline three directions for how the BM is connected to or is sufficiently different from the strategy. In the first direction, Casadesus-Masanell and Ricart (2010) and Casadesus-Masanell and Zhu (2013) focused on strategy, tactics, and the BM. Shafer et al. (2005) showed the ongoing effect a BM has on strategy and vice versa. In the second direction, McGrath (2010) and Doz and Kosonen (2010) identified leadership and experimentation as a strategic tool. For the third direction, Zott and Amit (2008)

make a connection between the BM and the product market strategy.

Casadesus-Masanell and Ricart (2010) demonstrate that BM, tactics, and strategy are different attributes, which are interconnected. According to this article, a BM reflects on the firm operations, focuses on the value creation process with the stakeholder, and reflects the firm's logic (Casadesus-Masanell & Ricart, 2010). In contrast, the strategy indicates the specific, competitive choices that are made for the BM in combination with tactics, which correspond to other choices that can be applied within the strategy (Casadesus-Masanell & Ricart, 2010). In this sense, a strategy is a contingency plan for the BM, which decides how the firm will compete depending on the competitors in the market. The tactics focus on flexible choices, which are easy to implement and easy to change after the BM and strategy have been established (Casadesus-Masanell & Ricart, 2010). Furthermore, a competitor will naturally react to the strategic choices, and over time, it becomes harder to anticipate the competitor's next moves and reactions (Casadesus-Masanell & Ricart, 2010). On a similar note, Casadesus-Masanell and Zhu (2013) focus on sponsor-based BMs and their connection to innovation and competitive imitation (Casadesus-Masanell & Zhu, 2013). The strategic choice with sponsor-based BMs lies in whether the entrant should reveal or conceal their strategy upon entering the new market (Casadesus-Masanell & Zhu, 2013). The decision will result in a response from the competitor. This will be either a tactical change or a replica or hybrid version of the newly introduced business model. In this sense, there is no clear yes or no answer; therefore, these competitive effects must be considered (Casadesus-Masanell & Zhu, 2013). Finally, a duopoly position may be beneficial for the established company in the market, as they can learn from the entrant and their newly introduced BM (Casadesus-Masanell & Zhu, 2013).

Shafer et al. (2005) showed that BMs never reach a final state, because the strategy of a company has to develop iteratively, and therefore, the BM changes through this development. For long-term success, the authors point out that constant testing of strategic options is necessary and goes in line with BM changes. With this constant testing, the authors show the importance of experimentation for successful BMs. The authors expect ongoing testing of assumptions about trends and norms.

Experimentation, as well as leadership, plays an important role in strategy. McGrath (2010) offered a "discovery-driven" approach for strategists and their BMs in uncertain environments. The fundamental parts of this approach are experimentation and leadership. On one hand, experimentation requires failure and learning from mistakes across and within the organization, as well as doing so at a low cost. The expenses should be kept low, as (competitive) advantages only become clear after some time, and financial investment is required during this period (McGrath, 2010). On the other hand, leadership is crucial to discover future opportunities for BMs, as leaders should question the current BM and inspire and support employees to search for alternatives and new outlooks (McGrath, 2010). Similarly, providing a broader outlook, a leadership agenda for accelerating BM renewal was developed by Doz and Kosonen (2010). The agenda

highlights how leaders can support BM transformation by developing three "meta-capabilities": strategic sensitivity, leadership unity, and resource fluidity (Doz & Kosonen, 2010). Strategic sensitivity focuses on discovering opportunities for transformation (Doz & Kosonen, 2010). Thus, the key tool described by McGrath (2010), experimentation, is embedded in this dimension. Furthermore, leadership unity provides steps to unlocking adaptive leadership, which helps build up commitments and engagement within the organization (Doz & Kosonen, 2010). Finally, resource fluidity focuses on reallocating resources to match the transformed BM (Doz & Kosonen, 2010).

Finally, the article by Amit and Zott (2008) states how BM is connected to the product market strategy. Consequently, the definition of the BM and the product market strategy aligns with the definitions stated above by Casadesus-Masanell and Ricart (2010), with the exception that the strategic focus is drawn to the product markets (Zott & Amit, 2008). The results of this article show that novelty-centric BMs contribute to the firms' performance if they are executed with a differentiation or cost leadership strategy or are an early market entrant (Zott & Amit, 2008). Finally, these two actors (the BM and the product market strategy) can gain competitive advantage by acting together or independently and can be perceived as complements (Zott & Amit, 2008).

### 3.3 | Qualitative trends analysis

As elaborated in the methodology, we analyzed all of the articles published in 2019 and grouped them by the keywords in their titles for the trend analysis. Out of the 96 articles (100%), we identified seven trends. These directions concern two streams: sustainability in terms of social and economic value (9.4%), dynamic capabilities (6.25%), small- and medium-sized enterprises (6.25%), circularity (5.2%), and digitalization and digital transformation (5.2%) and sustainability in terms of sustainable performance and other sustainability topics (4.2%) and leadership (3.1%). There was some overlap between the articles. In this case, we placed the article in both streams. Due to the criteria we set in the methodology section, and based on this analysis, we identified the following top three trends (Table 3) as emerging trends: sustainability (9.4%), dynamic capabilities (6.25%), and small- and medium-sized enterprises (6.25%).

#### 3.3.1 | Trend A: Sustainability

The first and most significant trend in BMI literature is sustainability. This trend focuses on how sustainability and BMI can increase social, environmental, and economic impacts (Bocken et al., 2014), rather than concentrating on the purpose of BMI for sustainable economic performance. Nine articles (9.4%) linked directly to this type of sustainability and BMI; thus, this is the largest trend that could be identified. Within these articles, two directions are noticeable. The first addresses the connection between sustainable BMI and different



**TABLE 3** BMI trends in the 2019 publications

Trend	Authors	Contribution
A: Sustainability	Pieroni, McAlloone, and Pigosso (2019); Hu, Huang, Cheng, and Lu (2019); Ciulli and Kolk (2019); Peralta, Carrillo-Hermosilla, and Crecente (2019); Sousa-Zomer and Cauchick-Miguel (2019); Kilintzis, Samara, Carayannis, and Bakouros (2020); Stubbs (2019);	The circular and sharing economies Barriers and drivers for sustainable innovation
B: Dynamic capabilities	Bocken and Geradts (2019); Zhao, Wei, and Yang (2019); De Silva, Al-Tabbaa, and Khan (2019); Čirjevskis (2019); Muhic and Bengtsson (2019); Weimann, Gerken, and Hülsbeck (2019)	Specific dynamic capabilities Future directions
C: Small- and medium-sized enterprises	Bouwman, Nikou, and de Reuver (2019); Müller (2019); de Reuver, Haaker, and Cligge (2019); Asemokha, Musona, Torkkeli, and Saarenketo (2019); Liao, Liu, and Ma (2019); Pucihar, Lenart, Kljajić Borštnar, Vidmar, and Marolt (2019)	Empirical testing of theories Learning and adapting techniques

economies (Ciulli & Kolk, 2019; Hu et al., 2019; Pieroni et al., 2019). The second focuses on different drivers, barriers, and the stakeholder approach for sustainable BMI within different industries and countries (Bocken & Geradts, 2019; Kilintzis et al., 2020; Peralta et al., 2019; Sousa-Zomer & Cauchick-Miguel, 2019; Stubbs, 2019). This literature focuses largely on sustainable BMI approaches by Bocken and Geradts (2019), who identified eight archetypes that contribute to sustainable BMI and are elaborated in cluster A1. Scholars also concentrate on an article by Boons and Lüdeke-Freund (2013), which offers sustainable approaches for BM components such as value proposition, supply chain, customer interface, and financial perspective. Moreover, the need to address sustainability and BMI has been called for by, among other authors, Foss and Saebi (2017).

First, sustainable BMI plays a role in economies, such as the circular and sharing economies. The literature on BMI indicates that various concepts are connected to the circular economy as well as sustainability, and can be mapped throughout different dynamic capabilities (sensing, seizing, and transforming) of BMI. Due to their similarities and differences, synergies can be made to create superior customer value (Pieroni et al., 2019). In addition, the sharing economy is gaining recognition in BMI, as the growth potential has been discovered within this economy (Ciulli & Kolk, 2019). Hu et al. (2019) provided an example of how business as a platform can incorporate four sustainable BMI archetypes (based on Bocken et al., 2014) to evolve in the sharing economy while creating, delivering, and capturing sustainable value. Additionally, the authors highlight opportunities and threats of firms entering the sharing economy. For instance, social and environmental value can be created if the BM is adjusted according to

sustainable sharing economy goals, such as using resources efficiently. However, if the entering firm applies a mimicking strategy or does not incorporate the sharing economy philosophy, then the potential environmental value would not be created as intended (Ciulli & Kolk, 2019). To avoid this, Ciulli and Kolk (2019) offered 12 ways to innovate sustainable BM.

Second, the authors highlight drivers of and/or barriers to sustainability. Entrepreneurs are motivated to follow sustainable BMI practices if they are easy to implement and enjoyable to practice (Peralta et al., 2019). Additionally, in small- and medium-sized enterprises, human resources, innovation, and technology are seen as drivers and enablers for organizational sustainability (Kilintzis et al., 2020). Furthermore, two case studies highlight that in developing countries, social factors, such as participating in a program for the community and focusing on the customer relationship, can be perceived as drivers for sustainable BMI. In contrast, lack of knowledge about sustainability issues and customer acceptance, as well as lack of sponsorship, are barriers (Sousa-Zomer & Cauchick-Miguel, 2019). Additionally, the imbalance of power and clashes of values and goals can be considered barriers to pursuing sustainable goals. However, specific firm structures, strategies, and/or practices can help overcome these barriers (Stubbs, 2019). Moreover, to overcome implementation barriers, a collaborative approach with the stakeholders is suggested (Peralta et al., 2019; Sousa-Zomer & Cauchick-Miguel, 2019). However, there are different perspectives in these studies on the relevance of stakeholders. This variation indicates the heterogeneity of sustainable BMI highlighting different criteria that affect the drivers and barriers.



### 3.3.2 | Trend B: Dynamic capabilities

Another trend in BMI is the topic of dynamic capabilities. Out of the articles analyzed from 2019, six (6.25%) make a contribution to this direction. The majority of these articles base the definition of dynamic capabilities on Teece's (2018) findings, which state that sensing, seizing, and transforming are dynamic capabilities of organizations that help businesses develop and evolve their BMs. Strong dynamic capabilities also allow an organization to react fast to customer needs and, at the same time, maintain a sustainable competitive advantage (Teece, 2018). In the core literature, dynamic capabilities are found in the most-cited article by Teece (2010) as well as in the publication by Foss and Saebi (2017). Furthermore, all of the articles in this trend illustrate that their research emerged from the implications stated by Foss and Saebi (2017). Their article highlights that internal drivers, such as dynamic capabilities, should be addressed further.

Dynamic capabilities are linked to many research fields, such as sustainable BMI (Bocken & Geradts, 2019), organizational search (Zhao et al., 2019), international social purpose organizations (De Silva et al., 2019), BMI in mergers and acquisitions of technology-advanced firms (Čirjevskis, 2019), cloud-sourcing in stage-based BMs (Muhic & Bengtsson, 2019), and BMI in family firms (Weimann et al., 2019). Although little direct connection could be made between the articles themselves regarding the research area that is linked to dynamic capabilities, we found some similarities in the contributions, as well as in the future directions for the specific research fields.

Scholars identified a broad range of individual dynamic capabilities for the targeted research fields. For instance, internal coordination capabilities and stakeholder engagement capabilities are important for organizational search (Zhao et al., 2019). Additionally, the role of the founders' capabilities, organizational capabilities, and the ecosystem play a role in international social purpose organizations (De Silva et al., 2019). Despite many specific discoveries, various scholars agree that the findings do not represent capabilities that can be used in a

general manner for BMI: they are for a specific firm type or BMI type (Bocken & Geradts, 2019; De Silva et al., 2019; Weimann et al., 2019).

All of the articles identified the need for further quantitative empirical research in these fields. Additionally, several authors wanted a more detailed and general framework for dynamic capabilities, which could be built on these findings (De Silva et al., 2019; Weimann et al., 2019). Last, performance indicators and impacts for dynamic capabilities should be tested within these fields as well as in general, to gain knowledge about which capabilities can be connected to financial and other perspectives (Bocken & Geradts, 2019; De Silva et al., 2019; Weimann et al., 2019).

### 3.3.3 | Trend C: Small- and medium-sized enterprises

The last emerging trend focuses on small- and medium-sized enterprises. Although these enterprises are perceived as having an important role in the economy, various scholars identified the lack of studies on the connection between BMI and small- and medium-sized enterprises (Bouwman et al., 2019; de Reuver et al., 2019; Liao et al., 2019; Müller, 2019; Pucihar et al., 2019). Therefore, there is a current tendency in the literature to focus on BMI research and small- and medium-sized enterprises. In particular, six (6.25%) articles make a direct contribution by connecting these subjects. The focus is digitalization and Industry 4.0 (Bouwman et al., 2019; Müller, 2019), online courses (de Reuver et al., 2019), entrepreneurial orientation and international performance (Asemokha et al., 2019), open innovation and organizational agility (Liao et al., 2019), and drivers and outcomes (Pucihar et al., 2019).

Among the articles, four out of six conducted an empirical study to test the theoretical BMI implications on small- and medium-sized enterprises (Asemokha et al., 2019; Bouwman et al., 2019; Liao et al., 2019; Pucihar et al., 2019). Some authors focused on hypotheses that can be

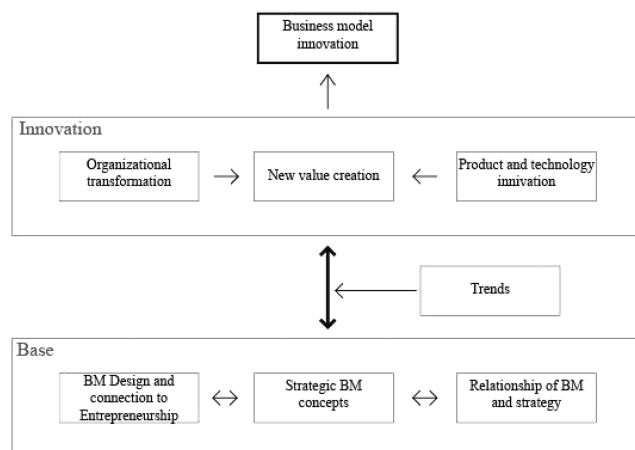


FIGURE 5 BMI model for practice and research

found within the core literature above, such as firm performance (Teece, 2010; Zott & Amit, 2007), experimentation (Chesbrough, 2010; Chesbrough & Rosenbloom, 2002; McGrath, 2010), entrepreneurship (Amit & Zott, 2012), environment (Johnson et al., 2008), and technological innovation (Chesbrough, 2007). However, in particular, open innovation and organizational capabilities are based on theories that are not identified directly in the clusters. Finally, half of these studies derive from the gaps identified by Foss and Saebi (2017), who called for more empirical research as well as additional research within specific topics, such as open innovation (Asemokha et al., 2019; Liao et al., 2019; Pucihar et al., 2019).

The articles indicate that most of the hypotheses could be verified. For instance, BMI has a positive effect on the performance of small- and medium-sized enterprises (Asemokha et al., 2019; Bouwman et al., 2019; Pucihar et al., 2019). However, there are some exceptions. In particular, information technology could not be identified as a key tool for BMI in Slovenian innovating businesses, although this is stated otherwise in the literature (Pucihar et al., 2019).

Furthermore, two articles explicitly state the importance of learning and adapting BMI techniques for small- and medium-sized enterprise managers (de Reuver et al., 2019; Pucihar et al., 2019). Therefore, de Reuver et al. (2019) offered five online courses based on six design principles that should help managers of small- and medium-sized enterprises overcome challenges to innovating their current BM.

## 4 | DISCUSSION AND CONCLUSION

### 4.1 | Synthesis

The bibliometric analysis clearly shows that BMI is widely used and that a clear core of established literature has accumulated. In addition to four clusters, we show the three main trends of the present and future for this research field. The results clearly indicate that the core literature of BMI is based on the BM literature. We can assume then that the proportion of BM literature will decrease as the theory of BMI progresses. An example is the work of Foss and Saebi (2017), which has made its way into the core literature. As things stand at present, the clusters we identified clearly represent the core literature of BMI. However, these clusters cannot be considered for themselves. The interconnectedness of the findings indicates that a holistic approach must be taken, as Zott et al. (2011) suggested for BM research. Within the BMI literature, the authors work on more than one cluster, and their publications influence each other. This creates a connection between the clusters. Not only are the clusters interrelated but also all the combinations of clusters and trends are important for future research.

Value creation as the main cluster is one of the core elements of BMI (Clauss, Abebe, Tangpong, & Hock, 2019). This position is also evident in the citation analysis. However, a BM also consists of other elements. These elements have not received the same attention from researchers. Detailed research on the respective elements could offer

great potential. This raises not only the question of how these other elements change but also how they can be innovated. One possible perspective on innovating these elements is sustainability, as recent research shows (Kraus, Filser, Puimalainen, Kailer, & Thurner, 2020; Rahman et al., 2020). Therefore, the interface of value creation and sustainability as the two most important results in the cluster and trend analysis is very important. On one hand, it is about creating innovative and sustainable business models and, on the other, about the question of how a sustainable value creation affects long-term development (Bocken et al., 2014). However, BMI can be more than the pure innovation of the value creation. Other elements can be innovated, and research should focus on them. In general, the analysis of BMI elements from the perspective of sustainability can be seen as a topic. In this context, circular business models are often mentioned, as they have a special position from the sustainability perspective (Chen, Hung, & Ma, 2020; Scarpellini, Valero-Gil, Moneva, & Andreas, 2020). In addition, other generic business models can be sustainable or developed for sustainability; however, companies need a special set of skills to do so.

Trends in society are an important factor in shaping businesses, as they have to adapt to remain competitive. Therefore, they have to change their value proposition based on existing or new resources and competences (Rasmussen, Powell, & Hughes, 2016). Consequently, as social norms and customer needs change quickly, due to new technologies, innovations, and the environment, the need to gain dynamic capabilities is growing. These changes may force enterprises to innovate their BM. Developing strong dynamic capabilities will allow a fast reaction to changing customer needs in accordance with the BM (Teece, 2018). Especially, in the combination of dynamic capabilities and sustainability, further potential for the future can be found, as research is increasing (Scarpellini et al., 2020).

For small- and medium-sized enterprises, there seems to be a common curiosity among researchers concerning the effect of BMI theory on these BMs. The trend for empirical studies has shown that many concepts, which are described in the core literature and were developed for larger enterprises, apply to smaller firms as well. However, there are also some exceptions, as the impact of technology innovation could not be applied in all of the small- and medium-sized enterprises. Therefore, this trend could have arisen due to the lack of specialized research on small- and medium-sized enterprises (Pucihar et al., 2019). Additionally, these contradictory results could be a motivation for scholars and practitioners to test which hypotheses apply to small- and medium-sized enterprises to maintain and further develop a competitive advantage (Pucihar et al., 2019). Finally, for small- and medium-sized enterprises, empirical studies show that managers should experiment with the possible adjustments that can be made in their BMs. As various scholars have identified, resources are limited among small- and medium-sized enterprises (Eggers, 2020). However, Kraus et al. (2020) showed that BMI can be implemented within a short time and with few resources, at least temporarily, and subsequently, can have a long-term effect.

## 4.2 | Theoretical contributions

In this paper, we analyze the foundation of today's BMI literature. Therefore, the results of the analysis can be drawn into a general framework that can be viewed as the foundation of BMI. We propose a general model for BMI (Figure 5).

The framework consists of two levels, the base level and the innovation level, and it can be understood as a holistic overview of the core literature that contributes to BMI. The BM concept can be perceived as the starting point of the framework. This is firmly connected to entrepreneurship (left) and strategy (right). With these elements, value creation can be facilitated, either from an organizational perspective and/or through product and technology innovation. In addition, the trends have an impact on the overall relationship. The change in a value creation arises from the base but is significantly influenced by the current trends.

Researchers should use the holistic framework as a roadmap that shows the main contributions and connections in the BMI research field. The framework can assist researchers to identify where their discoveries are within this field and what elements are connected to their research. This may be valuable to discover synergies, barriers, or further research directions. For example, if a discovery or hypothesis about the BM concept is made, it should be considered how entrepreneurship and strategy affect this discovery and vice versa. This relationship can also be assumed between the two levels of the framework. For instance, if a new theoretical contribution to product innovation (the innovation level) is made, the effect on the BM (the base level) should be evaluated. Furthermore, when applying the framework, researchers can start on any level and at any point in the framework, as their discoveries can be independent.

Additionally, as developed in the discussion, emerging trends can influence the core literature. For this reason, researchers should focus on the impact that the emerging trends might have on the literature. For instance, if the trend of dynamic capabilities increases, this may become part of the core literature. As illustrated in the discussion, this effect is already visible in sustainability. Therefore, it is likely that other authors, such as Boons and Lüdeke-Freund (2013) or Teece (2018), will become part of the core literature. Anticipating this effect in advance may help scholars realize in which direction they can focus their research and the research trends. Moreover, it can be beneficial, as they can address the trends in a timely manner and be among the first researchers to offer theoretical and practical implications for businesses, managers, and other scholars.

## 4.3 | Future research directions

The findings and discussion illustrate various future research directions for scholars. First, the discussion highlights that social norms, and trends also play a large role in emerging trends. As a result, a future direction for scholars can be identified by trends that take place in society. For example, the identified sustainability trend can be observed in the literature as well as in society. For researchers,

anticipating social trends offers the opportunity to discover a new perspective and address a new theoretical need that could become a key part of BMI theory.

Second, among the emerging trends, scholars identified various gaps and future directions for BMI. Addressing them could be an additional future direction for scholars. Particular gaps could be closed by expanding sustainability studies (Peralta et al., 2019), offering a general framework for dynamic capabilities (De Silva et al., 2019; Weimann et al., 2019), and/or offering a broad BMI theory and further empirical studies for small- and medium-sized enterprises (Asemokha et al., 2019; Liao et al., 2019; Pucihar et al., 2019).

Third, other than the identified emerging trends, scholars have addressed themes such as circularity (Ferasso, Beliaeva, Kraus, Clauss, & Ribeiro-Soriano, 2020), digitalization (Bouncken, Kraus, & Roig-Tierno, 2019; Kraus, Palmer, Kailer, Kallinger, & Spitzer, 2018), and leadership in the previous year. This offers insight into topics that are gaining awareness, but not as quickly as the identified emerging trends. Thus, scholars could contribute to theoretical and empirical studies on these topics, as they could be lacking further scientific evidence.

Finally, the core literature could change over time due to emerging trends. Therefore, scholars should update the framework proposed above, to keep up with the core literature. This could benefit practitioners and scholars, as they could continue to use the framework. Additionally, other significant key elements could be identified to address the different stages (clusters) in the framework. Furthermore, an empirical study could be conducted to identify the statistical correlations and effects between the proposed stages in the framework.

## 4.4 | Limitations

The data collection sets some limitations for this article. As the data selection was based, among other criteria, on the keyword "business model innovation" in the title, this could potentially have omitted some literature that may be relevant for the analysis. The keyword selection also reflects a limitation on the emerging trends, as they are grouped based on keywords in the title. Moreover, the number of published articles in general can create a bias as some journals publish more than others in general. Furthermore, the dataset is limited to articles as the only form of publication included. Therefore, this automatically excluded academic work that had been researched over a long time and was published in the form of books. However, all this goes in line with the quality criteria (Kraus, Breier, & Dasí-Rodríguez, 2020). An additional limitation is related to the selection process. The grouping of the core literature streams is based on qualitative selection criteria. Thus, another author might group the most-cited publications based on different criteria and, therefore, have a different outcome. As common for bibliometric analyses, negative citations are also analyzed in the course of a citation analysis. The reasons works are cited, regardless of whether they were positive or negative, are not identified via quantitative analysis (Brew, 2009). This makes it impossible to generate any statements concerning the

direction of the impact that publications have made (Kraus, Filser, Eggers, Hills, & Hultman, 2012).

## 4.5 | Conclusion

In this paper, we aimed to provide an overview of the core literature streams and identify emerging trends in the BMI research field. By conducting a bibliometric citation analysis, we identified four core literature streams: value creation through BMI, strategic BM concepts, design of the BM and its connection to entrepreneurship, and interrelation of BM and strategy. Additionally, based on the bibliometric citation analysis dataset, we discovered emerging trends. They are sustainability, dynamic capabilities, and small- and medium-sized enterprises. From these results, we created a holistic framework for BMI. This framework may be used by scholars and should advance any future theoretical work on BMI. The framework provides a valuable overview of the core BMI literature and trends. For researchers, it can be beneficial to use the framework and key elements as an orientation in the BMI research field. For managers, this framework should help show which fields of BMI need to be addressed in a step-by-step manner to create value through BMI in their companies. Additionally, the key elements of the framework assist managers in understanding what capabilities and fundamental understandings need to be developed to succeed in BMI. The proposed framework represents a snapshot of the current research. As trends and research continue to evolve, the framework will need to evolve.

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## **Publication II**

Kraus, S., Clauss, T., Breier, M., Gast, J., Zardini, A., and Tiberius, V.

**The economics of COVID-19: initial empirical evidence on how family firms in five European countries cope with the corona crisis**

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## **Publication III**

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# The role of business model innovation in the hospitality industry during the COVID-19 crisis

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## ABSTRACT

The hospitality industry worldwide is among the hardest-hit industries from the COVID-19 lockdowns. Initial theoretical and practical observations in the hospitality industry indicate that business model innovation (BMI) might be a solution to recover from and successfully cope with the COVID-19 crisis. Interestingly, some firms in the hospitality industry already started to successfully adapt their business models. This study explores the why and how of these successful recovery attempts through BMI by conducting a multiple case study of six hospitality firms in Austria. We rely on interview data from managers together with one of their main stammgasts for each case, which we triangulate with secondary data for the analysis. Findings show that BMI is applied during and after the crisis to create new revenue streams and secure a higher level of liquidity, with an important role of stammgasts.

## 1. Introduction

The COVID-19 pandemic tremendously challenged governments, society, and firms worldwide (Clark et al., 2020). While some industries suffered from minor consequences, firms in the hospitality industry almost completely lost their business for months (Baum and Hai, 2020). Furthermore, the nature of their products and services prevents the possibility of a catch-up effect to compensate for the lost revenues on a long-term base. A meal not being served during the crisis cannot be sold twice later. Moreover, the lockdown might have changed how business in hospitality will be done in the future, given the new rules and regulations concerning hygiene and social distancing together with more hesitant and worried customers. Given this severe and still ongoing crisis, firms in this sector are in a need of adequate mechanisms to recover.

Research on crisis management in the hospitality industry sees good approaches above all in strengthened marketing for local consumers and the reduction of infrastructure. However, government aid is generally

regarded as the most important factor in the industry for surviving a crisis (Israeli and Reichel, 2003; Mansfeld, 1999). Ritter and Pedersen (2020) highlight that the COVID-19 crisis will affect established business models (BM). The BM is the firms' unique configuration of its value proposition (i.e., what does the firm offer to whom?), value creation (i.e., how is this value proposition created?) and value capture (i.e., how does the firm generate profits from this?) approach (Clauss, 2017; Clauss et al., 2019). In a recent analysis on family firms' reactions to the COVID-19 crisis – which also includes firms from the hospitality industry – Kraus et al. (2020) identified *temporary* business model innovation (BMI) as a potential solution to recover from the crisis. If a BM is innovated through substantial changes in the elements and/or their configuration (Foss and Saebi, 2017), new opportunities can be addressed that increase firm performance and may help hospitality firms to recover.

Research on BM and BMI in the hospitality industry is scarce, but indicates that BM considerations and BMI are empirically relevant in this industry. Bogers and Jensen (2017) provide a taxonomy of different

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BMs in the gastronomic sector as a basis to assess the potential for BMI. Souto (2015) highlights that BMI can stimulate incremental and radical innovation in the hotel sector. Cheah et al. (2018) found that BMI mediates the relationship between market turbulence and performance in the hospitality industry. Based on these considerations, we identify a relevant research need for answering the question:

*"Can BMI be used for overcoming the COVID-19 crisis in the hospitality industry?"*

If BMI is a relevant mechanism for hospitality firms to cope with the COVID-19 crisis, it needs to be identified under which conditions these are fostered. Empirical literature has demonstrated that environmental turbulence nurtures BMI activities (Cheah et al., 2018; Clauss et al., 2019). Also, the general management literature highlighted that firms need to identify or source the ideas for BMI across the boundaries of the firm (e.g., Hock-Doeppen et al., 2020; Micheli et al., 2020). In particular, customers have been identified as a valuable source of ideas for new BMs (Clauss et al., 2018; Ebel et al., 2016). Studies in the discourse on innovation in the hospitality industry have highlighted the role of guests, in particular those who are characterized by high involvement, loyalty, and frequent visits to the hospitality firm (Grissmann and Stokburger-Sauer, 2012). Those *regular patrons* or *stammgasts*<sup>1</sup> reflect upon the strengths and weaknesses of the hospitality firm and openly communicate potential ideas for innovation (Hjalager, 2010; Kallmuenzer, 2018). Therefore, we further ask:

*"What are the drivers of BMI in the hospitality industry during the COVID-19 crisis, and what is the role of stammgasts?"*

For answering these two research questions, we employ a multiple case analysis of six hospitality firms located in the mountainous, mixed urban and rural Alpine region of Austria. This region is a prominent and established tourism region (Kallmuenzer and Peters, 2018; Paget et al., 2010) that was struck and suffered strongly from a high number of COVID-19 infections (the winter sports town Ischgl as one of the hot-spots from which the virus spread throughout Europe is located in this area) and the subsequent political consequences. Employment statistics for Tyrol, Austria's federal state with the largest, mostly rural hospitality industry, show that during that time unemployment numbers in hospitality went up by 933% from the beginning of the shutdown on March 5 to May 12, 2020 (AMS, 2020), compared to, for example, an increase of 1521% in the trade industry. Considering that the hospitality industry also serves guests who are not tourists (Okumus et al., 2010), the business in this industry was especially struck as both groups of customers – locals and visitors – were not allowed to visit these firms anymore and only slowly started to return after the sanctions were alleviated and the borders were still closed.

We triangulate the findings of multiple interviews per firm (i.e., managers and stammgasts) and available secondary data for our analysis. Our results suggest that BMI can serve as a strategic response to a crisis for hospitality firms. We discovered inhibiting and enhancing factors that influence BMI in the hospitality industry. Moreover, BMI is rather evolutionary and incremental during the crisis, as it had to be implemented quickly and spontaneously in a period of low liquidity. In contrast to our initial assumption, stammgasts are not the driving forces for BMI in times of crisis, but can serve as initial idea givers to the firms which might initiate BMI. Furthermore, they provide vital financial and psychological support during the crisis and when strategic responses such as BMI are carried out.

This study contributes to research and practice on hospitality

management by exploring BMI as a coping mechanism for hospitality firms during a severe crisis, such as the current one caused by the COVID-19 pandemic. In this context, we extend previous research on the role of guests for innovation. Moreover, this study contributes to the general ongoing discussion of the antecedents of BMI by highlighting enhancing and inhibiting factors.

## 2. Theoretical foundation

### 2.1. Crisis management in the hospitality industry

The handling of crises in the hospitality industry has already been investigated from different perspectives. Above all, the significance of terror and violence in tourism regions played a major role in this consideration (Anson, 1999; Butler and Baum, 1999). Other crisis situations were the financial crisis (del Mar Alonso-Almeida and Bremser, 2013) or crises from natural hazards (Biggs et al., 2012). Early ideas to cope with crisis situations were established by Mansfeld (1999) and consisted of increased marketing efforts to target local customers, the dismantling of infrastructure, and the call for governmental support. Further investigations of Israeli and Reichel (2003) built on a preset of 21 different practices hospitality firms can use to overcome a crisis. Their results showed that the most important factor for surviving a crisis at that time was the possibility of a grace period for local payments. Additionally, hospitality firms can recognize opportunities during crises and charge more from customers through added value. Moreover, in other studies cost reductions play an important role for surviving a crisis (Kraus et al., 2020; Wenzel et al., 2020).

### 2.2. Innovation in the hospitality industry

Considering the importance of loyal and local customers in the recovery from crises (del Mar Alonso-Almeida and Bremser, 2013), it is important to consider that customers value innovations of hospitality firms (Chen and Elston, 2013; Pikkemaat et al., 2018). In tourism, innovations are defined as "everything that differs from business as usual or which represents a discontinuance of previous practice in some sense for the innovating firm" (Hjalager, 2010, p. 2), and occur in the form of product/service, process, managerial, marketing, or institutional innovations. Hospitality firms themselves are also aware that their customers expect constant innovation (Kallmuenzer, 2018; Tajeddini and Trueman, 2012), and thus attempt to continuously innovate to be able to compete on the market (Thomas and Wood, 2014). However, in most cases and due to often limited financial opportunities and capacities, these are mostly *incremental* innovations (compared to *radical* innovations associated with rather technical advancements like the creation of smartphones) of products and services (Pikkemaat and Peters, 2006). As destinations are competing with each other and are often perceived by tourists as one product bundle (Svensson et al., 2005), innovations also often happen jointly by a large number of actors (Baggio, 2011).

### 2.3. Open innovation in crises

An increasingly important form of innovation is *open innovation*, which, compared to traditional in-house innovation, is also inspired by external stakeholders (Chesbrough and Bogers, 2014). This form of innovation is still in its infancy in the hospitality sector, and initial research results refer to the guest as an important innovation driver, often evoked by the informal exchange of ideas (Binkhorst and Den Dekker, 2009; Kallmuenzer, 2018). However, hospitality firms first have to implement a culture and processes to systematically follow an open innovation approach (Iglesias-Sánchez et al., 2020), but feedback of guests can already be a fruitful source of inspiration. During crises, open innovation shows to be a viable alternative to keep up with rapidly changing environmental conditions and to identify emerging

<sup>1</sup> We decided to use the German word, as it covers more than its English translation "regular patron". A stammgast is not only a regular, but also a very frequent guest who is well-known by name (often even by first name, which is otherwise unusual in German-speaking countries where people usually address each other only by first name when they are friends) to the staff, where the staff often even serves the stammgast with his regular dish without asking, and who can overall be considered as an "extended inventory" of the place.

opportunities (Chesbrough, 2020).

#### 2.4. Business model innovation in crises

Business model innovation (BMI) promises to be a strong response to the COVID-19 crisis (Kraus et al., 2020). Any enterprise has a BM, i.e., a unique configuration of the three mutually enforcing elements *value proposition*, *value creation* and *value capture* (Clauss, 2017; Clauss et al., 2019; Foss and Saebi, 2017), which is either consciously articulated or not (Chesbrough, 2007). The dimension of value proposition describes the firm's portfolio of proposed solutions and how the firm offers those solutions to the customer (Johnson et al., 2008; Morris et al., 2005). Value creation defines how the firm creates value along its value chain based on its resources and capabilities (Achtenhagen et al., 2013) while value capture refers to how the firm transforms its value proposition into revenues (Clauss, 2017).

BMs are important when firms seek to commercialize their innovations (Chesbrough, 2010; Teece, 2010). BMs are innovation drivers (Schneider and Spieth, 2013), representing the structure in which firms create and capture value from innovative technologies or ideas which, by themselves, do not provide any "single objective value [...] until it is commercialized in some way via a business model" (Chesbrough, 2010, p. 354). Given their role in innovation, BMs have become subject to innovation themselves (Schneider and Spieth, 2013).

Foss and Saebi (2017) define BMI as "designed, nontrivial changes to the key elements of a firm's BM and/or the architecture linking these elements" (p. 207). Further, they propose a BM typology that distinguishes four types of BMI based on two dimensions, namely *scope* (modular changes versus architectural changes) and *novelty* (new to firm versus new to industry).

*Evolutionary BMI* evolves as rather voluntary and emergent changes (Demil and Lecocq, 2010) in individual BM components. In contrast, *adaptive BMI* refers to changes in the entire BM and its architecture (Foss and Saebi, 2017), hence the way how BM components are linked together, as a reaction to changes in the external environment (Teece, 2010). The changes in evolutionary and adaptive BMI are typically new to the firm while not necessarily new to the industry (Saebi et al., 2017). *Focused* and *complex BMI* are modular or architectural BM changes, proactively initiated by the firm's management to disrupt market conditions within a respective industry (Foss and Saebi, 2017). Hence, these changes are not only new to the firm, but new to the industry. *Focused BMI* represents changes in one BM element, whereas *complex BMI* affects the entire architecture of the BM.

BMI has gained increasing attention among scholars and practitioners over the last years (Foss and Saebi, 2017), but research on BMI in the hospitality industry remains scarce and thus also misses to address its elements and typology. Although innovation is of great importance for hospitality firms' business growth (Thomas and Wood, 2014) and competitiveness (Pikkemaat and Peters, 2006), the role of BMI has – with some exemptions (Bogers and Jensen, 2017; Cheah et al., 2018; Souto, 2015) – been widely neglected. This study therefore attempts to explore how these elements and types of BMI are adhered to in the hospitality industry.

Interestingly, Cheah et al. (2018) already revealed that BMI helps hospitality firms to generate a sustainable competitive advantage, mainly when operating in turbulent environments. In fact, BMI often occurs as a consequence of external drivers, such as globalization (e.g., Lee et al., 2012), changes in the competitive environment (e.g., De Reuver et al., 2013), new technological opportunities, or new behavioral opportunities (e.g., Wirtz et al., 2010). BMI is vital for firms' success in today's fast-changing, turbulent and volatile environments (Giesen et al., 2010; Pohle and Chapman, 2006). In such environments, well-established and previously successful BMs may be no longer profitable (Chesbrough, 2007, 2010), and the "superior capacity for reinventing your BM before circumstances force you to" (Hamel and Valikangas, 2004, p. 53) becomes an essential source of competitive

advantage. In contexts characterized by high environmental volatility, BMI can provide opportunities (Giesen et al., 2010) in, for instance, reacting to altering sources of value creation and value capture (Pohle and Chapman, 2006) and developing new, innovative ways to create and capture value (Amit and Zott, 2010).

Further observations indicate a positive link between BMI and performance (Foss and Saebi, 2017). For instance, financial performance was positively linked to BMI in the IBM 2006 Global CEO Study (Pohle and Chapman, 2006) and BMI may positively influence firm performance in entrepreneurial (Zott and Amit, 2007), small (Aspara et al., 2010) as well as established firms (Cucculelli and Bettinelli, 2015).

### 3. Methodology

#### 3.1. Research design

To understand how hospitality firms innovate their BMs in reaction to the COVID-19 crisis and why such innovation efforts might be enhanced or inhibited, we adopt a *multiple case study method*, which is best suited for studying complex, real-life phenomena for which theoretical knowledge is scarce (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Yin, 2017). As pointed out earlier, hardly any research on BMI in the hospitality industry exists, and also the COVID-19 context has a novel quality compared to other crises. However, research on both BMI without our sector specificity and on crises in general exist. Therefore, our qualitative research approach aims to extend existing theory by bridging the context (Bansal and Corley, 2012; Brand et al., 2019).

Single (e.g., Franceschelli et al., 2018; Velu, 2016) and multiple case study research designs (e.g., Bolton and Hannon, 2016; Ghezzi and Cavallo, 2020; Yang et al., 2017) are well-established in the BMI field. We chose to include multiple cases to enhance the robustness of our findings (Eisenhardt and Graebner, 2007; Yin, 2017). Whereas case study research does not allow for an empirical generalization in probabilistic or deterministic terms, our findings shall be understood as ideas that provide reasonable expectations of similar findings in other cases in the hospitality sector (Bengtsson and Hertting, 2014; Lincoln and Guba, 2000) and that can be validated or falsified by future quantitative research.

#### 3.2. Sample

Using purposive (Guest et al., 2006; Morse et al., 2002) or theoretical sampling (Eisenhardt and Graebner, 2007), we selected six hospitality firms from Austria (see Table 1) that were strongly affected by the COVID-19 crisis, but showed signs of recovery and were therefore likely to show BMI (Patton, 2014). Austria is a country with a well-established hospitality industry, counting 1527 million overnight stays in 2019, and ranking 5th out of 29 European tourism regions (WKO, 2020). Approximately one-sixth of the country's workforce is employed in this sector that contributes 15.3% of the country's GDP.

For the sample, we also included a hotel apart from a homogenous group of restaurants and bars that depend on daily guests to be able to search for both similarities and contrasts among the cases and therefore to enhance the robustness of the findings (Guest et al., 2006). For the same reason, we selected cases with different firm ages as these might affect the way management copes with the crisis. Thus the restaurants and bars also differ regarding number of employees, number of seats, kinds of offered foods or beverages, etc. We stopped data collection after saturation was reached (Eisenhardt, 1989; Morse et al., 2002).

#### 3.3. Data collection

For each hospitality firm in our sample, we conducted two interviews: one with the owner or managing director and one with a stammgast, in May and June 2020. The semi-structured interview format allowed us to adjust our questions to the respondents' statements

**Table 1**  
Overview of the investigated cases.

Case	Type	Data Source	Family firm	Seasonal business	Number of employees	Year of foundation
A	Restaurant	2 Interviews Homepage Review platforms Social media	yes 1 st generation	no	30	2019
B	Restaurant	2 Interviews Homepage Review platforms	yes 1 st generation	no	6	2019
C	Restaurant	2 Interviews Homepage Review platforms	yes 1 st generation	no	6	2019
D	Bar	2 Interviews Homepage Social media	no	no	10	2011
E	Bar	2 Interviews Homepage Review platforms Social media	yes 1 st generation	no	4	2010
F	Hotel	2 Interviews Homepage Review platforms Social media	yes 3rd generation	no	12	1953

(Eisenhardt and Graebner, 2007). With the interviewees' consent, the interviews were recorded. We triangulated the data with publicly available information (Yin, 2017) from the firms' websites and review platforms such as TripAdvisor and social media.

### 3.4. Data analysis

After transcribing the interviews, we independently read the transcripts and openly coded the interview and archival data (Miles et al., 2014; Corbin and Strauss, 2014) in a within-case analysis, followed by a cross-case analysis (Eisenhardt, 1989). In the coding process, we iterated between theory and data. In the cross-case analysis, we compared and contrasted the cases and looked for common themes which could be verified in interactive loops (Eisenhardt and Graebner, 2007), to get an in-depth understanding and find insights that are potentially generalizable (Miles et al., 2014; Yang et al., 2017). Reliability and validity of our findings were assured by multiple cases, independent coding, and iterative joint data consolidation (Kirk et al., 1986; Morse et al., 2002; Sousa, 2014).

### 3.5. Case descriptions

#### 3.5.1. Background information

The Austrian hospitality industry was affected by the COVID-19 crisis like hardly any other industry. Due to the wide variety of country-specific measures and regular legal adjustments, transparency about the situation was of great importance during data collection. While the interviews were conducted with the firms, all borders with neighboring countries were still closed. Restaurants and bars were allowed to open up again from May 15, 2020, hotels only from May 29. The staff had to wear masks or face visors. Also, guests had to wear a mask when entering a facility. Guests were allowed to sit at the table with a maximum of four people, and a minimum distance between the tables was imposed. The closing time was legally set at 23:00.

#### 3.5.2. Case A – Restaurant

Case A is a restaurant with a long tradition starting in the 18th century. After several changes, in 2019, the restaurant became a family firm in first generation, and the new tenant continued to run the restaurant under the existing brand, employing 30 employees. The restaurant is an annual operation and not a seasonal business, but due to the additional garden seats and the tourist attraction in summer, the restaurant makes its principal turnover in summer. During summer, 400 seats are available, mainly in the large garden.

Currently, two family members work in the firm and split the management tasks. Both have many years of industry experience and had already run a restaurant before. The restaurant benefits from the excellent reputation of the brand. It is characterized by low fluctuation despite the change of tenant and the takeover of the team. However, ideas generally come from the management team and not from employees. The managers try as often as possible to serve the customers directly and therefore have numerous stammgasts.

#### 3.5.3. Case B – Restaurant

Case B is a family-owned restaurant in the first generation which

offers 109 seats and employs six employees. In 2019, tenants changed, but the new tenants continued to run the restaurant under the same brand. The firm started its operations in January 2020 and only had a short time to establish itself before the COVID-19 crisis led to a national lockdown. The restaurant is not a seasonal business, but due to the garden, most of the sales are generated in summer.

Currently, only one family member is employed full-time as manager and chef. This person already has extensive industry experience. The firm has taken over many stammgasts from its predecessor, who focused on the neighboring countries. As a result of the border closures, many stammgasts were unable to enter the restaurant during the reopening.

#### 3.5.4. Case C – Restaurant

Case C is a restaurant that has been run as an inn since 1864. The current owner has rented the building for the last 30 years, and after the last change of tenant in 2019 decided to build the restaurant himself as a family firm. The restaurant has six employees and a total of 106 seats. Due to a small garden, the building offers more seats in summer but is not a seasonal business.

Since October 2019, the family firm has been managed by an experienced external managing director. There are currently no family members in the firm, but they are in training in other restaurants and are planning to take over the family firm in the long run. Although the firm has only been run as a family firm for a short time, numerous stammgasts have already been won over.

#### 3.5.5. Case D – Bar

Case D is a bar that is mainly attracting a local audience. The firm is not a family firm but is run by two partners with many years of experience in the business. The first shareholder took over the firm in 2011 under the existing brand. The second shareholder joined the firm in 2018. The firm has a total of 10 employees, only four of whom work full-time, and offers inside space for up to 200 guests (no garden/terrace).

Individual stammgasts have been visiting the bar regularly for over ten years. The implementation of the non-smoking law in Austria in autumn 2019 has led to minor structural changes and has caused the firm several problems as smokers must leave the premises. This, in turn has led to problems with residents. The regular opening hours of the bar are from 19:00 to 03:00 in the morning, and the bar is well attended, especially on weekends. The main rush of customers is between 22:00 and 02:00.

#### 3.5.6. Case E – Bar

Case E is a bar that exists since 2010 and has four full-time employees. The managing director is 70 years old and experienced in the hospitality industry. The firm is a family firm in the first generation, and in addition to the managing director, her husband also works in the firm. Due to problems with neighbors related to noise, the firm had to move to a new facility in 2016. This move was associated with high costs. The premises do not have a garden, so the firm was affected by renewed building measures after the introduction of the non-smoking law in Austria. The law resulted in numerous noise nuisances and fewer customers. The bar is generally open from 19:00 to 05:00 and is particularly well frequented on weekends. Because of the longer opening hours than most local bars, the firm is visited by guests mainly between 02:00 and

05:00.

### 3.5.7. Case F – Hotel

Case F is a family-owned hotel, established in 1953 and now managed in the third generation. The managing director was integrated into the firm from the very beginning and had much experience. The firm currently has 12 employees, including three family members. The hotel has 80 beds at full capacity and is not a seasonal business, but most turnover is generated during the summer months, as the region is popular with tourists during this time due to cultural events. Outside this time, the most frequent guests are representatives in transit and guests of regional firms. The family runs an associated restaurant in the hotel, but this only generates a small share of the total turnover.

## 4. Findings

### 4.1. Within-case analysis

The following analysis provides an insight into the individual cases. Table 2 provides an overview of the main components of the cases.

#### 4.1.1. Case A

Case A was severely affected by the crisis and completely discontinued its primary BM. The firm put all employees on furlough but did not have to lay anyone off. Besides, the management pursued a strong cost-cutting policy and was able to suspend the rent during the lockdown and pay the rent based on turnover for at least the first two months after reopening.

During the crisis, the firm engaged in BMI. The idea came from the entrepreneur and was implemented at short notice. Instead of the regular restaurant business, various theme boxes (boxes with pre-selected ingredients to cook at home) were put together, which were then purchased and picked up by customers. These boxes were advertised primarily via personal networks, social media and a regional newspaper. The managing director plans to expand and further develop this model.

The firm has also clearly benefited from its stammgasts during the crisis, although they did not contribute any ideas to the BMI. The stammgasts, however, were the buyers of the new service and also supported the firm by purchasing vouchers. They also provided psychological support for the owner. After reopening, it was mainly stammgasts who were responsible for the turnover. Until the opening of the border, stammgasts were responsible for over 40% of earnings after the crisis and also contributed to promoting the firm in this phase through their social media activities.

#### 4.1.2. Case B

The firm did not begin operating until shortly before the crisis, but was already popular and well attended. During the crisis, the business was shut down, and no revenues were generated. The employees were

all put on furlough, and the rent was immediately waived. Government support and furlough were the most important measures to survive the crisis.

During the crisis, the business used the time mainly to do small repairs and cleaning. No new BM was developed, the time was merely bridged. At the end of the lockdown, the firm started to sell vouchers to improve liquidity.

Stammgasts were of psychological importance to the firm and helped to get through the crisis. After the crisis, they will be of great importance as visiting the restaurant repeatedly. One of the main problems is that many stammgasts come from neighboring countries, and, at the time of the interview, were not yet allowed to travel.

#### 4.1.3. Case C

The firm had already closed before the official lockdown due to a vacation shutdown; afterwards, the employees were registered for furlough, no employees had to be dismissed. As the family firm owns the building, no negotiations regarding the rent were necessary. Furlough was mentioned as the most important measure. In addition to the government measures, a fixed cost subsidy, the depreciation of spoiled goods, the reduction of the VAT on non-alcoholic beverages, and a regional tourism promotion also helped the business.

Although the firm briefly considered establishing a pick-up or delivery service, the management and the owners decided against it. The adjustments were considered too large, and it was assumed that this BM could not be implemented in a sustainable manner and would, therefore, only be used for marketing purposes.

However, stammgasts were vital for the business. They generated liquidity by purchasing vouchers, but mostly showed psychological support and regularly asked for the manager's well-being. After the crisis, they helped to get the firm going again, primarily through frequent visits and the introduction of ideas.

#### 4.1.4. Case D

The firm followed government regulations and shut down completely. To be able to survive the situation in the best possible way, costs were minimized. In addition to furlough and government support, the management negotiated a suspension of the rent and a turnover-related rent for the first six months after the reopening. This measure and furlough were the most important criteria for surviving the crisis. In the course of the reopening, it is mainly the opening hours that cause problems for the firm.

The firm was already implementing BMI before the crisis. The aim was to develop a flexible bar in a trailer to offer cocktail catering on birthdays and weddings. Due to the crisis, this BM was implemented more quickly and adapted again. The firm has a fixed location, in an open-air swimming pool, to be able to generate turnover during the day and to have the personnel resources free for the actual business in the evening. In addition to this innovation, there was another BM change. Since the firm did not have garden areas available, they agreed with the city to set up a cocktail stand in a gastronomically undeveloped area on weekends.

In hardly any other example did the stammgasts show such a strong connection to the firm. The stammgasts joined forces and offered the firm, next to psychological support, financing to help survive the crisis. However, the offer became unnecessary due to state support. The firm refrained from selling vouchers during the crisis but benefited from the consumption of stammgasts in the first few weeks after the crisis, as they accounted for most of the firm's turnover.

#### 4.1.5. Case E

The firm faced numerous problems during the crisis and shortly after the lockdown. Expenses could be reduced through furloughs, but the rent could only be postponed. Due to the problems that occurred when starting out and implementing the non-smoking law, the financial situation was already tense. Customer demand, however, is high, especially

**Table 2**  
Within-case analysis overview.

	BMI	Furlough	Dismissals	Rent	Most important measure
Case A	conducted	yes	no	Sales-related	Furlough
Case B	no	yes	no	Sales-related	Furlough
Case C	considered	yes	no	Owns building	Furlough
Case D	conducted	yes	no	Sales-related	Furlough
Case E	conducted	yes	no	suspended/ not finally clarified	Furlough
Case F	considered	yes	yes (1)	Owns building	Furlough



at off-peak times, which makes the early curfew another problem.

The firm saw a way out in adjusting its BM and rented additional open space. This space is now used to generate sales during a period when the actual bar is closed. The changes in the BM are small, but help the firm to generate revenue and stay liquid.

During the crisis, the managing director was in contact with stammgasts, this psychological factor helped especially as she belongs to the risk group for the virus. From a financial point of view, however, the firm did not try to approach its stammgasts. Stammgasts greatly helped the business after the reopening by actively sharing social media contributions to support.

#### 4.1.6. Case F

This hotel business was severely affected by the lockdown and, compared to the restaurants, was only allowed to reopen later. Since the hotel guests are the most important customers for the own restaurant, the firm decided not to open the restaurant early. During the lockdown, costs were reduced, employees were sent on furlough, and one employee in the probationary period was dismissed. Since the property belongs to the firm, rent was no issue. Banks were contacted for potential credit lines.

The management thought briefly about starting a new BM to keep the restaurant business running. Due to the organizational effort and potential bad reputation they decided against this. The business is known for its high quality food and assumed that this standard could not be maintained with delivery.

Stammgasts were relevant for the firm mainly concerning liquidity. Three stammgasts offered to continue to make the regular direct debits, and use these amounts in the future. Apart from this component, no psychological support for the stammgasts was felt at this firm.

#### 4.2. Cross-case analysis

The analysis shows that the firms have a very similar understanding and approach to the crisis. Only the hotel (Case F) differs in some respects, mainly due to specifications of the accommodation industry, which predominantly refer to the significantly higher unit costs for consumption. Table 3 provides an overview of the main results of the cross-case analysis. We did not find an impact of the firm age on how to cope with the crisis.

##### 4.2.1. Importance of BMI to overcome the crisis

Three firms (Case A, D, and E) established a BMI as a result of the crisis. In all three cases, the BMs were fundamentally new for the firm, but for two cases already established in the industry (Case D, and E). In

two firms (Case A and D), the idea for innovation was already present before the crisis, and was adapted or implemented as planned due to time and financial pressure.

The results show that the crisis in one firm (Case A) has significantly changed its value creation. The firm no longer offers the value of a classic restaurant but establishes prepared food or gift baskets for at home. For the value proposition, there were changes in all three cases (Case A, D, and E). On the one hand, new points of sales are being used, and on the other hand, the customer base is changing significantly. As there was a significant change in the value proposition in Case A, the value capture also had to be adjusted. The BMIs are mainly evolutionary BMIs for Cases D and E but also a focused innovation for Case A.

##### 4.2.2. Enhancers and inhibitors in BMI of hospitality firms

The main reasons for initiating BMI are related to the firms' respective situations but can be narrowed down to the topics of financial pressure, responsibility, and available time. The results show that available time capacities are not automatically sufficient to start a BMI, as all firms had those capacities available, but only three of them innovated their BM. However, the combination of free capacities and financial pressure as well as great responsibility, has led to a BMI (Case A, D, and E). Firm A has a special responsibility due to its size. However, only with the free capacities, the BMI could be realized. In the case of firms D and E, it is striking that even after the end of the lockdown, both would still hardly make any sales due to their situation (no garden areas and closing time at 23:00). As a result, the financial pressure on the firms became greater, and they had to come up with new ideas.

Although only three firms have responded to the crisis with a BMI, two other firms (Case C and F) have also looked into it and developed ideas, without eventually pursuing them due to their marginal financial value. Both these firms own their premises and thus have the advantage to not have to pay rent. Other firms, which have been involved in BMI, are dependent on the goodwill of the lessor for their rent payments.

Besides the cost reduction through rent savings, all investigated firms praised the state support. Extensive government programs have allowed firms to reduce their personnel costs and ensure liquidity, which has eased the pressure to implement innovative ideas.

For all firms, furlough was the most important factor in surviving the crisis. In addition, a regional tourism promotion scheme was highlighted because of its unbureaucratic payment (Case C and E). Other government measures included the reduction of VAT on non-alcoholic beverages, the distribution of bridging loans, the entrepreneur hardship fund, and the assumption of fixed costs. In general, the entrepreneurs mainly mentioned state measures.

**Table 3**  
Cross-case overview of essential factors.

		Case A	Case B	Case C	Case D	Case E	Case F
<b>Engaged in BMI</b>	Change in Value Creation	yes	–	–	no	no	–
	Change in Value Proposition	yes	–	–	yes	yes	–
	Change in Value Capture	no	–	–	no	no	–
	Scope and novelty of BMI	focused	–	–	evolutionary	evolutionary	–
<b>Status of BMI</b>		conducted	no	considered	conducted	conducted	considered
	Financial support	x	–	x	x	–	x
	Psychological support	x	x	–	x	x	–
	Marketing channel	x	–	x	x	x	–
<b>Influencing factors</b>	Idea generator	–	–	x	–	–	–
	Furlough	x	x	x	x	x	x
	Decrease of VAT on non alc. drinks	x	–	x	x	–	–
	Bridging loan	–	–	x	–	–	x
	Hardship funds	–	–	x	x	x	–
	Takeover of fixed costs	–	–	x	–	–	–
	Reduction or deferment of rent	x	x	owns building	x	x	owns building
	<b>Governmental support</b>						
	<b>Further support</b>						

#### 4.2.3. Stammgasts' role during crisis in the hospitality industry

Extant literature suggests that guests play a significant role in the generation of new ideas in firms (Kallmuenzer, 2018). Our results also show the great importance of stammgasts for the firms' survival of the crisis.

Table 4 highlights the components of a definition in the eyes of the interviewees. Apart from the factor that stammgasts are returning guests (Cases A, B, C, D, E, and F), the emotional bond between guest and owner is of extraordinary importance for stammgasts (Cases A, B, C, D, and E). *"To me, stammgasts are more than just frequent visitors. They are like friends and or family."* (Case D).

Therefore, we define a stammgast as "a person who is a not only a frequent returning guest of a hospitality firm but is also connected on an emotional and personal level to the owner and the staff." Only the statements of the hotel (Case F) were not entirely in line with these results as the definition of a stammgast was purely reduced to the number of hotel stays.

For all investigated firms, stammgasts played an essential role during the general lockdown. The psychological component was of utmost importance (Cases A, B, C, D, and E). The stammgasts repeatedly contacted the entrepreneurs, asked about their current situation and thus provided psychological support. Through this support, the entrepreneurs felt encouraged to implement their ideas and thus carry out BMI. Stammgasts also contributed to overcoming liquidity bottlenecks and, as early adopters, took advantage of new services offered (Cases A, B, D, and F). Moreover, in two cases, stammgasts offered additional financial support to the firms. In Case D, a group of stammgasts joined together offering to finance the firm through the crisis. The managing director (Case D) explained: *"We knew from the outset that we could run out of money during the lockdown. Our stammgasts noticed that too. We were then offered money saved by several stammgasts to help finance our business."* In Case F, several stammgasts offered the hotel to carry out the regular debits even without providing the service to secure the firm's liquidity: *"Some of our stammgasts at the hotel said we should just charge them for the months, they would definitely come and spend it one way or another."*

Even in the course of the reopening, stammgasts were of great importance. Especially on the opening days, they established themselves as revenue generators. The only exception is the hotel (Case F), which had only few customers due to closed borders. The other firms emphasized the role of stammgasts due to their loyalty and the revenue they generate (Case A, B, C, D, and E). The managing director of Case A states: *"We are very happy about our stammgasts. They currently account for about 40% of our revenue."* In addition, stammgasts also have played a role as brand ambassadors and as a marketing channel. Both in conversation and when looking at the firms' social media sites, it can be seen that the stammgasts interact with the firms' posts and spread them among their friends (Case A, B, C, D, and E).

Finally, stammgasts were also a source of ideas. In Case C, in particular, they came up with numerous ideas to increase the capacity utilization of the restaurant during the reopening phase. They were also actively involved in the implementation and offered their own premises and contacts for advertising purposes.

**Table 4**  
Components used in the definition of a stammgast and their frequency.

Component	Number of nominations	Cases
Frequent returning guest	6	A, B, C, D, E, F
Personal level	4	A, B, C, D, E
Special reference to the host	4	A, B, C, D, E
Emotional relation to employees	3	A, B, E
Friend	3	A, B, D
Interacts with social media	3	A, D, E
Word of Mouth	3	A, C, D
Almost like family	2	A, D
Brings new guests	1	C
Offers support if needed	1	D

## 5. Discussion and conclusion

### 5.1. Key findings

The present study shows that BMI is a useful strategy for hospitality firms to overcome and restart after a crisis like the COVID-19 pandemic. We find that the identified BMIs are rather small incremental changes that can be implemented quickly (Foss and Saebi, 2017). We highlight the driving factors for a BMI, namely available time, overall pressure to change because of the crisis, and the important role of stammgasts during BMI. The state-ordered closure and the associated reduction of operational tasks freed up time resources in the firms, especially for decision-makers. These resources can now be invested in strategic developments instead of operational activities.

In addition to the free resources, general pressure has also emerged as an essential criterion. Firms that receive less support (from landlords or the state), are threatened by longer lockdowns (nightclubs, bars) and are responsible for many employees, react more proactively than others in their BMI. Stammgasts provide psychological safety, which supports and induces hosts to innovate their BM. In addition, the personal relationship ensures that stammgasts support and contribute to BMI throughout the process as partners in the implementation, early users and therefore providers of feedback.

Based on these results, we propose the crisis – BMI relationship model for the hospitality industry (Fig. 1). The model comprises the results and shows that a crisis can be a trigger event (Sigala, 2020) to start BMI in the hospitality industry, which can help firms that are shut down to create new BM and open up again. The lockdown of the COVID-19 crisis led to the total loss of income streams and thus to a particular pressure on firms to innovate. Enhancing factors such as stammgasts' psychological support, free time, and financial pressure create a need to change and further support a BMI. However, in the course of a crisis, comprehensive support packages are also put together by governments, which cause firms not to adjust their BM if liquidity is already secured.

### 5.2. Theoretical contributions

This study contributes to the discourse on crisis management in the hospitality industry, which has so far been mainly addressed for the context of terrorism, but also for natural disasters and financial crises (Anson, 1999; Butler and Baum, 1999). Literature shows that, above all, government support and targeted advertising of local populations help to overcome a crisis (Mansfeld, 1999). Our findings confirm these particular effects also for the COVID-19 crisis. However, the results of this study extend previous knowledge by showing that BMI can be another potential solution to overcome a crisis in the hospitality industry.

This general finding is in line with recent evidence provided by Kraus et al. (2020) in a cross-industry setting from different European countries as well as with initial evidence that has shown that BMI is a relevant approach for hospitality family firms in increasing their innovation capability (Souto, 2015). We support the importance of BMI but also show that the role of BMI might be even more strategically relevant in a crisis context. While individual firms adapt BMs only temporarily to maintain liquidity, we find that BMI – initiated as a response to a crisis – can also have long-term implications. Put differently, a crisis can result in new perspectives and profit potentials for firms that seize the opportunity of change.

In this context, our study also dealt with the antecedents of BMI during the crisis. One particular focus was on the stammgasts, as literature sees guests as a source of innovation in the hospitality industry. Contrary to the suggestions in the literature (e.g., Kallmuenzer, 2018; Pynnönen et al., 2012), our study could not identify them as a principal trigger/idea generator and thus contributors to open innovation, but rather primarily as a facilitator of BMI. This may be explained by the nature of the given innovation context. Usually, customers become

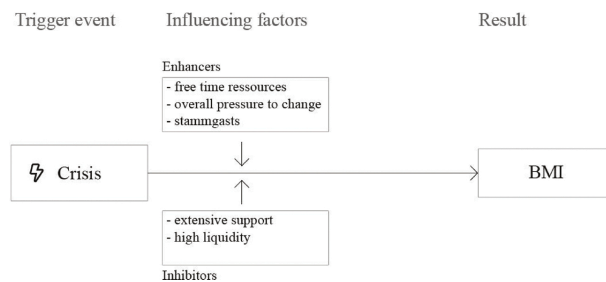


Fig. 1. Crisis - BMI relationship model under the influencing factors of the hospitality industry.

innovators as they want to improve their own situation and have the opportunity to provide critical feedback. The rigid lockdown, however, changed this context, as the measures for social distance also create distance for the exchange of ideas. Nonetheless, open innovation is still also little known in the hospitality sector and processes and foundations for open innovation are only gradually being created (Iglesias-Sánchez et al., 2020). A lack of structures in combination with the lockdown situation where communication between external stakeholders and decision-makers was limited apparently lead to a lack of pen innovation and thus also indicates that missing foundations during a crisis can have significant consequences. However, our study unveils a different and potentially even more important role of the stamngasts during the crisis – namely their psychological support, especially in the implementation and establishment of a BMI, where they helped the firms to get over a first shock and motivated decision-makers to work creatively.

Above all, changes in the environment play a significant role (Foss and Saebi, 2017), and perceived threats were an important antecedence of BMI (Saebi et al., 2017). Our study supports these findings for the hospitality industry as the COVID-19 pandemic also represents a turbulent environment that significantly threatens the firm.

The crisis, as such, is a trigger for the general BMI, but not necessarily sufficient. A range of influencing factors is responsible for the final decision to implement a BMI. While the literature generally states that financial resources are a key driver for innovation in tourism (Kallmuenzer et al., 2019), in the specific context of this study, extensive financial resources only ensure that firms get through the time of crisis and continue to work without change. This finding may be explained as the threat (see Saebi et al., 2017) that is induced by the crisis is reduced, and therefore the pressure to alter the BM is much smaller. This persevering strategy helps the hospitality firms to survive the crisis (Wenzel et al., 2020), but its long-term development remains open as global crises, in particular, cause not only business but also social changes (Clark et al., 2020).

On the other hand, there are supporting factors that favor BMI. Kraus et al. (2020) found that lower operative utilization creates more available time and slack resources for strategic considerations. In particular, small and medium-sized enterprises that do not have dedicated capacities in strategy development can benefit from this (Legohérel et al., 2004). Furthermore, while extensive financial support inhibits BMI, financial pressure can lead a firm to engage in it. Eggert (2020) states that small and medium-sized enterprises, which usually have less financial resources available, come under even higher pressure during a crisis. But it is precisely this financial pressure that leads these firm to question the existing and develop a new BM.

### 5.3. Implications for practice

This study allows for first recommendations to firms concerning the

role of BMI in the hospitality industry and in the survival and recovery from a crisis. Measures for social distancing lead to fatal consequences in the hospitality sector, such as blocking open innovation. A BMI cannot only help firms to generate revenues during the crisis but also contribute to a sustainable preparation of the firm for the future. Hospitality entrepreneurs should, therefore, actively and continuously develop and adapt their BM.

Especially through digitalization of the BM additional services can be offered, which can also be called up during the crisis and overcome the distance barriers imposed by the lockdown measures during COVID-19 (e.g., Clark et al., 2020). In the upcoming phase, firms should make the best possible use of this potential of digitalization in order to be prepared for future crises. Kraus et al. (2020) already showed that temporary changes in BMs are a useful strategy to overcome a crisis and prepare for the future.

In addition to digitalization, firms must actively reduce the effects of inhibiting factors and promote enhancing factors, such as communication with stamngasts and creating time slots for strategic considerations. This preparation does not only allow for a successful BMI, but also for open innovation (Iglesias-Sánchez et al., 2020). Findings from this study also show that open innovation would enable personal relationships and active communication with customers that can have enormous potential, especially during times of crisis.

Recommendations for regions can also be derived from the results. Destination managers should encourage and connect firms to innovate despite or even during good financial times. Innovation relates not only to products and services but also to BMs. BMI can be anchored in firms through training and cooperation with innovation and creativity trainers. These meetings then also lead to strong networking effects within the industry, which improves the exchange of ideas and innovations (Beritelli, 2011; Kallmuenzer, 2018) that can help to develop stronger resilience and recovery potential from future crises.

### 5.4. Limitations and future research opportunities

This study is subject to limitations due to its methodology and the crisis situation. It is a first investigation on the relationship of BMI during a crisis in the hospitality industry. However, the purposive sampling of firms that were investigated is a general limitation of the method used. As BMI is a growing research field its effects on the hospitality industry should further be investigated. This paper can be seen as a foundation for further research.

The identified inhibiting and enhancing factors should be investigated in further quantitative approaches to check their robustness. Furthermore, our findings are particularly grounded on cases of restaurants, bars, and a hotel in Austria. Future research should extend both the scope of types of hospitality firms and the cultural context to further explore the phenomenon and add to the validity of findings.

The unique setting of the COVID-19 crisis is another limitation of this study: Since this crisis is described as unprecedented and special in its scope, the comparability with other crises is impaired. Closed borders were not known to Central Europe in the past decades, and has led to a special situation. By testing our results in the course of other crises and contexts, this limitation could be mitigated.

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## **Publication IV**

Clauss, T., Breier, M., Kraus, S., Durst, S., and Mahto, R.

**Temporary business model innovation – SMEs' innovation response to the Covid-19 crisis**

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# Temporary business model innovation – SMEs' innovation response to the Covid-19 crisis

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**The Covid-19 crisis has hit SMEs particularly hard. Numerous business models (BM) have been limited or rendered downright impossible due to decreased social contact. SMEs can respond to this exogenous crisis via temporary business model innovation (BMI). This empirical study investigates these temporary BMs using a multiple case study approach based on five SMEs in Austria, Germany, and Liechtenstein who within a short period of time applied their core competencies and networks to integrate new BMs, which were in some cases very different from existing ones. These had a positive effect on strategic flexibility, and if desired can also be incorporated into the firm long-term. The paper contributes to SME crisis management during the Covid-19 pandemic by pointing out and developing a successful management mechanism that allows to survive a crisis or even improve during this time. Moreover, we contribute to BMI literature by explaining temporary BMI as a new form of BMI. It also makes clear to managers that temporary BMs add value to firms and create new revenue streams.**

## 1. Introduction

The Covid-19 pandemic has disrupted social life and economic activity across the globe (Clark et al., 2020). The economic impact has been unprecedented, with most countries experiencing large-scale job losses and economic contraction (e.g., in Q1 of 2020, China's GDP shrunk by 6.8%, while the euro area saw GDP drop by 3.8% [Chen et al., 2020]). In

comparison to previous crises, the Covid-19 pandemic has caused a simultaneous demand and supply shock (del Rio-Chanona et al., 2020). For many firms, lockdowns and strict regulations have challenged existing business models (BM) (Ritter and Pedersen, 2020; Breier et al., 2021), while some firms have not been able to pursue their established business operations at all. This situation has called for a drastic, rapid crisis management response.



Small and medium-sized firms (SMEs) are particularly vulnerable to crises (Shepherd, 2003; Kraus et al., 2013). Resource scarcity and lack of preparedness have restricted their strategic choices in managing the Covid-19 crisis (Eggers, 2020). SMEs are usually not diversified, but instead rely on only one specific BM (Pal et al., 2012). Furthermore, banks associate SMEs with higher risks, thus limiting their options for debt financing during crises (Piette and Zachary, 2015). On the other hand, SMEs are flexible, entrepreneurial, and embedded in communities, and have been shown to possess unique capabilities to mount an effective response to a crisis and ultimately emerge stronger (Ter Wengel and Rodriguez, 2006; Dahles and Susilowati, 2015). Crisis management studies have primarily explored which characteristics and strategies have helped SMEs survive (Eggers, 2020). Factors such as young firm age (Simón-Moya et al., 2016), management expertise (Giannacourou et al., 2015), and market orientation (Petzold et al., 2019) have been shown to be positively related to SMEs' crisis performance. Studies have also concluded that SMEs' innovative stances and entrepreneurial orientation are helpful for surviving a crisis (e.g., Eggers and Kraus, 2011; Vargo and Seville, 2011). Beliaeva et al. (2020) relate this effect to their ability to identify opportunities during crises. But despite these initial findings, surprisingly little is known about how SMEs can best cope with severe crises.

We add to this research discourse by analyzing the reactions of SMEs to the Covid-19 crisis. This pandemic provides a unique context for studying how firms can cope with a crisis if their existing BM suddenly becomes infeasible. Wenzel et al. (2020) proposed four different strategies for firms to respond to a crisis: retrenchment, persevering, innovating, and exit. In line with the arguments above, we focus our study on the opportunity for SMEs to overcome a crisis through innovation and temporary business model innovation (BMI). We argue that as the unique characteristics of this crisis have seriously affected the BMs of many SMEs, these firms have had to come up with new BMs at least for the duration of the crisis. In contrast to previous research that suggests that dual or multiple BMs can help firm diversification (e.g., Markides and Charitou, 2004; Aversa et al., 2017; Winterhalter et al., 2016), this context has created a situation in which a new BM is temporarily required to survive the crisis while the established BM is significantly reduced or even placed on hold. Against this background, the research objective of this study is to explore how SMEs pursue

temporary BMI in response to Covid-19 and what effects this has. This question aims to achieve a deeper understanding of SMEs' crisis management mechanisms.

By analyzing the case data of five firms who had a temporary BMI early in the Covid-19 crisis, we make two important contributions to the literature. First, we add to the SME crisis management literature (e.g., Eggers, 2020) and the growing stream of studies proposing innovation and temporary BMI as potential strategies to cope with the Covid-19 crisis (Chesbrough, 2020; Kraus et al., 2020a; Wenzel et al., 2020). Especially, SMEs due to their liabilities (Eggers, 2020) have to engage in innovative strategies to survive in the long run. Second, we contribute to the literature on BMI by showing that temporary BMI which relies on existing core competencies and is positioned in nascent industries (Zook and Allen, 2003) is a viable way to change an organization as a response to changing external conditions. In contrast to existing research (e.g., Clauss et al., 2021), we demonstrate that BMI as a response to changing external circumstances must not necessarily be radical and irreversible but can be a more tactical approach to temporary adapting the organization e.g., if a crisis is to be faced.

## 2. Theoretical foundation

### 2.1. Firms' response to a crisis

According to Pearson and Clair (1998), an organizational crisis is defined as '...a low probability, high-impact event that threatens the viability of the organization' (p. 60). The Institute for Crisis Management (ICM) (2004) divides crises into two primary types: sudden and smoldering. Sudden crises are the unexpected external events in which the organization has virtually no control and limited fault or responsibility. The Covid-19 pandemic can be viewed as an example of this type of crisis. Smoldering crises are those events that start out as small, internal problems within a firm, become public at some point, and over time escalate as a result of inattention and/or poor decisions by management.

Although no two crises are alike, research suggests that they all have three common elements: surprise, threat, and short response time (Williams et al., 2017). Scholars argue (e.g., Smith and Riley, 2012) that regardless of the type of crisis, it requires immediate and decisive action by an organization. Hence, crisis management has been defined as 'the systematic way in which members

of an organization, in conjunction with external stakeholders, work to avoid potential crises and to minimize and resolve those that do occur' (Brumfield, 2012, p. 45). The available normative guidance on managing a crisis suggests that managers should be prepared to make available more time and resources to expand the required operating space (Bowers et al., 2017). The need for continued internal and external communication has been frequently highlighted here as well (Gilstrap et al., 2016; Bowers et al., 2017).

Wenzel et al. (2020) proposed four strategic responses to a crisis: retrenchment, persevering, innovating, and exit. These strategies were shown as effectively capturing the early responses of family firms to the Covid-19 pandemic (Kraus et al., 2020a). Retrenchment involves cost-cutting measures that may reduce the scope of a firm's business activities. This strategy appears to support firms in surviving a crisis in the short run. Persevering is about preserving the status quo of a firm's business activities. This may be achieved through debt financing, and seems suitable in response to a crisis in the medium run, even though it may threaten the long-term survival of the firm. Exit means the discontinuation of a firm's business activities; it is a strategy which is not limited to a crisis, and can be selected at any time. Finally, innovating means that the firm engages in strategic renewal in response to a crisis.

In contrast to the other mechanisms, an innovation strategy to crisis management is the most future-oriented because it may provide solutions on how to use opportunities that emerge from a crisis. It has been shown that firms pursuing more explorative strategies toward new product and market developments are those that cope better with crises (Archibugi et al., 2013). In line with this, studies have shown that SMEs' innovative stances and entrepreneurial orientations are helpful for surviving a crisis (e.g., Eggers and Kraus, 2011; Vargo and Seville, 2011). Considering how the Covid-19 crisis created a situation in which the existing BMs of many firms were suddenly placed on hold, managers should assess the impact of the crisis on their firms' BM (Ritter and Pedersen, 2020) and may potentially seek out BMI as an effective opportunity (Kraus et al., 2020a).

## 2.2. Temporary BMI

The BM concept has received considerable theoretical (Massa et al., 2017) and practical (Pohle and Chapman, 2006) interest because it provides a useful perspective for understanding a firm's business and competitive logic. Scholars recently agreed that BMs are conceptualized as configurations of the

three interrelated key elements of value proposition, value creation, and value capture (Clauss, 2017; Foss and Saebi, 2017). These elements are configured as mutually enforcing systems that together define the gestalt of the organization (Martins et al., 2015; Kulins et al., 2016). BMI is then defined as 'designed, nontrivial changes to the key elements of a firm's BM and/or the architecture linking these elements' (Foss and Saebi, 2017, p. 207). BMI extends the scope of product and process innovation as key elements of firms' organization, along with when their configurations are changed (Foss and Saebi, 2017; Clauss et al., 2020). As a result, it provides firms with the opportunity to create novel activities that go beyond product and process innovation (Osseyevskyy and Dewald, 2015). Studies show that competitive advantages can be achieved either by innovating components of the BM or the entire BM (Berends et al., 2016; Clauss et al., 2020). BMI therefore not only exists if radical changes are implemented, but can also be the result of their more incremental reconfigurations (Velu and Jacob, 2016; Foss and Saebi, 2017; Kraus et al., 2020b). Foss and Saebi (2017) differentiate BMI in terms of their newness and scope.<sup>1</sup> The first dimension captures the 'degree of novelty of the BMI.' It differentiates whether a BMI is only new for the firm (Johnson et al., 2008; Bock et al., 2012), or if it is completely new to the whole industry (Santos et al., 2009). The second dimension captures the BMI's scope, defining how much of the existing BM is affected by the innovation. In line with the above-mentioned ideas, the scope is the number of BM elements (i.e., value creation, value proposition, and value capture) that are changed by the BMI. If only one or a few elements of the BM are changed, the scope of the BMI would be modular, whereas the orchestrated reconfiguration of all elements of the BM would be termed *architectural BMI* (Foss and Saebi, 2017). The more components that are changed and the greater the novelty of the changes outside of the firm, the more radical the BMI is. On the other hand, incremental BMIs are based on only modular improvements of a firm's existing BM.

Because complex BMIs require fundamental changes in the organizational system (Berends et al., 2016), involve substantial redeployment of resources (Doz and Kosonen, 2010), and are usually the consequence of a long-term strategy defined by the firm (Casadesus-Masanell and Ricart, 2010), previous literature predominantly considered BMI as a firm's enduring reconfiguration. Paradoxically, another stream of literature suggests that BMI may be achieved by temporarily experimenting with new BMs (Sosna et al., 2010; Andries et al., 2013) or by creating temporary spin-off BMs (Chesbrough and

Rosenbloom, 2002; Clausen and Rasmussen, 2013; Markides, 2013) that may be reintegrated into the parent firm at a later date. Furthermore, it has often been proposed in start-ups that new BMs may require regular pivots in which their elements are adjusted based on market feedback (Felin et al., 2019). With these studies in mind, we propose that BMI does not inevitably lead to an enduring reconfiguration of the organization, but that temporary BMs are often possible or necessary for a period of time. We regard a *temporary business model innovation* as one which is, at least at the time of its origination, not intended as permanent. These temporary BMs are assumed to be particularly appropriate if firms' operating conditions significantly change, and more modular and less novel changes in the elements of the BM can recreate or improve the competitive position.

In contrast to more radical BMI, temporary BMI should be closely related to the strategy and core competencies (Prahalad and Hamel, 1990) of the firm. In line with Zook and Allen (2003), BMs take place in adjacent spaces where firms can reuse existing capabilities. Casadesus-Masanell (2010) shows how BMs form as a consequence of strategic decisions, and as rather rigid configurations of the organizational activity system. These structures however leave some residual freedom for changes as a direct response to changing external conditions, and as long as these changes are in line with the core competencies and strategic orientation of the firm. Zott and Amit (2008) in a similar vein show that the alignment of the BM and the established product-market strategy is important for sustained competitive performance. In turn, if BMs are consistent with the firm's core competencies, their limited strategic complexity may make these more reversible, and they may be partially or fully undone if the external conditions return to the previous state. Whatever the case, temporary BMs can still represent an optimal-use case or prototype for long-term BM changes.

Temporary BMI may not necessarily substitute for the existing BM. In situations where the established BM cannot be pursued due to external conditions (e.g., regulations), new BMs will exist in parallel with the established BM. Previous research has emphasized that tensions between two parallel BMs may arise when they follow competing institutional logics (e.g., low cost vs premium) (Winterhalter et al., 2016) or if they are competing for limited resources (Markides and Charitou, 2004). Studies have shown that to overcome these potential issues, new (temporary) parallel BMs should be able to share resources and activities (Snihur and Tarzjian, 2018), and should furthermore be compatible and synergistic regarding

value chain linkages and technologies (Aversa et al., 2017).

We propose that temporary BMI are a potential mechanism for firms in responding to dramatic changes (i.e., demand and supply shocks). If they are the result of the Covid-19 pandemic, they are a kind of 'extended environment.' Initial evidence by Kraus et al. (2020a) indicate that European family firms utilized temporary changes in their BM as a direct response to the Covid-19 crisis. Furthermore, Ritter and Pedersen (2020) have recommended that in response to the crisis, firms should consider changes in a few core dimensions of the BMs. Gutierrez-Gutierrez et al. (2020) called for rapid responsible innovation as a sustainable response strategy to the Covid-19 pandemic. Following these initial ideas, together with the theoretical background of temporary BMI, we examined five firms that engaged in temporary BMI as a direct response to the Covid-19 crisis.

### 3. Methodology

This study explores temporary BMs in SMEs during crises. Kraus et al. (2020a) researched how firms adapt their BMs as a short-term response to cope with crises. Although they reflected their findings into extant literature, that of Casadeus and Ricart (2010), the understanding of temporary BMs in SMEs is underdeveloped. This argued in favor of an exploratory multiple case study approach. A case study 'attempts to examine: (a) a contemporary phenomenon in its real-life context, especially when (b) the boundaries between phenomenon and context are not clearly evident' (Yin, 1981, p. 59). This approach can be used to find answers to 'how' or 'why' questions and addresses real-life problems (Yin, 2009). Furthermore, a case study design enables the investigation of complex relationships and provides a basis for the development of theories (Flyvbjerg, 2006). The use of multiple cases was considered effective for theory development, and the underlying replication logic increases the likelihood of producing more robust and generalizable theory (Eisenhardt and Graebner, 2007).

#### 3.1. Selection of cases

The sample in this study included SMEs from Austria, Germany, and Liechtenstein. The search for and selection of suitable SMEs was based on theoretical sampling (Eisenhardt and Graebner, 2007). We identified companies that were negatively affected

by the crisis and were thus in a need to strategically deal with the situation. Therefore, all our cases come from low-tech industries which were more severely affected by the crisis. Here we identified SMEs that responded to the crisis via an innovation strategy (Wenzel et al., 2020) and operated with a temporary BMI (Kraus et al., 2020a). With help from the local Chambers of Commerce, we identified firms who at the time of the study were already known to have innovated their existing BMs as a response to Covid-19. A total of twelve possible firms were identified based on this. After double-checking whether these firms were really engaged in temporary BMIs, all of them were approached and asked whether they would participate in our study, with five of them agreeing to do so.

### 3.2. Data collection and analysis

The data for the present study were collected from various sources, i.e., through semi-structured interviews; follow up calls; archive data such as e-mails, internal reports, and presentations; and the firms' websites and social media activity on Instagram and Facebook as well as on-site visits and observation of the new BMs. In doing this, we used multiple sources of evidence as recommended by Yin (2009) to increase the overall quality of the case study and triangulated the results of the interviews wherever possible.

An interview guide was created for the semi-structured interviews. Accordingly, a number of focal topics were specified at the outset of the interviews. Very specific questions had to be asked to develop the necessary in-depth information about the new BMs, their basis and initial effects, and to explore the underdeveloped BMI phenomenon (Guest et al., 2006). More precisely, the content of the interview guide focused on how the participating SMEs had dealt with the crisis to date; which measures were chosen and why; what the temporary BM looked like; how the process of implementation worked; and whether the firms had already been exposed to significant consequences and changes resulting from their temporary BMI. Given the exploratory character of the present study, it was not possible to rely on existing questionnaires, requiring new questions to be formulated. The use of semi-structured interviews allowed the analysis of a complex situation and the inclusion of the experiences and views of the participants involved in it (Graebner et al., 2012). A total of eight interviews were conducted between April 30th and May 6th of 2020. This was during a time when the countries in the study had just started to

slowly reopen following their Covid-19 lockdowns. Due to the still-active social distancing measures and restricted border access, the interviews were conducted via the digital tool LoopUp, recorded with the consent of the participants, and later transcribed. The interviewees also enabled access to further material including firm reports, sales lists, and marketing material. The interviewees furthermore agreed to be contacted at a later date for any follow-up questions.

The data analysis primarily followed inductive reasoning (Creswell and Poth, 2016). It also took advantage of the underlying ideas of thematic analysis. This approach to data analysis searches for topics that appear important for the understanding of the phenomenon in focus (Fereday and Muir-Cochrane, 2006). Data reduction is here supported through segmenting, categorizing, and summarizing relevant concepts within the data set being examined (Ayers, 2008).

The data analysis began by a research team member transcribing the recorded interviews. This researcher took notes during this process, which supported not only the recording of why certain data chunks were assigned to particular topics, but the initial data interpretation as well. Once all transcripts were generated, the first step was to identify all data related to a list of predetermined topics covering three areas: (1) variance between the existing and the temporary BM, (2) changes in BM elements, and (3) time perspective of the BM. Additional codes were assigned to the portions of data that represented new topics (Saunders, 2012), further underlining the selected inductive approach. This was done for each case. New topics emerged as a result: branding and reputation issues, use of core competencies, effects on the existing BMs, and effects on the strategic flexibility of a firm. To reduce the danger of misinterpretation, all of the authors read through the transcripts and discussed the findings. Even though data from other sources was gathered and additionally included in the above-mentioned process, priority was given to the semi-structured interviews. Once this process was completed, individual case reports were prepared for each firm involved, which also formed the basis for a within-case analysis to be followed (Eisenhardt, 1989). The cross-case analysis aimed at highlighting the differences and similarities between the cases involved (Eisenhardt and Graebner, 2007), which was supported by the topics identified in the previous step. Moreover, comparison tables were produced to enable the cross-case analysis. This also helped the researchers discuss the findings and agree on the relevant topics needed to address the research aim. The detailed case descriptions can be found in the Supplementary Information.

## 4. Findings

### 4.1. Within-case analysis

In the following section we are providing an overview of the main BM changes that were conducted by each of our case companies. Table 1 provides a comprehensive overview on the changes in value proposition, value creation and value capture of the old and the new BM. Each case description highlights the new BM, the evaluation of the BMI based on Foss and Saebi (2017), and some general data about the case.

#### 4.1.1. Case A – distillery and beverage producer turns to disinfectants

Case A started to produce, bottle, and sell disinfectants as a business response to Covid-19. This BM, although new to the industry (production of disinfectants is a state regulated BM in Austria and only specialized companies were allowed to produce them until the crisis started, which opened this BM to the industry), was not structural, and therefore can be seen as a focused BMI (modular and new industry). The variation to the existing BM is vast, requiring several processes to be altered to be able to implement the new BM. However, the core competencies in production and filling remained unchanged. With its value creation, the firm has changed from the production of alcoholic drinks to a disinfectant. The value proposition has also changed, as new customers are targeted with a different product; only the value capture element remained unchanged.

Although one of the firm's employees developed the idea for the firm, it was decided not to make any changes when this person informed management. But management changed their mind a few days later, followed by the firm switching over to the production of disinfectant. The common goal made clear to everyone what they had to work on/change and how to implement the new BM. The firm's flat hierarchy supported this process. As one of the employees responsible for the process said, 'We all knew what we had to work on to get the product on the market. All departments were involved and you could see how motivated the employees were to implement this as quickly as possible.' The implementation was supported through public authorities and partners who contributed their expertise to the processes. During the process, the firm was concerned that the existing brand and its high-quality beverages would suffer from a negative image as a result of the change. But contrary to expectations, the interviewees noted that the firm's rapid action has significantly increased awareness of its own strategic flexibility. It projected the notion that it can handle complex situations well,

and is prepared for the future. Furthermore, it opened up new contacts and a new target group for the firm, which in the future will be reached via the current BM. So the experiences and new contacts obtained shortly after the introduction of the temporary BM led to positive effects on the core activities. Although the BM is currently generating good sales, there are no plans to pursue it long-term.

#### 4.1.2. Case B – creating digital value for conference sponsors

This firm developed a specific online event as a response to the Covid-19 crisis, addressing the needs of its customers and sponsors. This BMI can be described as evolutionary (modular and new to the firm), as no architectural changes were necessary and the BM of online events is used by others in the industry too. The variance to the existing BM is small, as most of the processes are still the same with the exception of room booking and catering. Within the scope of this temporary innovation, value creation has not changed, as it continues to focus on the networking of market participants. There were however changes in the value proposition. An event with personal character was brought into the digital space. The element of value capture has also changed: Through exclusive access to customers, sponsors are willing to pay more money per person reached. This firm approached a consulting firm with the concern that it would not be able to carry out their planned events. 'We listened to the firm's concerns that it would have to repay the money it had already received from the sponsors and developed a new concept based on the client's skills and the characteristics of the event.' The sponsoring contracts for the events had in most cases already been signed. During the crisis, it was noticed by all sides that affinity toward digital communication tools had increased significantly, which is why the firm decided to reproduce the conference within the framework of a digital meeting. A small group of the conference participants had up to this point been meeting on a regular basis for some time to exchange ideas over dinner. Over the course of the new BM, a handwritten invitation was sent out to participants who were to be networked together to create a similar personal environment over a drink. The participants are invited to digital conference rooms where the sponsors briefly present themselves. An opportunity that arose through the crisis was identified here, with extensive time invested to be able to hold the first run of the new event as quickly as possible. In the context of the crisis, innovation was of great importance, most notably in how it helped the firm avoid repayment to the sponsors. The interview partners pointed out that they can act more flexibly

Table 1. Description of old and new BM based on the three BMI dimensions

Case		Value proposition	Value creation	Value capture
Case A	Old	Production of a consumer good	Production of alcoholic beverages from basic ingredients including bottling for customers	Sell the produced spirits primarily to businesses and partly to retail customers via an online shop
	New	Produce disinfectant	Production of disinfectant to tackle health crisis and fill the increased demand during the crisis	Sell the disinfectant to businesses
Case B	Old	Network people in a specialized business environment.	Host local events and network the sponsors with the people they want to meet	Sponsors pay to be invited to the dinners that take place around the event
	New	Network people in a specialized business environment.	Host online events with limited space for sponsors to charge higher prices while networking the two core groups	Sponsors pay to be allowed in the online meeting and further to get a slot to present their products
Case C	Old	Provide place, food and service for a good time.	Create, cook and serve meals for customers in the restaurant	Get paid for every meal served
Case D	New	Provide meals to eat at home.	Cook and deliver meals.	Get paid for every meal served
	Old	Consult SMEs in strategic issues	Meetings, workshops and strategic development with customers	Charge for time used to consult the customer
Case E	New	Sell hygiene products to business customers	Sell disinfectant to other businesses	Earn commission for every successful sale
	Old	Produce and sell meat	Sell meat to restaurants only	Direct sales to business partners
	New	Produce and sell meat	Sell meat to customers and further retail organic products	Sales to customers through webpage, WhatsApp and on the farm



now, and see different new possibilities for creating revenue based on the new BM. A long-term implementation is not planned at the moment, but was in fact discussed in light of the positive participant feedback received from the events.

#### 4.1.3. Case C – from pure cooking to selling toilet paper, masks, and delivery service

This firm responded to the crisis by starting a new delivery service, transforming into a retail store for consumer goods selling toilet paper and masks. The BMI can be described as adaptive (new to the firm and architectural) as it is new to the firm to sell goods, while others in the industry already established this before. Moreover, large structural changes were necessary which resulted in architectural changes. The introduction of a delivery service was well-known in the industry, but required new processes and staff work profiles. The additional sale of consumer goods varies widely from the existing BM, creating further overall changes in the firm. And although the delivery service represented an extension of the firm's value creation, the inclusion of consumer goods into the restaurant's product portfolio was less common and altered its value creation. This additionally changed the value proposition from the processing of food to the sale of everyday consumer goods. By contrast, the value capture element hardly changed.

The idea for this came primarily from the owner, with the delivery service quickly implemented. This required internal processes to be changed, and the service staff trained accordingly (bring the food to the customers at their homes, not to a table in the restaurant). The BM for selling toilet paper was also implemented very quickly, as the firm was able to purchase it through existing supplier relationships within their network. Masks were designed and manufactured by a local tailor. In general, the financial impact of the new BM was minimal compared to the losses from the Covid-19 lockdown. The delivery service only added minimal value, and has already been partly reduced. Although the sale of masks and toilet paper was profitable for the firm, there were reasonable concerns about the impact on the firm's brand and reputation in the region. As a result, the margins on the products sold were low. The firm does not plan to continue this BM beyond the Covid-19 crisis.

#### 4.1.4. Case D – a classic consulting firm gets into retail

This firm started distributing disinfectants via a European distribution network in response to the crisis. The BMI can be described as adaptive (architectural and new to the firm) as other consulting firms also work as sales companies, but for this firm major

changes in their systems and approaches were necessary. Although the entry into trade is atypical for classical consulting firms, this firm has a long history in trade and numerous contacts. The owner stated how the decision was obvious for him, and the new BM is in line with his firm's existing competencies and personal network. The new BM resulted in changes to all three elements, with the firm expanding value creation from advising customers to providing disinfectants. The sale of disinfectants represented a change in the value proposition. The firm creates revenue as a retailer now, and no longer just with consulting, changing the element of value capture as well. The idea emerged from the firm's owner and through the closer network, with its joint cooperation starting shortly after the idea was born. The new BM could be implemented at this speed mainly due to a flat hierarchy and with the help of virtual organization with network partners who joined their core competencies, with the case firm taking over the distribution of the product. Creating sales strategies was a core competence that was already in place. After sales in Austria turned out to be profitable, the firm became a dealer to other countries as well, and the BM started to be perceived as a long-term opportunity. Margins are currently low, with attempts being made to force other participants out of the market in the near future.

#### 4.1.5. Case E – an organic farmer sets out on new paths

This firm produces and sells meat to private clients from its farm, and operates a digital organic farm shop. Its BMI can be described as evolutionary (modular and new to the firm), as other farms follow the same system of a farm shop and only minor changes were necessary to change to the new customer segment. It is mainly based on the same core competencies. Only some infrastructure had to be adapted to sell the meat directly on the farm. This firm changed its value creation from a pure on-site food seller to a digital shop. Furthermore, the live experience for the customers on the farm is an important factor for the firm; buying directly on the farm was still possible during the lockdown. While the value proposition is still the same (selling meat), the value capture of the firm has changed. Prior to the crisis, the farm was a B2B vendor and sold to restaurants only. However, this income stream vanished during the crisis, forcing the farm to come up with new ideas; its new BM was integrated quickly. In the near future, this firm plans to expand its digital shop with other organic regional products. As this firm has enjoyed a very strong brand image as an organic farm, there is a fear of damaging this image with the wrong products in the online shop. Furthermore, it hopes to not alter the

existing relationship with business customers with the new BM. In general, with the BMI, the new sales pillar provides greater strategic flexibility to react to situations, and has also enabled new contacts. In the long run they aim to continue with the new BM, even though they expect that the original BM will be similarly important following the lockdown and the reopening of restaurants.

#### 4.2. Cross-case analysis

The following section concentrates on the cross-case findings. We analyzed firms from different sectors and situations, with overall propositions for further research emerging upon closer inspection. Table 2 provides an overview of the case results. Our results indicate three important steps of a temporary BMI. These steps are the trigger and reason for a temporary BMI, insights into the integration of a TBMI and an outlook on the potential effects. Based on the detailed analysis of the cases we could develop a table that highlights similarities and differences among the cases and allows the identification of some patterns for temporary BMI. In particular our results of the cross-case analysis focus on the three areas along the process of temporary BMI: (1) The trigger and reason for a temporary BMI. (2) The integration process and important issues. (3) The effects of temporary BMI. A fourth section deals with patterns we identified in our data that provide more details on temporary BMI.

##### 4.2.1. Finding 1 – trigger and reasons for temporary business models

The Covid-19 crisis was the trigger for all of the firms to temporarily adjust their BMs, with all of them at least partially affected by the crisis, and Cases C and D highly affected. Only one case firm has already worked on its new BM prior to Covid-19 (Case E). For the rest of the firms the change was based on newly emerging opportunities (Cases A, B, C, and D). *'Everyone started using online tools [for meetings and communication]. It was just more familiar to our target group and I decided this is an opportunity to do our networking activities online'*, so the consultant of case B. There are significant differences in the time perspective of the new BMs. While two firms (Cases A and C) only wanted to implement their new BM during the lockdown, there are two firms for whom the potential long-term development was a decisive reason to adapt (Cases D and E). For firms seeking long-term integration, the relevance of the new BM is high, while for others it is only average or low. The owner of case E explained this relevance to us: *'We have already started to change over shortly before the pandemic. Because*

*of the pandemic, our main source of sales collapsed. Restaurants had to close. We therefore had to work even faster. That was incredibly important because we couldn't sell anymore. But that is also how it will be in the future, that we will sell directly to private individuals.'* Moreover, the companies that integrated temporary BMI with the intention to sustain it over the long run mentioned that they also invested a significant amount of resources. An important basis for the introduction of a temporary BM is the initial idea and observed opportunity. This may come from very different sources. In case A, an employee had the idea, in case B an external management consultant, and in cases C, D and E the owner. The CEO in case A stated: *'Our employee realized that the competitors in more seriously affected regions already started to work on this opportunity. He convinced us to also do this.'* The statement shows the flat hierarchies and short command lines in SMEs and is an indication that in SMEs innovation can also be initiated quickly by employees and external parties in order to master a crisis.

##### 4.2.2. Finding 2 – integration process, branding and business model elements

Most of the temporary BMs observed emerged from the crisis (Cases A, B, C, and D). For these firms, the rapid exploitation of their respective opportunity was of great importance. As a result of the crisis, capacities were freed up in the firms to take advantage of these opportunities. The CEO of case D explained: *'In the course of the crisis, some major projects were cancelled or postponed. This gave them enough time to implement this business model quickly'* (Case D). Rapid implementation was achieved with the help of free capacities<sup>2</sup> (Cases A and C), by external consultants (Case B), and by using the existing network (Cases C and D). Case E is the only one that carried out the implementation itself. One reason for the rapid implementation of the temporary BMs was that they were based on existing core competencies at all of the firms. The case firms created BMs around new opportunities but in line with their established competence base. The companies also described how they used their core competencies: Case A who primarily produces spirits could not sell the same amount as restaurants were closed. They explained that they could build on their existing processes and competences of following a receipt and producing and mixing different ingredients, when they started to produce disinfectant rather than spirits. Also in packaging and distribution they could build on existing capabilities. The CEO mentioned: *'We don't do anything different today than we did in the past. We follow a recipe and mix the necessary ingredients*



Table 2. Cross-case results and main insights

Situation overview	Degree to which the crisis has affected <sup>1</sup>	Case A	Case B	Case C	Case D	Case E
		Partly affected	Partly affected	Highly affected	Highly affected	Partly affected
Trigger and reasons for temporary BMI	Reason for integration <sup>2</sup>	Opportunity Short-term	Opportunity Long-term possible	Opportunity Short-term	Opportunity Long-term	Necessity Long-term
	Perspective of temporary BM					
	Source of innovative idea	Employee Average	External consultant Average	Owner Low	Owner/network High	Owner High
	Relevance of temporary BMI <sup>3</sup>	Yes	Yes	No	Yes	Yes
How and what changed	Network	Yes	Yes	No	Yes	Yes
	BMI typology	Focused	Evolutionary	Adaptive	Adaptive	Evolutionary
	Variance with existing BM <sup>4</sup>	Far	Near	Far	Near	Near
	Built on core competencies	Yes	Yes	Yes	Yes	Yes
Effects of temporary BM	Branding issues	Yes	No	Yes	No	Yes
	Value creation	Changed	Same	Changed	Changed	Changed
	Value proposition	Changed	Changed	Changed	Changed	Same
	Value capture	Same	Changed	Same	Changed	Changed
	Effects on Network	Yes	Yes	No	No	Yes
	Strategic flexibility	Yes	Yes	No	No	Yes

<sup>1</sup>Self-reported affectedness of the firm through the crisis (partly affected or highly affected).<sup>2</sup>Self-reported reason why firms integrated into temporary BMI.<sup>3</sup>Self-reported relevance of the temporary BM for the firm in regard to business performance.<sup>4</sup>Individually assessed by all researchers on the basis of the changes to the BMI elements.

together to make a product.' Case B, who had offline events with sponsors, for example still sees its competence in matching the right people together. Instead of doing this offline they do it online now. As firms relied on these existing competences, residual required competences that were not readily available were very few and could be built up quickly via the existing network in order to be able to react quickly (Cases A, B, D and E). This made the implementation of the temporary BMI very fast and efficient. We observed a considerable variance (Cases A and C) between existing and temporary BMs for those firms who only see their BMI as a short-term opportunity. On the other hand, firms who indicate that they are planning or are already working on a long-term continuation of their temporary BMI (Cases B, D, and E) obviously conduct changes in their BM that are generally more incremental in nature. Still, in general, even in the cases where more radical changes were carried out, the existing core competencies formed the decisive basis for establishing these BMs (Cases A and C). For three firms (Cases A, C, and E), a good reputation and a strong brand belong to these core competencies. These firms were incidentally concerned about the effects of the temporary BM on their brands (Case A, the most affected firm), thus ensuring that the temporary BMI is aligned with the existing brand reputation. An employee explained: *'We produce high quality spirits and are now a manufacturer of disinfectants. We have to be incredibly careful to draw a clear line here in communication.'* An analysis of the media, the homepage and their social media accounts interestingly showed that these case firms even prevented to inform the public about their newly integrated BM. Firms that have established a significant, well-known brand among private customers in their daily business are more concerned about their reputation than purely B2B firms. From this perspective, the organic farmer who has to pay attention to the organic origin of the products sold in his local and digital farm shop had to consider branding in order not to lose the trust of his customers. Secondary data show that they put a lot of emphasis into communicating their organic status throughout their means of communication. The restaurant, which enjoys a solid reputation throughout its region, also had to keep this in mind. All these firms had to design their new BM in a way that did not damage the existing brand.

Our results indicate several changes in the BMI elements and different BMI typologies. First we see that at least two of the three elements changed in all of the cases. In one case (Case D), all three elements changed. A special situation could be analyzed for

the value capture element, which is not changed if companies' temporary BM is far from the existing one. This could be due to the fact that these firms do not plan to integrate the temporary BM into the firm in the long-term, i.e., these changes will take place while continuing to focus on existing BMs and changes in value capture are more complex than in other dimensions. Second, we could find that based on the *BMI Typology* focused (new to the industry and modular), evolutionary (new to the firm and modular) and adaptive (new to the firm and architectural) BMI was used to establish a new BM. Two companies (Cases C and D) followed an adaptive BMI another two (Cases B and E) did an evolutionary BMI while only one firm integrated a focused BMI (Case A). The results indicate a relationship among adaptive BMI and the affectedness of the existing BMI, which is further described in finding 4.

#### 4.2.3. Finding 3 – the effects of temporary business models

The results showed that the introduction of a temporary BM had positive effects on the case companies. Cases A, B, and E noted positive effects on their network. They mentioned that the heterogeneity increased through new contacts which will help in different situations, moreover they highlighted the positive effects of contacts in various industries that think about solutions differently. Finally they mentioned that their total customer base increased as they addressed new customer segments, which may allow them to address these with their original BM in the future. In addition to our expectations, three cases (Cases A, B, and E) described BMI creates beneficial effects on strategic flexibility, which resulted from a deeper reflection and understanding upon their own core competencies and the potential strategic opportunities that could be addressed through these. The companies realized that on this basis the dimensions of a BM can be successfully adapted to changing conditions. The CEO of case A explained their increased strategic flexibility in the following: *'We have seen what we are capable of when we enter a difficult situation. Our team has shown us that we can also achieve sales in other areas when a change is needed.'* The managing partner of case B further explained: *'It was good to see that we are flexible enough to adapt to this crisis. Our competitors just cancelled their events while we could still generate revenue.'* Moreover, the new BMs allowed these firms to be more flexible through the generation of additional revenue streams, helping to better adjust to changed situations while working on new value creation.

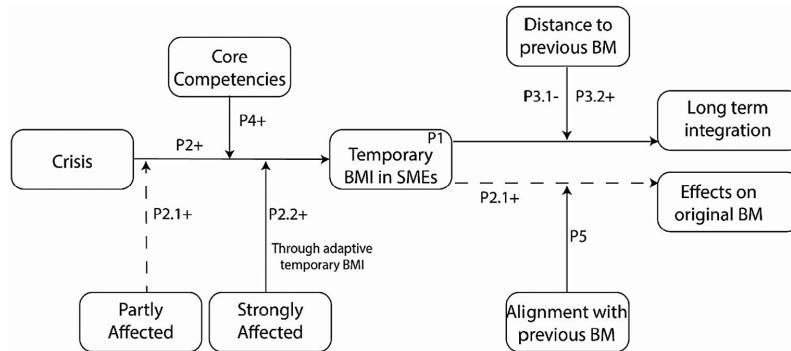


Figure 1. Overview on the propositions of temporary BMI.

#### 4.2.4. Finding 4 – temporary business model patterns

Despite the limited number of cases the results indicate two general patterns in temporary BMI as a response to crisis. The first pattern differentiates primarily those companies that are significantly affected from those that were less negatively affected by the crisis. This level of affectedness leads to different results and directions. The crisis did not have the same effects on all the companies. The ones that were affected to a greater degree (Case C and D) both engaged in adaptive BMI, which means that their innovation was new to the firm and architectural. As these companies were more constrained by the crisis, they could no longer follow the existing BM. Due to the severity of restrictions they had to do *architectural* changes in their BMs to generate new revenues. This huge change of the existing BM created a situation in which none of the effects we realized with other companies (positive effect on network and positive effect on strategic flexibility) could have been discovered. On the other side companies that were less negatively affected changed their BMI more incrementally via modular changes and could consistently benefit from the positive effects of the new BM on strategic flexibility, on the existing network and on the existing BM. They reported that they are more aware of their core competences and could easier respond to environmental changes based on this experience in the future which allows them to be more flexible from a strategic perspective. On the other side they mentioned that they plan to leverage the new contacts they reached with their BMI to do cross sales and develop innovative solutions for this new segment. Moreover, they mentioned that the experience during the creation of the temporary BM helped them to further develop the old BM.

The second pattern differentiates the perspective companies have on the new BMs. Companies who planned a long-term continuation of their temporary BMI show a different pattern of behavior as compared to those companies with a rather short-term perspective. It is realizable that the strategic planning horizon behind a temporary BM does have effects on the investment companies are willing to do, the distance to the existing BM, branding and also the value capture dimension. Companies that change their BM just for short-term survival are fine with a larger distance between the existing BM and the new BM. As they do not plan to implement it in the long-run they are more concerned about their brand and that the temporary BMI could have negative influence on it. Moreover, our data indicate that companies that only follow a short-term implementation try to keep going with the same *value capture* as before. On the other side, companies that plan their new BMs for a long-term perspective actively mention that they invested money to integrate the new BM. For example, an onsite visit at Case E showed that they invested into new infrastructure to build cooling capacity and a store on their farm.

## 5. Discussion and conclusion

### 5.1. Synthesis of key results

In the following section we synthesize our results and create five core propositions on temporary BMI. They explain the relationships of our core constructs and should encourage future research on this topic based on our empirical temporary BM foundation. At the end of this section we provide an overview on these propositions (Figure 1).

This study focuses on SMEs and indicates that these companies use temporary BMI to survive a crisis. SMEs are characterized by various criteria. These include the liability of smallness, which means that SMEs have fewer resources available in times of crisis (Eggers, 2020). Due to the limited resource availability, certain crisis management strategies explained through Wenzel et al. (2020) could at maximum be used for a short period of time. A pure retrenchment or persevering strategy cannot be pursued over a long time, without new revenue streams as a SME. Authors further explain that SMEs have to be innovative to survive turbulent environments (Le Nguyen and Kock, 2011), which is clearly indicated through our analysis. Thus, in particular for SMEs a proactive innovation strategy based on temporary BMI seems to be a feasible solution to manage an exogenous crisis. On the other side SMEs have lean structures which allow them to be more innovative. As our data show it is possible for employees and external stakeholders to persuade the management in SMEs to pursue new ideas. Furthermore, the management is more directly involved in the firms' operations, leading to direct and quick opportunity recognition. Concluding SMEs are more likely to engage in temporary BMI as other strategies are not suitable for a long period and the lean structures allow them to easier implement new ideas.

**Proposition 1** Temporary BMI is particularly appropriate for SMEs during crisis.

Our cases clearly show that an exogenous crisis is a trigger for temporary BMI. In all investigated cases the crisis triggered the innovation process. This is in line with existing literature describing that crises lead to new innovation opportunities (Brockner and James, 2008). Saebi et al. (2017) explained that firms tend to adapt their BMs when they are under threat. In the case of an exogenous crisis, these opportunities may be temporary. Temporary BMI differs in companies that are severely or only partly affected by the crisis. Significantly constrained companies may be in a need to move further away from the actual BM in order to be able to create new sources of revenue. These companies must do an adaptive BMI based on Foss and Saebi (2017) which forces the firm into architectural changes of the existing system. Therefore, the changes in these companies are more severely and they are not able to profit from positive effects on their network (new contacts in different industries to learn from or customers they can also address with the original BM) or strategic flexibility. Less constrained companies benefit from stronger positive effects of the new BM on the existing BM

through the newly gained experience and feedback outside their home industry, the network and their strategic flexibility. While other authors investigated strategic flexibility as an antecedent of BMI (Bock et al., 2012; Clauss et al., 2021). Schneider and Spieth (2014) experimentally showed that BMI indeed increases the strategic flexibility of firms across different dimensions. In line with this, our study showed that those firms facilitating temporary BMI could increase their strategic flexibility and may therefore develop a capability to better react to potential future crises (Muhic and Bengtsson, 2021). SMEs' active responses create experiences in coping with complex situations, and the foundation for further BMIs as a result (this was explained by Zook and Allen (2003) in the context of multinationals).

**Proposition 2** An exogenous crisis serves as an initiator of temporary BMIs in SMEs.

**Proposition 2.1** If an exogenous crisis strongly affects an existing BM this leads to the implementation of a temporary BMI through adaptive BMI.

**Proposition 2.2** Under circumstances where an exogenous crisis affects an existing BM only partly a temporary BMI has positive effects on the existing BM, strategic flexibility and increased business network.

While Kraus et al. (2020a) describe temporary BM adjustment as a short-term response to crisis, some of our cases clearly indicated that these companies intend to transform temporary BMs into long-term BM changes. For these cases their temporary BM is not only an opportunity that works during the crisis but can also create revenues after it. In particular those companies, whose temporary BMI is close to the existing BM, are actively planning such a long-term integration of their temporary BMI. If a BMI is only incremental and creates new revenue streams, it is a case for long-term implementation. It is important to see future potential for the temporary BM after the crisis too and it should be compatible with the existing BM to prevent harming the core BM. In this situation it makes sense to integrate the new BM also in the long run, especially if it is possible to integrate it into the existing strategy.

On the other side we observed companies that do not plan a long-term integration of their temporary BMI. Interestingly, while these companies follow BMs that are more fundamentally different from their existing one they still do not change their value capture dimension. The larger distance to the existing BM allows them to do a short-term change to

create new revenue streams but it forces them to get back to the old one if they would like to go with the existing strategy (Casadesus-Masanell and Ricart, 2010). Changes in the value capture dimension are more complex than the other dimensions and were shown to require system wide adaptations that could not be achieved through temporary BMI (Clauss et al., 2021). This may explain why the case companies did not change their value capture for temporary BMI even if more radical BMI were conducted.

**Proposition 3.1** Temporary BMI that are closer to the traditional BM of SMEs show potential for long-term integration and may thus be a basis for long-term BMI.

**Proposition 3.2** Temporary BMI that are far to the traditional BM of SMEs are only implemented for a short-term perspective.

Our results indicate that the quick response through temporary BMI in SMEs is made possible as the case companies rely on existing competencies and slack resources as a basis for their temporary BMs. Moreover, leveraging existing personal and business contacts increases the speed of BM implementation, especially during a time where free capacities are available due to restricted existing BMs. This demonstrates that temporary BMI may be facilitated through a firm's core competency base. The literature examined how core competencies are an essential factor for general BMI (Matzler et al., 2013). Moreover, it is suggested that incremental BMI should be developed in line with core competencies (Prahalad and Hamel, 1990). Zook and Allen (2003) further explained that it is important to keep situations of change manageable by building on existing capabilities and working one step at a time. Changing environments lead to an increasing complexity, which can be handled using limited changes in the firm that build on existing competencies. Leveraging the network and core competencies helps to implement a BMI in SMEs.

**Proposition 4** After an exogenous crisis core competencies leveraging is used for temporary BMI in SMEs.

In line with this argument our findings further suggest that firms may implement temporary BM quickly, albeit with foresight. This is illustrated by the obvious concern of our case companies that temporary BMI may harm their brand reputation and therefore their existing BM. Especially, companies that only create a new BM for the short run

have a huge interest to protect their reputation and core BM. The reputation of our case companies is often described as a core competence. They are well known in their industry and respected for good quality. Therefore, the creation of short-term revenue streams through a temporary BMI must be possible without risking this reputation. This effect is also visible in other areas. In their study, Zook and Allen (2003) showed that growing firms are always careful not to weaken their existing core, and basically only pursue one opportunity after another. This sequential approach results in easier processes and allows a BMI to be implemented without harming the core of the firm, keeping the possibility to go back to the core BM alive. Companies that plan to integrate their temporary BM in the long run too are less afraid of harming their reputation. As proposition 3.1 and 3.2 already explained these are also the companies where the existing BM is not that far from the new one. By pursuing an incremental change of the BM the possibility to harm the old one is more limited. On the other side companies that are afraid their temporary BMI could harm their reputation are engaged in more radical changes of their BM.

**Proposition 5** Temporary BMs should be done without harming the existing BM.

In total we proposed five core propositions with individual sub-propositions that could better describe temporary BMI. Figure 1 summarizes all these propositions into a model to show their overall connections and provide a better understanding of the investigated variables.

## 5.2. Contribution to research

Our study makes two important contributions to the literature. First, we contribute to the literature on crisis management in SMEs by identifying and elaborating a management mechanism that allows firms to survive and may even improve during a severe exogenous crisis such as the one caused by the Covid-19 pandemic. A quick and successful response to crises is an important issue for SMEs due to their limited size and lack of resources (Eggers, 2020). Our findings are in line with previous studies showing that exploration strategies, engagement in innovation, and entrepreneurial orientation may help firms to survive a crisis (Eggers and Kraus, 2011; Vargo and Seville, 2011). Beliaeva et al. (2020) relate the positive effect of an entrepreneurial orientation during a crisis to firms' ability to identify opportunities during crises. We substantially add to this previous knowledge as we further develop initial arguments on short-term BM

adaptions (Kraus et al., 2020a) and further explain the concept of temporary BMI as response strategy for SMEs to create new revenue streams and increase liquidity in cases where the existing BM is negatively affected by a crisis. Specifically, more incremental adaptations of existing BMs provide opportunities for SMEs to test alternative BMs which can be pursued during/following a crisis. In addition to that, our research shows that going through a temporary BMI increases the strategic flexibility of firms, supporting previous research of Ates and Bititci (2011) who show that current change processes also increase SMEs resilience for future crises.

Second, we contribute to the BMI literature by substantiating temporary BMI as a new form of BMI. Kraus et al. (2020a) created the foundation for temporary BMI as a short-term response to crisis. While BMI as a response to changing external conditions has been presented as a costly and time-consuming change that is radical by nature (Snihur et al., 2018; Clauss et al., 2021), temporary BMs create the possibility to more incrementally change the BM in a short period of time and with limited resources. This is possible as temporary BMI relies on exiting core competencies of the firm and thus – although the dimensions of the BM are altered – can reduce the challenge of a BMI (Prahalad and Hamel, 1990). Therefore, our research brings a new perspective to the emergence and rigidity of BMs. Casadesus-Masanell and Ricart (2010) initially explained that BMs are the result of a firm's long-term strategy. In this view, these rather rigid structures could thus not be altered at a short-term basis and reactions to changing environmental conditions could only be conducted through minor tactical maneuvering in the scope of residual BM flexibility. In contrast to this, we find that indeed, temporary BMI is possible under certain conditions. This may be explained based on Mintzberg's (1978) idea of emergent strategies. Under extreme conditions such as a crisis caused by a pandemic where the underlying assumptions of the deliberate strategy are not valid anymore firms may develop these emergent strategies, which will then be operationalized through a temporary BMI. We thereby show that despite previous assumptions, temporary changes of BMs are possible independent of the deliberate long-term strategy of the firm.

However, our results clearly demonstrate that these temporary BMI are established based upon the existing core competencies. Thus, although temporary emergent strategies may lead to temporary BMI under situations where existing deliberate strategies are rendered obsolete, these are still in line with the resource based foundations of the original strategy

leading to BMIs that are less radical and address adjacent industries. In general this finding is in line with ideas of the resource based view (Barney, 1991), advocating strategy definition based on unique firm resources. Companies that are aware of their own core competencies have the opportunity to scale in adjacent domains through an adaption to a changed environment based on emergent strategy and a temporary BMI. This behavior creates new revenue streams in areas that are not or less affected by the crisis and create a better chance of survival.

We show that temporary BMI is a successful crisis management approach during exogenous crises when the core BM is severely affected by changing external conditions. However, our finding may also be more generalizable to BMI under other conditions. Arguably, temporary BMI could also be a relevant approach during normal times to help innovate BMs and test alternative ones. Through, such temporary BMI, new BMs can be tested, changed, and improved. In line with previous research (Sosna et al., 2010; Andries et al., 2013), temporary BMI constitutes a resource efficient opportunity to experiment with new BMs without putting the core BM at risk. This experiment can lead to a long-term integration of the new BM or to a change back to the existing one. A key to pursuing an experimental approach based upon temporary BMI is not to endanger the existing BM. We add to this discourse by showing that one important criterion to enable this process in incumbent firms is that the BMI relies on firms' existing core competencies and is connected to the core business (Zook and Allen, 2003). If the BMI is setup to be temporary and draws on the core competencies of the organization, a return to the core BM is always possible, resulting in limited risks for the firm. This option to return to the core BM is further enabled through a separation of the old and the new BM in time. Temporarily shifting to a different BM or running two BMs simultaneously is facilitated if the new temporary BM does not harm the old one (Markides, 2013). Moreover, the proximity of a BMI to the core competencies of the firm allows it to be implemented quickly. A core BM does not need to be forcibly reduced to implement a temporary BM, which could perhaps promote parallel synergetic BMs. In this vein, temporary BMI may be a potential approach to implement and manage multiple BMs (Winterhalter et al., 2016). As suggested by Markides (2013) a temporal separation may be a solution to manage two competing yet integrated BMs. This may be facilitated through temporary BMI. Furthermore, the initial findings of this study indicate that in the long run existing BMs can also



benefit from temporary BMs through an extension of the network into new industries and an improved knowledge of the own core competencies.

### 5.3. Managerial implications

This study shows that a sudden and unexpected crisis can also unlock enormous potential for firms, provided they are open-minded, willing, and prepared to search for potential opportunities during a crisis. Firms can recognize new opportunities in a rapidly-changing environment, and must be aware of their core competencies to recognize opportunities that might be far removed from existing BMs. By exploiting their own network, and applying their own competencies, unused resources can be quickly bundled into new BMs during a crisis. With a global crisis, these BMs can serve not only a purely economic purpose, but a social one as well. Rapid responsible innovation is an 'innovation developed in a short period of time in a state of emergency with the hope of protecting people and saving lives' (Gutierrez-Gutierrez et al., 2020). Some of the firms examined in the course of this study can be associated with this approach, and serve as examples of how to sustainably operate long-term.

In addition to the issue of sustainability, our study shows clear positive effects for firms. The introduction of a temporary BM leads to positive effects on the current BM. The understanding of the own BM changes by looking at other industries and processes, and gaining new customer groups. Above all, rapid reaction by firms leads to increased flexibility and reveals a firm's potential. A sharpened view of the own core competencies can have long-term positive effects.

### 5.4. Limitations and outlook

This study was dedicated to the analysis of temporary BMs, providing first insights into the effects they can have and how they can be implemented. Numerous other propositions have arisen as a result. This study is limited by its scientific approach. Only firms experiencing BMI during a crisis were specifically examined and all these firms have been SMEs. The companies came from low tech industries, which were more affected by the crisis. The impact of the Covid-19 crisis on other firms was not addressed. However, it is to be expected that the crisis will also lead to significant changes at other firms. Nevertheless, some firms profited during the crisis and we cannot draw any conclusion on these companies. To overcome these issues the relationships

identified in this research should be investigated in a quantitative analysis. Furthermore, due to the current timing, it is not yet possible to conclusively say what effect the introduction of a temporary BM will have on the overall performance of a firm, or any resurgences following a crisis. The long-term effects of temporary BMI on existing BMs as well as on firm performance will have to be the objective of future research. Lastly, we focused on temporary BMI triggered by an exogenous crisis that forced firms to develop a new BM in order to ensure the survival of their firm. However, this study did not investigate other more proactive antecedences of BMI as discussed in the literature, such as strategic agility (Clauss et al., 2020), learning (Berends et al., 2016) or knowledge management (Hock-Doeppgen et al., 2021). Future research might therefore investigate the antecedences of temporary BMI besides or in addition to the external shock caused by the crisis. Moreover, the results in this study are only a first analysis of temporary BMI. They are only one possible way to pursue these kind of BMs. Future studies should refine this model and show different approaches based on other cases or quantitative research.

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## Notes

<sup>1</sup>Henderson and Clark (1990) defined architectural and modular innovation. This definition must not be confused with the BMI Typology of Foss and Saebi (2017), that also uses the terminology architectural and modular. Their terminology is built on fifteen years of BMI research and describes the scope of a BMI.

<sup>2</sup>As a result of the Covid-19 lockdown, new capacities for strategic considerations and new operational implementations were freed up in the course of operational cut-backs. We describe these as ‘free capacities.’

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