



Iterative business model innovation: A conceptual process model and tools for incumbents

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ABSTRACT

Business model innovation (BMI) is challenging for incumbents because they must leverage existing capabilities, market knowledge, and stakeholder relationships in the BMI process. As BMI is an ongoing process, incumbents that can continuously innovate their BMs in response to changing market conditions and customer needs may be successful in the long term. However, an integrated and detailed process model of incumbents' highly challenging BMI process is lacking. By structurally reviewing 47 publications and integrating their process model elements, we propose an incremental, iterative, recursive, and reflective conceptual process model for incumbents' BMI that comprises six phases and summarizes 23 activities and 38 tools. Our work contributes to the ongoing evolution of the process perspective of BMI by presenting a process model for incumbents that complements the established phases of initiation, ideation, and integration with the new phases of lifecycle analysis, competitor analysis, and roadmap.

1. Introduction

Business model innovation is crucial for both incumbent and newly established companies. While the current Covid-19 pandemic (Bivona & Cruz, 2021; Breier et al., 2021; Harms et al., 2021) has heightened its importance, other factors, such as increased competition from new market entrants (D'Ippolito et al., 2019; Johnson et al., 2008), changing customer needs (Kim & Mauborgne, 2014; Zollenkop, 2009), the impact of new digital technologies (Jodlbauer & Strasser, 2016; Urbinati et al., 2022), and sustainability demands (França et al., 2017) contribute to its growing significance. To remain competitive, companies need to continuously innovate their business models (Bashir & Verma, 2017) because business model innovation is not a one-time event but rather an ongoing process (Hedman & Kalling, 2003; Osterwalder & Pigneur, 2010). Research has revealed that incumbents capable of consistently innovating their business models in response to evolving market conditions and customer needs are more likely to achieve sustained long-term success (Mao et al., 2020). With their established market positions, resources, and capabilities, incumbents play a crucial role in the economy and face unique challenges and opportunities in innovating their business models. Business model innovation in incumbents requires a different approach

than that of newly established companies. It entails overcoming internal barriers to change (Chesbrough, 2007, 2010), leveraging existing resources and capabilities, capitalizing on market knowledge and access, cultivating relationships with stakeholders (Foss & Saebi, 2017; Markides & Charitou, 2004), and balancing the need for innovation with the risks of disrupting existing business models (Ibarra et al., 2018). These significant challenges arise within the business model innovation process as it becomes apparent that achieving such innovation expeditiously is unattainable, necessitating a prolonged commitment of time and resources. Existing research predominantly centers on the process of business model innovation as executed by startups, while less attention has been directed toward investigating the innovation of existing business models of incumbents (Andreini et al., 2022; Haftor & Climent Costa, 2023). Consequently, comprehending and exploring the business model innovation process within incumbents is paramount in the contemporary dynamic and competitive business landscape. Therefore, the research questions underlying our work are: 1) What is the existing knowledge about incumbent companies' business model innovation process? 2) What are the distinct phases, along with their associated activities and tools, of a conceptual process model for incumbent companies derived from the current state of research?

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To answer these questions, we conducted a structured narrative review of the incumbents' business model innovation process. By structurally reviewing the business model innovation process models presented in 47 publications and identifying and integrating the common elements of these models, we derive a conceptual process model for the business model innovation of incumbents. Our model depicts an incremental, iterative, recursive, and reflective process aligned with the four dimensions of the business model (value proposition, value delivery, value capture, and value creation). It comprises six interconnected and sequential phases (initiation, ideation, lifecycle analysis, competitor analysis, integration, and roadmap), backed by 23 activities and 38 tools. The process involves revisiting previous phases, gaining new insights, and regular reflection on progress and outcomes. This approach facilitates gradual implementation, adaptation to changing circumstances, goal alignment, and enhanced process understanding.

The paper is structured as follows: First, the theoretical background of the literature on business models, business model innovation, the business model innovation process, and the business model innovation process of incumbents is provided. Second, our research design of conducting a structured narrative review is presented. Third, the content analysis' results and synthesis of existing business model innovation process models are given. Next, we derive a conceptual process model for incumbents' business model innovation by integrating existing literature. The paper closes with a discussion and conclusion.

2. Theoretical background

2.1. Business model

Although research is divided about a business model's constructs, its assessment dimensions, and its definition (Desyllas & Sako, 2013; Foss & Saebi, 2018; Zott et al., 2011), it can be summarized from the existing literature that a business model is a structural template for the way a company manages and develops its business (Clauss, 2017; Spieth et al., 2014; Teece, 2010; Zott & Amit, 2013; Zott et al., 2011). A business model is a multidimensional construct (Latifi et al., 2021) that—depending on the researcher—encompasses between three (Lee & Cadogan, 2013) and four dimensions (Gassmann et al., 2015), and between five and 14 elements (Lang, 2020). This paper uses a definition of a business model as a configuration that incorporates nine elements across four dimensions: First, the intended added value for the customer is expressed by the **value proposition** (Massa & Tucci, 2013), and the according element is 1) products, services, and job-to-be-done valuable to the customers. Latifi et al. (2021) list introducing new products and/or services as a new value proposition. Second, **value delivery** of a created perceivable value for target customers ensures efficient processes, channel personalization, and customer service and support. The corresponding elements are 2) target customer segments, 3) customer channels, and 4) customer relationships. Third, **value capture**, i.e., the value-added for the company itself, describes how to maximize revenues and minimize costs to improve the financial statements and ensure the sustainable financial success of the business. The according elements are 5) revenue model and 6) cost structure (Johnson et al., 2008). Lastly, **value creation** maximizes customer perceived value, meets customer needs, and minimizes associated customer risks. Collaborative value creation (e.g., multi-firm partnerships, open business models, and users as innovators) is enabled by co-creation and interactional creation (Brown et al., 2021; Ramaswamy & Ozcan, 2018). Value creation encompasses the following elements: 7) Key activities and key processes, 8) key resources, key technologies, key capabilities, and key control elements, and 9) key partners and ecosystems.

2.2. Business model innovation

Understanding the concept of a business model is crucial for comprehending how a company creates, delivers, and captures value. We define business model innovation as the process of identifying the need for a new business model and (re-)designing, evaluating, and implementing it to create value for both the company and the target customers. This involves changing at least one of the four dimensions and the corresponding nine elements through the innovation process (Baden-Fuller & Haefliger, 2013; Baden-Fuller & Mangematin, 2013). A distinction is made between business model innovation in startups, referred to as business model design, which involves creating a completely new business model, and business model innovation in incumbents, known as business model reconfiguration, which entails modifying an existing business model (Casadesus-Masanell & Zhu, 2013; Massa & Tucci, 2013).

Business model innovation encompasses a wide range of activities, from developing new products and services to creating new distribution channels, adopting new technologies, to establishing new partnerships (Reuver et al., 2013). It is crucial for achieving success, surpassing the importance of product/service or process innovation (Amit & Zott, 2012; Johnson et al., 2008). However, these types of innovation are often intertwined, particularly as companies strive to improve their competitiveness by providing better customer-centric products and services. Consequently, effective collaboration among stakeholders throughout the entire product lifecycle (Ming et al., 2008) and resource orchestration throughout a firm's lifecycle are increasingly crucial for developing the necessary capabilities to achieve a competitive advantage (Sirmon et al., 2010). Repurposing existing resources for new applications, commonly known as exaptation, serves as an effective means to initiate value creation, delivery, and capture mechanisms and, as such, represents a viable approach to business model innovation (Codini et al., 2023). In their analysis of business models adopted over a firm's lifecycle, Landoni et al. (2020) find that business model innovation allows the exploitation of business opportunities, first through the resource organization to build a good reputation, second by leveraging new distribution channels, and lastly by generating new ideas and testing solutions to update the product portfolio. A consistent relationship exists between business model innovation and the progression of the industry lifecycle from embryonic to growth phases: Changes in the business environment create the need for recurring business model innovation, as embryonic industries require frequent adaptations to the business model (i.e., exploratory activities) while growing industries demand organizational ambidexterity (i.e., both exploratory and exploitative activities) (Vittori et al., 2022).

2.3. Business model innovation process

The process perspective of business model innovation has evolved over time, with new models being developed to capture the challenges of the innovation process. While early models, such as the stage-gate system proposed by Cooper (1990), provided a structured and sequential process, alternative models emerged that account for the dynamic and iterative nature of the business model innovation process. Process theory-inspired process models (Chesbrough & Rosenbloom, 2002; Teece, 2010) emphasize the importance of social and organizational processes in shaping business model innovation, while actor-network perspective-inspired process models take a network-oriented approach, considering business model innovation as a collective process involving multiple actors (Laasch, 2019). Andreini et al. (2022) support this perspective by defining business model innovation as an iterative refinement process that establishes connections among individuals, teams, organizational units, markets, and institutions. They

categorize business model innovation processes into five distinct types: cognition, knowledge-shaping, strategizing, value creation, and evolutionary processes. These are integrated within broader organizational contexts, thereby enabling boundary-spanning actions.

2.4. Business model innovation process of incumbents

Leveraging their unique and valuable capabilities and resources, incumbents have successfully created and captured value through their existing business models (Lantano et al., 2022). However, when embracing new business models, these capabilities can pose challenges (Kim & Min, 2015). For incumbents, business model innovation becomes an iterative process involving incremental changes to the current business model while ensuring compatibility with existing mechanisms (Lantano et al., 2022; Sosna et al., 2010).

Research emphasizes the significance of various approaches to support incumbents in innovating their existing business models. Dynamic capabilities, for instance, play a vital role in this regard (Lantano et al., 2022). Dynamic capabilities enable a company to constantly monitor the external environment, identify new opportunities, and integrate novel elements into its business model (Helfat & Raubitschek, 2018). This flexibility and adaptability are crucial for incumbents seeking to navigate the complexities of business model innovation and effectively respond to evolving market dynamics.

Digital technologies do not only contribute to these market changes but can also be leveraged by incumbents in the business model innovation process (Sabatini et al., 2022). Paiola et al. (2022) studied how incumbent small and medium-sized enterprises (SMEs) effectively manage the simultaneous evolution of a new IoT-based business model alongside their existing one. They found that the business model innovation process is incremental, refining resource allocation through trial-and-error learning. Skillful management of the interaction between the two business models, their resources, and customer-related capabilities is crucial during the transitional phases (inception, experimentation, and replication).

3. Research design

To answer the research questions, we conducted a structured narrative review (Paré et al., 2015) on the business model innovation process in incumbent companies. Given the extensive body of research on business model innovation in general, it cannot be ruled out that several literature reviews exist on business model innovation processes. We are aware of two papers on this topic: A recent work by Andreini et al. (2022), who present a review of the process-based literature, and a literature review on business model innovation processes by Wirtz and Daiser (2018), who review the state of research between 2000 and 2014. While Andreini et al. (2022) do not focus on incumbents or synthesize a new process model, Wirtz and Daiser (2018) derive a process model from the literature that addresses the needs of incumbents. Therefore, we build only on the work of Wirtz and Daiser (2018) by adopting their sample and providing a structured narrative review of post-2014 research. As the research field of business model innovation processes has become more diverse in recent years, including sustainable and data-driven business model innovation processes, it has become necessary to revisit the systematization of this area.

The distinguishing characteristic of a narrative literature review lies in its objective of identifying existing literature on a specific subject or topic, adopting a selective approach, which may not involve a systematic and exhaustive search of all relevant literature (Paré et al., 2015). Therefore, we chose the method of a structured narrative review because it allows us to present an overview and systematic analysis of the extensive and constantly growing research output on business model innovation processes. It enables us to provide an overview of current research trends that have not been analyzed and discuss them based on existing literature. Green et al. (2006) offer a useful guideline for

performing narrative reviews, which are comprehensive syntheses of previously published information. They can be particularly helpful for practitioners looking to get up to date on a particular topic, as they summarize the contents of each article in a readable format. It is important to structure the information well, synthesize the available evidence, and convey a clear message to write a successful narrative review. The first step is to perform a preliminary search of the literature to refine the topic and objective of the review. Next, conduct a thorough search of electronic databases, cite the databases searched and the search terms used, and disclose selection criteria that led to the inclusion or exclusion of a study. The presentation of a narrative review should be as objective as possible. Finally, the most challenging part of a narrative review is synthesizing the information retrieved into comprehensive paragraphs.

In our analysis, we proceeded as follows: We built upon the work of Wirtz and Daiser (2018) by adopting their sample (19 publications) as a starting point. To complement this initial sample, we searched two databases (ScienceDirect, Scopus), focusing on the most recent publications (from 2014 to 2022). The search in the database Scopus was limited to the subject area “Business, Management, and Accounting” and keywords related to business model innovation. We searched for the keywords “business model” AND (“innovation” OR “redesign” OR “reconfiguration”) AND (“process” OR “process model” OR “process phase” OR “idea-to-launch process” OR “phase review” OR “phase*” OR “step*” OR “stage*”) in title, abstract, and keywords. Since much of the standard works in business model innovation are published in books, and conference proceedings and working papers are frequently cited, we decided against quality assessments and selection criteria, focusing predominantly on peer-reviewed and/or ranked journals. This approach is in line with Kubíček and Machek (2019), who argue that “innovative research ideas may even appear in lower-ranked journals” (p. 967). Any papers dealing with process models for the development of product innovations have been excluded from our analysis. We have solely included publications explicitly presenting or deriving process models for business model innovation, specifically emphasizing incumbent companies. Articles exclusively focused on startups have been excluded. However, articles that provide relevant frameworks for incumbents and startups, such as the business model patterns proposed by Remané et al. (2017) or the business model prototypes introduced by Seidenstricker et al. (2014), were included. Through this approach, we identified 20 publications that met our inclusion criteria. Moreover, by analyzing the cited literature within these 20 publications, we identified eight more publications meeting the specific inclusion criteria. The article selection process is shown in Fig. 1.

Consequently, the sample we analyzed consists of 47 publications, with 19 publications identified by Wirtz and Daiser (2018) and an additional 28 publications identified through our search. An overview of the current state of research is presented in Table 1.

4. Content Analysis: Business model innovation process models

4.1. Identification of process phases

We followed the approach outlined by Finfgeld-Connett (2014) for conducting the content analysis, which involved the following steps: Firstly, we thoroughly reviewed each article to identify relevant phases of the business model innovation process (step 1: identification of data segments). These phases were recorded in a spreadsheet (step 2: data matrices and coding). For a comprehensive overview of the different process phases of business model innovation per publication, please refer to Table 2. As our analysis progressed, we synthesized the findings across the studies while documenting them (step 3: memoing). Subsequently, we created a figure to visually represent the relationship between the phases of the business model innovation process (step 4: diagramming), which served as the foundation for aggregating our findings into a conceptual process model for iterative business model

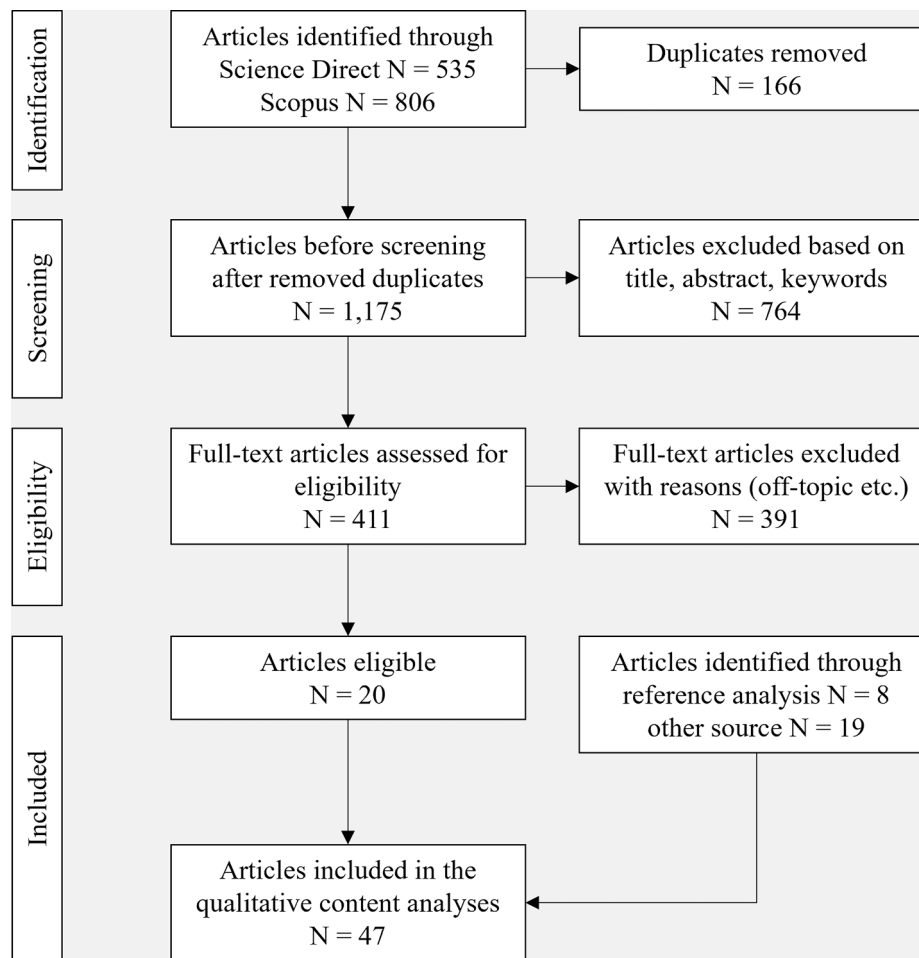


Fig. 1. Article selection process.

innovation of incumbents (see Chapter 5). Throughout the analysis, we engaged in reflection to construct and explore concepts (step 5: reflection).

The analysis reveals that the four phases or stages of initiation, ideation, integration, and implementation are present in almost all process models, albeit with some variations in naming. Additionally, certain researchers exclude specific phases from their models, such as initiation (Adrodegari et al., 2017; 2018; Casadesus-Masanell & Ricart, 2010; Geissdoerfer et al., 2016; Rummel et al., 2022; Wirtz, 2011), ideation (Lindgardt et al., 2013), integration (Karlsson et al., 2018; Lindgardt et al., 2013), and implementation (Adrodegari et al., 2017; 2018; Amit & Zott, 2012; Casadesus-Masanell & Ricart, 2010; Karlsson et al., 2018; Pollard et al., 2021; Seidenstricker et al., 2014; Sjödin et al., 2020). The number of process steps in different models varies, ranging from two to ten. The phases or steps can encompass distinct tasks even when sharing the same name.

4.2. Process models for specific types of business model innovation

There are additional distinctions in the selected focus, including process models for customer-driven business model innovation (Pynnönen et al., 2012; Sjödin et al., 2020) or game-based business model innovation (Laurischkat & Viertelhausen, 2017). Process models for cross-industry (Enkel & Mezger, 2013) and industry-specific (e.g., production) business model innovation (Rummel et al., 2022) are distinguished. Manufacturers increasingly adopt servitization, transitioning from selling products to offering outcome-based services to innovate their business models. Adrodegari et al. (2017) provide a

detailed business model innovation process to support manufacturers in this transition towards a service-oriented business model. Enkel and Mezger (2013) investigate the transfer and adaptation of characteristic business model components from other industries and present a process model based on imitation. Furthermore, process models that use competition and cooperation (cf. competitor analysis) (Casadesus-Masanell & Ricart, 2010), collaboration (Heikkilä & Heikkilä, 2013), or alliances (Spieth et al., 2021) for business model innovation are known. As sustainability gains importance, researchers have focused on developing systematic process models for circular economy business model innovation (CEBMI) (Pieroni et al., 2019; 2021; Pollard et al., 2021).

Early research on business model innovation focused on technological innovation (Pateli & Giaglis, 2005; Pramataris et al., 2001; Voelpel et al., 2004), with the role of technology in the business model innovation process still being explored (Tece, 2018) and generating new research: Khanagha et al. (2014) investigated the transition process of incumbents to a cloud computing-based business model and demonstrated that the development of the strategy is a collaborative experimental learning process. Hunke et al. (2017) reviewed the existing business model innovation processes and found that they do not align with the needs of incumbents in data-driven business model innovation. Therefore, they proposed their four-stage process model. Another five-step data-driven business model innovation process for incumbents comes from Coskun-Setirek and Tanrikulu (2021). Rummel et al. (2022) explore the design of innovation processes for manufacturers to develop new digital business models that can tackle the challenges posed by digital transformation. Their results show that the design of business model innovation processes differs conceptually between B2C and B2B

Table 1
Overview of the ranking of the state of research's publications.

Author(s) (year)	Journal	Ranking		Citation Google Scholar
		VHB-JQ3	AJG (2021)	
Adrodegari et al. (2017)	<i>Procedia CIRP</i>	–	–	46
Adrodegari et al. (2018)	–	–	–	10
Amit and Zott (2012)*	<i>MIT Sloan Management Review</i>	C	3	2199
Amit and Zott (2016)	–	–	–	59
Bonakdar and Gassmann (2016)	–	–	–	16
Casadesus-Masanell and Ricart (2010)	<i>Long Range Planning</i>	B	3	3575
Chesbrough (2007)*	<i>Strategy & Leadership</i>	C	1	2465
Coskun-Setirek and Tanrikulu (2021)	<i>Technology in Society</i>	–	–	26
Enkel and Mezger (2013)*	<i>International Journal of Innovation Management</i>	B	2	126
Frankenberger et al. (2013)*	<i>International Journal of Product Development</i>	C	1	488
Gassmann et al. (2014)*	–	–	–	800
Geissdoerfer et al. (2016)	<i>Journal of Cleaner Production</i>	B	2	437
Geissdoerfer et al. (2017)	<i>Procedia Manufacturing</i>	–	–	216
Heikkilä and Heikkilä (2013)	–	–	–	38
Hunke et al. (2017)	–	–	–	37
Johnson et al. (2008)*	<i>Harvard Business Review</i>	C	3	4612
Johnson (2010)*	–	–	–	1095
Karlsson et al. (2018)	<i>Journal of Cleaner Production</i>	B	2	48
Khanagha et al. (2014)	<i>R&D Management</i>	B	3	340
Laurischkat and Viertelhausen (2017)	<i>Procedia CIRP</i>	–	–	23
Linder and Cantrell (2000)*	–	–	–	1398
Lindgardt et al. (2013)*	–	–	–	489
McGovern (2021)	<i>Energy Policy</i>	B	2	1
Mitchell and Coles (2003)*	<i>Journal of Business Strategy</i>	C	1	739
Osterwalder and Pigneur (2010)*	–	–	–	18,013
Pateli and Giaglis (2005)*	<i>Journal of Organizational Change Management</i>	k.R.	2	299
Pieroni et al. (2019)	<i>Proceedings of the International Conference on Engineering Design, ICED</i>	–	–	531
Pieroni et al. (2021)	<i>Journal of Cleaner Production</i>	B	2	7
Pollard et al. (2021)	<i>Journal of Cleaner Production</i>	B	2	16
Pramataris et al. (2001)*	<i>Electronic Markets</i>	B	2	97
Pynnönen et al. (2012)*	<i>International Journal of Innovation Management</i>	B	2	107
Randhawa et al. (2021)	<i>Journal of Business Research</i>	B	3	56
Remané et al. (2017)	<i>International Journal of Innovation Management</i>	B	2	8
Rummel et al. (2022)	<i>R&D Management</i>	B	3	2
Seidenstricker et al. (2014)	<i>Procedia Social and Behavioral Sciences</i>	–	–	52
Sjödin et al. (2020)	<i>Journal of Product Innovation Management</i>	A	4	163
Sosna et al. (2010)*	<i>Long Range Planning</i>	B	3	1442
Spieth et al. (2021)	<i>R&D Management</i>	B	3	17
Sternad and Mödrtscher (2022)	<i>Entrepreneurship Theory and Practice</i>	–	4	6
Teece (2010)*	<i>Long Range Planning</i>	B	3	10,855
Teece (2018)	<i>Long Range Planning</i>	B	3	1690
Trapp et al. (2018)	<i>International Journal of Innovation Management</i>	B	2	39
Voelpel et al. (2004)*	<i>Journal of Change Management</i>	C	1	456
Warner and Wäger (2019)	<i>Long Range Planning</i>	B	3	741
Wirtz (2011)*	–	–	–	854
Wirtz and Daiser (2018)	<i>Journal of Business Models</i>	–	1	77
Yang et al. (2014)*	<i>International Journal of Applied Engineering Research</i>	–	–	13

* Sample of Wirtz and Daiser (2018); only 19 of 20 publications were included as a study by Deloitte could not be found.

manufacturers: While process models in B2C firms follow a semi-structured approach (e.g., experimentation), process models in B2B firms pursue a hybrid model similar to new product development. Warner and Wäger (2019) examine the process of how incumbents can develop dynamic capabilities for digital transformation by utilizing digital technologies to create new business models. They introduce a process model to identify the factors that initiate, facilitate, and impede the establishment of dynamic capabilities for digital transformation. Dynamic capabilities related to business model innovation have not just been discussed since digital transformation but have been studied by researchers for many years (Amit & Zott, 2016; Pieroni et al., 2019; 2021; Teece, 2018). Building on their early process model (Amit & Zott, 2012), Amit and Zott (2016) present a five-stage process model for business model design, which they link to the dynamic capabilities framework (Teece, 2007). Designing a business model requires ongoing adjustments, and companies need to use dynamic capabilities to make such adjustments. Randhawa et al. (2021) developed a business model innovation process model based on dynamic capabilities and found that the appropriate use of dynamic capabilities promotes business model innovation (especially in SMEs).

The core elements of design thinking can be integrated and used across all phases of the business model innovation process (Bonakdar & Gassmann, 2016; Rummel et al., 2022), for example, to improve the process of sustainable business modeling (Geissdoerfer et al., 2016) and digital innovations-driven business model regeneration (Coskun-Setirek & Tanrikulu, 2021). During the initiation phase, latent customer needs are uncovered, the change problem is clarified, and the design challenge is formulated (Gassmann et al., 2014). During the ideation phase, additional innovation potential is unlocked by uncovering the hidden needs of potential customers (Bonakdar & Gassmann, 2016), fostering creativity through a pivotal thinking team leader (Gassmann et al., 2014), and helping companies to improve their performance and become more sustainable at the same time (Geissdoerfer et al., 2016). During integration, uncertainty is reduced through rapid prototyping, reality testing, and learning from feedback (Gassmann et al., 2014).

4.3. Phases of business model innovation

The process of business model innovation commences with the **initiation** phase, in which an analysis of the company's current business

Table 2
 Synthesis of relevant BMI process models (own compilation, based on Wirtz and Daiser (2018) and Rummel et al. (2022)).

	Initiation			Ideation			Integration			Implementation	
Linder and Cantrell (2000)*	Describe current BM			Develop new BM						Change BM	
Pramataris et al. (2001)*	Examine stakeholder roles	Define business objectives		Identify market value flows	Identify competitive drivers	Synthesize current BM	Embed technology architecture	Develop technology skills	Define mediation functions	Develop new coordination scheme	Synthesize proposed BM
Mitchell and Coles (2003)*	Understand & optimally apply current BM			Establish, understand, & follow appropriate BMI vision			Design & test potential BM innovations			Understand & install BM innovations	
Voelpel et al. (2004)*	Sense potential for change in customer behavior & new customer value propositions			Sense strength, direction, & impact of technology			Sense potential for value system (re)configuration, including organizational structure(s)			Sense economic feasibility & profitability of proposed BM	
Pateli and Giaglis (2005)*	Document current BM			Assess influence of technology innovation	Identify missing roles		Define scenarios	Describe new BM		Evaluate impact of change	
Chesbrough (2007)*	Analyze current BM			Experiment for innovation			Choose best concept			Implement	
M. W. Johnson et al. (2008)*	Create customer value proposition			Design profit formula	Identify key resources & processes		Compare proposed to current BM			Implement	
Casadesu-Masanell and Ricart (2010)				Choose BM (strategy)			Make tactical choices guided by chosen BM				
M. W. Johnson (2010)*	Design new customer value proposition			Devise profit formula	Identify key resources & processes		Compare proposed to current BM	Incubation		Acceleration	Transition
Osterwalder and Pigneur (2010)*	Assemble all elements for new BM design			Research & analyze elements for BM design			Generate & test BM options & select the best			Implement BM prototype	Adapt & modify BM based on market research
Sosna et al. (2010)*	Design & test initial BM			Develop BM			Scale up refined BM			Sustain growth through organization-wide learning	
Teece (2010)*	Segment market	Create value proposition for each segment			Design & implement mechanisms to capture value from each segment			Implement isolating mechanisms			Deconstruction & evaluation
Wirtz (2011)*				Generate ideas	Analyze feasibility		Prototyping	Decision-making	Manage change	Implement	Monitor & control
Amit and Zott (2012)*	Analyze customer needs			Content BMI	Structure BMI	Governance BMI	Check value creation through new BM		Define revenue models		
Pynnönen et al. (2012)*	Analyze customer needs of current BM			Innovate BM according to customer needs		Test BM with customer survey		Adjust & implement BM according to customer needs			
Enkel and Mezger (2013)*	Commercial opportunity or threat			Abstraction	Value proposition & analogy search		Value delivery & adaptation	Value creation	Implementation		
Frankenberger et al. (2013)*	Initiation (analyze ecosystem)			Ideation (generate new ideas)			Integration (build new BM)			Implementation (realize)	
Heikkilä and Heikkilä (2013)	Analyze customer needs	Sketch ideal BM		Analyze demand-side restrictions	Design ideal BM		Analyze supply-side restrictions	Finalize operational BM	Reality check	Take action	
Lindgardt et al. (2013)*	Uncover opportunities									Implement new BM	Build platform & skills
Gassmann et al. (2014)*	Initiation (analyze ecosystem)			Ideation (adapt patterns)			Integration (shape BM)			Implementation (realize plans)	
Khanagha et al. (2014)	Screening & speculation			Embedded experimentation	Independent organization		Small independent organization	Dissolution of independent organization			
Seidenstricker et al. (2014)	Define aim & identify potential fields			Generate ideas for new BMs			Assess BM ideas				
Yang et al. (2014)*	Definition	Analysis		Innovation	Evaluation feedback		Optimization	Verification	Risk-management	Execution	
Amit and Zott (2016)	Observe			Synthesize	Generate			Refine	Implement	Manage	
Bonakdar and Gassmann (2016)	Initiation (analyze ecosystem)			Ideation (adapt patterns)			Integration (detail BM)			Implementation (realize plan)	
Geissdoerfer et al. (2016; 2017)				Ideation	Concept design	Prototyping virtual	Experimenting	Detail design	Piloting	Launch	Adjustment & diversification
Adrodegari et al. (2017)				Generate BM idea	Define future state		Analyze gap	Define & prioritize actions			
Hunke et al. (2017)	Mobilization	Initiation (analyze BM)		Ideation (generate BM)			Integration (prototyping)			Realization (operationalize BM)	Administration
Laurischkat and Viertelhausen (2017)	Understand initial situation	Analyze customer segments		Design value proposition	Define profit model		Specify customer interaction	Determine value structure	Summarize BM	Evaluate innovative BM	
Remané et al. (2017)	Initiation (understand current BM & its surrounding ecosystem)			Ideation (identify new ideas for BMI)			Integration (integrate ideas into a complete BM)			Implementation (pilot & commercialize designed BM)	
Adrodegari et al. (2018)				Generate BM idea	Define future state		Analyze gap	Define actions			
Karlsson et al. (2018)	Study need for change	Set the scene	Develop BM input	Generate ideas	Design prototype	Assess experience	<i>Future research</i>			<i>Future research</i>	

(continued on next page)

Table 2 (continued)

	Initiation			Ideation			Integration			Implementation	
Teece (2018)	Technological possibilities		Identify opportunities; technology development			Design & refine BM; commit resources; anticipate competitor reactions; defend intellectual property			Realign structure & culture; align existing & invest in new capabilities		
Trapp et al. (2018)	Analyze customer needs & create new customer value proposition			Develop innovative value constellation			Replicate new-to-the-firm BMI			Integrate new BM into company	
Wirtz and Daiser (2018)	Analysis			Ideation		Feasibility	Prototyping		Decision-making	Implementation	Sustainability
Pieroni et al. (2019)			Initiation (define vision for CEBMI; map current BM)	Ideation (identify customer needs; develop new CEBM ideas)			Concept design (integrate parts of new CEBMs)	Detailed design (experiment with selected CEBMs)		Implementation (plan & execute CEBM launch; adjust & review CEBMs)	
Warner and Wäger (2019)	External triggers (disruptors)	Digital sensing (scenario planning)		Digital seizing (prototyping, strategic agility)						Digital transforming (navigate ecosystem)	Strategic renewal of BM
Sjödin et al. (2020)	Define value proposition (identify value creation & value distribution)			Design value provision (decide on profit formula)			Deliver value-in-use (refine value creation, regulate incentive structure)				
Sternad and Mödrtscher (2022)	Build-up of adaptive tension	Opportunity commitment		Reconfigure key BM elements			New market potential			Stabilization phase	
Coskun-Setirek and Tanrikulu (2021)	Objective analysis; identify influencing factors			BM component analysis; value creation			Analyze impact of digital innovation; classify influencing factors	Decision-making; identify measures to maximize value & minimize risks		Regeneration; prioritize & implement measures	
McGovern (2021)	Initiation			Planning						Roll-out	Reflection & adoption
Pieroni et al. (2021)	Team & scope	CEBMI chances	CEBM ideas	CEBM solution principles (value proposition)			CEBM concepts	Detailed CEBMs		Implementation projects	
Pollard et al. (2021)	Define CEBM objectives	Develop CEBM canvas	Identify CEBM challenges	Assess CEBM chances	Identity policies relevant to operations	Develop CE indicators	Associate CE indicators				
Randhawa et al. (2021)	Sensing (explorative – exploitive – ambidextrous)			Seizing (explorative – exploitive – ambidextrous)						Reconfiguring (explorative – exploitive – ambidextrous)	
Rummel et al. (2022)	For B2C:			Ideation			Design			Scaling	
	For B2B:			Ideation			Design	Validation		Implementation	
Spieß et al. (2021)	On alliance level:		Concept	Foundation			Development			Operation	
	On firm level:		Identification	Consolidation			Creation			Adaption	

model and its surrounding ecosystem is conducted (Bonakdar & Gassmann, 2016; Gassmann et al., 2014; Remané et al., 2017). Causes for innovating the current business model are identified, such as commercial opportunities or threats (Enkel & Mezger, 2013; Lindgardt et al., 2013; Sjödin, et al., 2020; Sternad & Mödrtscher, 2022; Teece, 2018), customer needs (Amit & Zott, 2012; Heikkilä & Heikkilä, 2013; Pynnönen et al., 2012; Trapp et al., 2018), technological possibilities (Teece, 2018), or the build-up of adaptive tension (Sternad & Mödrtscher, 2022). Activities such as defining the business objectives (Pramataris et al., 2001; Seidenstricker et al., 2014), analyzing customer segments (Laurischkat & Viertelhausen, 2017; Teece, 2010) and their value preferences (Pynnönen et al., 2012), and creating a new customer value proposition (Sjödin et al., 2020; Trapp et al., 2018) are exercised during this phase.

In the ideation phase, ideas for a new business model are collected and/or developed, with quantity initially taking precedence over quality (Bonakdar & Gassmann, 2016; Gassmann et al., 2014). The goal is developing, understanding, and following an appropriate business model innovation vision (Mitchell & Coles, 2003). It can be helpful to research and analyze the elements of business model design (Osterwalder & Pigneur, 2010) and to identify and reconfigure the key elements, resources, and processes of the business model (Johnson, 2010; Johnson et al., 2008; Sternad & Mödrtscher, 2022). The value proposition is designed (Enkel & Mezger, 2013; Laurischkat & Viertelhausen, 2017; Pieroni et al., 2021), mechanisms for value creation from each customer segment are developed (Teece, 2010), and the profit formula is defined (Johnson, 2010; Johnson et al., 2008; Laurischkat & Viertelhausen, 2017; Sjödin et al., 2020). In addition, the influence of new technologies should be assessed (Pateli & Giaglis, 2005; Voelpel et al., 2004). Steps such as experimenting (Chesbrough, 2007; Khanagha et al., 2014), virtual prototyping (Geissdoerfer et al., 2016; 2017), or design prototyping (Karlsson et al., 2018) are listed in this phase by some researchers, while others list them in the integration phase.

In the subsequent integration phase, the multitude of ideas is sorted out, with quality now taking precedence over quantity, to develop

selected ideas into concepts (Bonakdar & Gassmann, 2016; Gassmann et al., 2014) or generate business model options (Osterwalder & Pigneur, 2010). On the one hand, the potential new business model is designed into a complete business model by integrating ideas (Remané et al., 2017), committing resources, and anticipating competitive responses (Teece, 2018). On the other hand, it is refined through value-creation processes and the regulation of incentive structures (Sjödin et al., 2020). Rummel et al. (2022) distinguish between B2B and B2C firms in that B2B firms need to validate the design in the integration phase. Validation or testing of potential business model options (Amit & Zott, 2012; Mitchell & Coles, 2003; Osterwalder & Pigneur, 2010) can be done through customer surveys (Pynnönen et al., 2012), prototyping (Hunke et al., 2017; Wirtz, 2011; Wirtz & Daiser, 2018), or experimentation (Geissdoerfer et al., 2016; 2017; Pieroni et al., 2019). In the case of circular economy business model innovation, a conceptual design is first created, integrating parts of the new circular economy business model, then a detailed design is developed, experimenting with selected circular economy business models (Pieroni et al., 2019; 2021), and finally circular economy indicators are developed (Pollard et al., 2021). The previous steps prepare the decision-making process (Coskun-Setirek & Tanrikulu, 2021; Wirtz, 2011; Wirtz & Daiser, 2018), i.e., the selection of the best concept (Chesbrough, 2007; Osterwalder & Pigneur, 2010). The new business model is then described in detail (Pateli & Giaglis, 2005), tactical decisions are made based on the selected business model (Casadesus-Masanell & Ricart, 2010), and actions are defined and prioritized (Adrodegari et al., 2017; 2018).

Finally, many process models describe an implementation phase in which the business model changes (Linder & Cantrell, 2000) and the business model innovation is executed (Mitchell & Coles, 2003). The current business model has to be replaced by the new one. The previously established plans are implemented, and thus the designed business model is operationalized (Bonakdar & Gassmann, 2016; Frankenberger et al., 2013; Gassmann et al., 2014; Hunke et al., 2017) and commercialized (Remané et al., 2017). Additional tasks such as managing risk during execution (Yang et al., 2014), administrating the new (e.g., data-

driven) business model (Hunke et al., 2017), and aligning existing and building new skills and capabilities (Lindgardt et al., 2013; Teece, 2018) are considered. Many researchers conclude the phase with an evaluation step where the impact of the actual change is assessed (Laurischkat & Viertelhausen, 2017; Pateli & Giaglis, 2005; Teece, 2010; Wirtz, 2011) and the business model is adapted and modified, e.g., based on market research (McGovern, 2021; Osterwalder & Pigneur, 2010; Pironi et al., 2019).

5. Results: Deriving an iterative process model for business model innovation

The process model for iteratively innovating business models of incumbents is founded on current research related to the processes and tools used for business model innovation. The three innovation process phases, initiation, ideation, and integration (Bonakdar & Gassmann, 2016; Frankenberger et al., 2013), were adopted in our conceptual process model, but we do not include the actual implementation phase. Instead, the integration phase is followed by the roadmap phase (Specht & Behrens, 2005), which prepares and thoroughly plans the implementation. In addition, our process model is supplemented by two phases: Firstly, during the lifecycle analysis phase (Pollard et al., 2021), an analysis of the value proposition is conducted from the perspective of the target customer to enhance value delivery. Secondly, in the competitor analysis phase (Spieth et al., 2021), value creation and value capture are strengthened. This extension is a result of our increased focus on, and integration of target customer needs in the business model innovation process. Building on the theoretical background of business model innovation (as discussed in Chapter 2), we have added a new phase to the process model: Lifecycle analysis. This additional phase serves several purposes, including facilitating effective collaboration among stakeholders (Ming et al., 2008), ensuring efficient resource orchestration (Sirmon et al., 2010), identifying and exploiting entrepreneurial opportunities (Landoni et al., 2020), and adapting to changes in the organization’s environment (Vittori et al., 2022) over the entire lifecycle. The phases of lifecycle analysis, competitor analysis, and roadmap hold significant importance beyond being mere tools. They require dedicated attention, the utilization of specific tools, and investments of time and resources, all of which can influence the overall trajectory and outcomes of the business model innovation process.

The conceptual process model outlines an incremental, iterative, recursive, and reflective approach to business model innovation of incumbent companies, which comprises 23 activities and 38 tools to

support the process. The model consists of six phases: (1) initiation, (2) ideation, (3) lifecycle analysis, (4) competitor analysis, (5) integration, and (6) roadmap, which guide business model innovation from initiation to the final roadmap for implementation (which is outside the scope of our model). The process is incremental, with each phase building on the previous one. It is iterative, allowing multiple repetitions of the phases to refine the business model. The process is recursive, as it involves revisiting previous phases to gain new insights, as progress and outcomes are regularly reviewed and analyzed. We will discuss the details of each phase to demonstrate how the activities and tools are employed. As explained in Chapter 2, our understanding of a business model comprises four dimensions and nine elements. In each phase of the process, one or more of these elements are evaluated, adapted, developed further, and, if necessary, discarded. Fig. 2 depicts the interrelation of the six phases (1) to (6). Throughout these phases, the maturity of the business model is expected to increase, resulting in a more target-customer-oriented, strategy-compliant, consistent, and value-creating model. This incremental approach facilitates the implementation of changes, adaptation to dynamic circumstances, alignment of the business model with current objectives, and enhances the understanding of the process.

Each phase consists of preparatory work, workshops, and follow-up work: In the **preparatory work**, detailed analyses are carried out, and the necessary tasks are elaborated. In addition, organizational matters are prepared, identified obstacles are removed, responsibilities are clarified, resources are made available, and existing (interim) results and planned further procedures are communicated. In the **workshops**, the group discusses and interprets the available analysis results: Developed concepts, presumed causal relationships, and proposed solutions are critically scrutinized, evaluated, and further refined. The workshops aim to align the entire group with the same level of information and foster a commitment to the innovation of the business model among as many employees as possible. In the **follow-up work**, all (interim) results are documented and critically reviewed by experts, e.g., by identifying and reviewing dangerous assumptions or carrying out target-customer validations. An essential task in any follow-up is the communication of the achieved results, the intermediate statuses, and the further procedure. In particular, the top management must be continuously informed about the business model innovation process. In addition, framework conditions and working methods are analyzed to identify and eliminate (possible) obstacles and inefficiencies.

In phase (1) **initiation**, the development of the business model innovation process is started. As part of the preparatory work, all

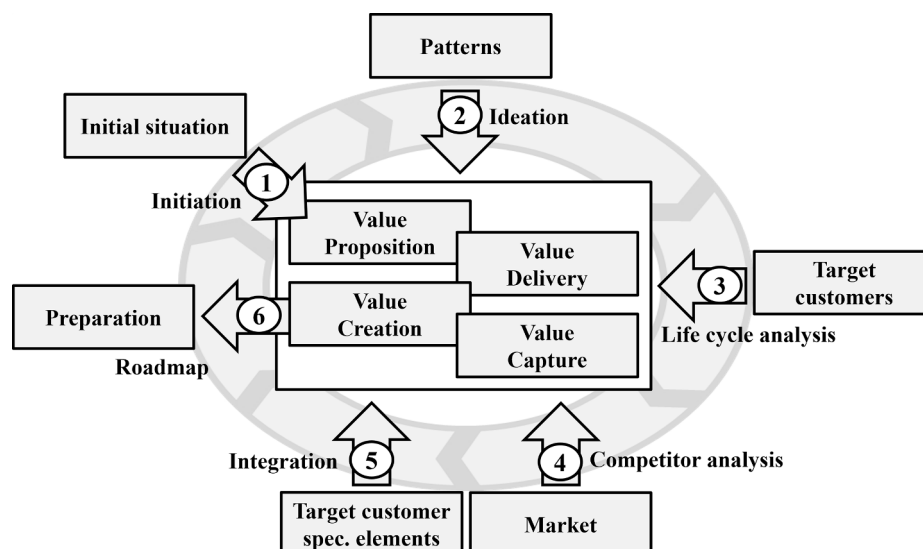


Fig. 2. Process model for the iterative development of a new business model (adapted from Jodlbauer (2020)).

decision-makers and stakeholders involved in the process must have a comprehensive understanding of the current business model, ecosystem, and critical developments (Frankenberger et al., 2013). Additionally, they must know the necessity and urgency to innovate the business model and prioritize its transformation. A *stakeholder analysis* (Freeman, 2010; Siebold, 2021) can help better understand who is supporting or blocking the planned business model innovation. The aim is to describe the target customers and segments clearly and to develop a shared vision of how the business model innovation should be designed that is supported by a sufficient number of contributors (Frankenberger et al., 2013). The openness to new ideas and confident senior management (Trapp et al., 2018) are the basic prerequisites for efficient teamwork during the business model innovation process. Several tools can be applied during the initial phase: With the help of a *PESTLE analysis* (Ho, 2014; Johnson et al., 2011), the most important developments in politics, economics, society, technology, law, and the environment may be identified. By conducting a *SWOT analysis* (Homburg, 2016), the current business model's weaknesses and threats can be discovered, eventually leading to identifying and removing the obstacles to its successful innovation. *Maturity models* (Brunner & Jodlbauer, 2020; Jodlbauer & Schagerl, 2016) help determine a company's current maturity level regarding its digitalization and identify its potential to digitize in the future. *Benchmarking* can support the analysis of the ecosystem, particularly the competitors, and the company's positioning concerning the best competitors (Mertins et al., 2013). During the workshops, topic repositories are reviewed, and topics are assigned with the help of the following tools: The so-called *five flipcharts* (Jodlbauer, 2020), with four flipcharts documenting the elements of the business model and one flipchart documenting the key control elements, each for a specific target customer segment. The *task kanban* (Kniberg, 2009; Kniberg & Skarin, 2010) helps to find the right solution to problems and to complete the necessary tasks efficiently, while the *resonance board* (Robertson, 2015) is a tool for recording and resolving tensions, discomfort, conflicts, and weaknesses. In the follow-up work, the target customers are evaluated qualitatively and quantitatively. A *reflection analysis* (Gibbs, 1988) considers factual and emotional criteria for processing, resolving, and utilizing objections and concerns.

Phase (2) **ideation** involves designing the preliminary structure of the new business model by considering expected developments, such as trends, new technologies, legal frameworks, and existing market knowledge, such as the needs and expectations of the target customers. Additionally, creative thinking beyond conventional business logic is employed. A detailed and target customer-oriented value proposition is developed for each customer segment. The value proposition is described in detail using creativity techniques that have been specifically developed for business model innovation: The 55 business model building blocks, according to Gassmann et al. (2015), can provide valuable ideas for the design of a concrete business model through the appropriate combination of about two to five building blocks. Business model building blocks can be identified and transferred to a business model based on similarity or confrontation (cf. *similarity principle* or *confrontation principle*) (Gassmann et al., 2015). Building blocks support solving a relevant problem (Abdelkafi et al., 2013), relate to only one essential topic (i.e., several building blocks need to be linked) (Weill & Vitale, 2001), and are formulated in a general way (i.e., not company- or sector-specific) (Amshoff et al., 2015). During the subsequent workshop, target customers are reviewed, the value proposition is developed, and business model building blocks are selected and combined. Various tools help with these tasks, such as the *five flipcharts*, *task kanban*, *similarity principle*, and *confrontation principle*. The *user story* (Cohn, 2004; Pichler, 2013) describes a customer's problem or environment from the customer's perspective, and personas are created utilizing the *empathy map* (Ferreira et al., 2015). The *construction method* determines the appropriate business model building blocks and their synergistic integration, and *design thinking* is a method that emphasizes agility and creativity (Brown, 2008; Grots & Pratschke, 2009) and can help unleash

innovative potential during the ideation phase (Bonakdar & Gassmann, 2016). The follow-up work consists of reflecting on current business models per each target customer segment (cf. *reflection analysis*).

In phase (3) **lifecycle analysis**, a target customer-oriented refinement of all nine business model elements takes place to create a preliminary target customer-oriented version of the business model (cf. *user story*). Although lifecycle analysis comes from product development, we transfer it to business models (Jodlbauer, 2020). The application of the lifecycle method starts with a generic cross-industry lifecycle which is subsequently adapted to the specific company and its target customer group. Lifecycle analysis extends the five phases of the *value lifecycle* and the four phases of the *customer buying cycle* according to Osterwalder (2004): The five phases of the *value lifecycle*, namely value creation, value purchase, value use, value renewal, and value transfer, contribute to the creation of customer value (Osterwalder, 2004). During the entire lifecycle of the product or service, the target customers should be accompanied and supported. The customer channels facilitate the four phases of the *customer buying cycle* by (1) raising awareness of the value proposition among target customers (value communication); (2) their expectations and the value proposition are made compatible (transaction processing); (3) the process of receiving the value proposition is improved (value delivery); and (4) customers are supported and retained after the transaction (after-sales service) (Osterwalder, 2004). Adapting the generic lifecycle to the specific company means that, depending on the target customers and value propositions, certain phases will be more or less relevant and may be complex or structured. The decisive factor in our process model is the consistent customer segment-specific analysis, which is not the case with other approaches. The lifecycle analysis phase concretizes the ideation phase to improve the revenue mechanics and increase customer value. The concept of the circular economy is focused on breaking the link between economic growth and resource consumption by preserving the value of materials and products throughout their entire lifecycle (Pollard et al., 2021). Pollard et al. (2021) develop a business model innovation process for the circular economy that uses circularity indicators to measure the business model innovation process across lifecycle stages, allowing for continuous improvement of the circular economy business model. During the preparatory work, the objective is to acquire a profound understanding of selected target customers' needs along the lifecycle of the value proposition. In the subsequent workshops, the designed business model is analyzed, consistently detailing the business model to ensure the most consistent target customer orientation possible while maximizing revenues. Target customer-specific business models are presented, the results of the reflection analysis are summarized, and the business model is designed. The applied tool is the *five flipcharts*. In the follow-up work, the business model is improved in a customer-oriented way, and non-relevant customer requirements are questioned. The applied tools are a *reflection analysis* and a *plausibility check* of the value proposition.

In phase (4) **competitor analysis** (Bergen & Peteraf, 2002), the business model is systematically evaluated, validated, and improved to secure a sustainable competitive advantage over competitors in each target customer segment, considering market, environmental, and corporate conditions. A *competitor analysis of not-yet-customers* is conducted regarding the value proposition per each lifecycle stage. This evaluation helps identify opportunities to refine the value proposition and tailor it to meet the specific needs and preferences of different customer segments at different stages of their lifecycle. Another tool to utilize is *competitive benchmarking* (Ketter et al., 2016), which allows businesses to compare their performance, practices, and offerings with their competitors. It involves gathering data on key performance indicators, processes, products, services, and strategies employed by industry rivals. During the subsequent workshops, target customer needs are adapted based on the not-yet-customers' feedback, the value proposition is revised based on competitors' value propositions, and competitors are evaluated qualitatively and quantitatively. Already known tools such as *five flipcharts* and *task kanban* are used, but also tools that

have not been applied so far: A *consistency check* is carried out to analyze a business model's design regarding its strategic and internal consistency, especially concerning positioning issues (e.g., one-off versus series production, individual versus standard solution) (cf. *repeat factor versus standardization method*), its weaknesses and suitability (cf. *need-approach-benefit-competition*, NABC) (Gassmann et al., 2015), and in terms of market dynamics (i.e., static, dynamic, or complex) (cf. *Market Dynamics Method*) (Eisenhardt & Sull, 2001). Other tools include *Porter's five forces* (Porter, 2008) to perform a competitive analysis for strategic positioning in the ecosystem, the *economic value added (EVA) tree* (Altendorfer & Jodlbauer, 2011; Jodlbauer, 2007; Stern et al., 1995) to improve the earnings mechanics, and the *constrained portfolio* based on the theory of constraints (throughput accounting) (Corbett, 1998; Goldratt, 1990) to discover constraints and remove their limiting effects in the sense of bottleneck orientation (Jodlbauer, 2016). The follow-up work encompasses ensuring participants' awareness of all target customer-specific business models by using the tool of asking *comprehension questions*.

In phase (5) **integration**, the target customer-specific elements are brought together to form a new balanced and consistent business model for the entire company. In doing so, the identification of contradictions and impediments, as well as their mitigation, the assurance of compatibility (cf. *compatibility analysis*), and the creation of synergies (cf. *synergy analysis*) while maintaining the target customer orientation and increasing sustainable competitive advantages, must be ensured. Tools such as *five flipcharts* and *comprehension questions* can be used. In the workshops, the roadmap to implementing the new business model is prepared with the tools of repeating *compatibility* and *synergy analyses* and preparing a *product process matrix* (Jodlbauer, 2016; Slack et al., 2010). In the follow-up work, the new business model must be presented to top management, and its impacts should be made visible with the help of *cross-impact analysis* (Jodlbauer et al., 2022).

In the last phase (6) **roadmap**, all existing key activities, processes, resources, management capabilities, technologies, and partners (incl. channels and relationships) are aligned with the key entities required for the new business model. Whether to implement the new business model continuously (i.e., transferring individual elements of the business model in many small steps) or discretely (i.e., activating the entire business model in a few large steps) is made. *Multi-project management* (Gajdzik & Wolniak, 2022) is a tool that helps outline various initiatives to facilitate the implementation of the new business model. However, it should be noted that the actual implementation is not included in the process model. The roadmap includes the new value creation structures that were previously missing and the dismantling (residual use) of the value creation structures that are no longer needed. The implementation can either follow a *parallel strategy*, where both old and new systems are operated simultaneously, or a *replacement strategy*, where the old system is deactivated as the new system is activated. The roadmap is finalized in the workshops: The key value drivers for implementing and operating the new business model are identified, and *simple rules* and *critical metrics* are established to ensure that the right goal (effectiveness) is targeted and the right path (efficiency) is taken to achieve it (Chatterjee, 2013). The *Cynefin-Stacey matrix* (Snowden & Boone, 2007) is about turning complex and complicated issues into simple ones. In the follow-up work, the new business model and roadmap are reviewed and validated (cf. *simple rules*, *critical metrics*), and the implementation of the business model is initiated. Table 3 gives an overview of the six phases and their respective objectives, tools, and activities during the three steps of preparation, workshops, and follow-up.

6. Discussion and conclusion

6.1. Theoretical implications

We show with our work that research on the business model innovation process has evolved since 2014, which is the date to which the

work of Wirtz and Daiser (2018) considers publications. Our study builds on their work by introducing new aspects, such as processes for data-driven and sustainable business model innovation. These additions reflect the changing business landscape and the need for new process models to address emerging challenges. We contribute to the existing literature by proposing a process model for business model innovation that aims to combine the strengths of existing process models. By presenting a process model that complements the established phases of initiation, ideation, and integration with three additional phases (i.e., lifecycle analysis, competitor analysis, and roadmap), our work contributes to the ongoing evolution of the process perspective of business model innovation. Our theoretical model introduces a third phase called *lifecycle analysis*, which ensures a target customer-oriented approach and effective collaboration among stakeholders (Ming et al., 2008), efficient resource orchestration (Sirmon et al., 2010), and entrepreneurial opportunity exploitation (Landoni et al., 2020). This can result in creating business models that are more tailored to meet target customers' needs and are more aligned with the organization's objectives. Additionally, our process model addresses the design-implementation gap (Geissdoerfer et al., 2017), which refers to the gap between conceptualization and implementation in business model innovation. To address this gap, we introduce a sixth phase called *roadmap*, which aims to bridge the gap by providing a precise implementation plan.

6.2. Managerial implications

The process model for business model innovation presented in this study contributes to practice by summarizing 23 activities and 38 tools to support incumbent companies' business model innovation process. This study complements existing research by combining and merging specific methods and tools to carry out individual process phases presented in the state of research. By following our structured process model for business model innovation and applying the 23 activities and 38 tools in practice, managers can better understand the process and the various phases involved. This can help to reduce the risk of missing important phases or wasting resources on ineffective approaches, generate new insights, challenge assumptions, identify potential opportunities, and make more informed decisions about the direction of the business. Furthermore, the proposed process model provides a common framework and shared language for discussing business model innovation. This can facilitate greater collaboration among employees involved in the innovation process. Ultimately, our process model offers a comprehensive approach to business model innovation that integrates theoretical and practical aspects of the process. By doing so, we aim to contribute to a better understanding of the business model innovation process and to support practitioners in successfully innovating existing business models.

6.3. Limitations and directions for future research

Limitations arise from our chosen methods, i.e., a structured narrative review and a content analysis. Despite all efforts to obtain a sample of all literary sources relevant to answering the research questions, this cannot be guaranteed due to the chosen search string and the databases searched and the inevitable subjectivity in the selection and interpretation of sources. Another research team may therefore come to different conclusions. We want to note that our model is currently conceptual and has yet to be tested in practice. As such, any conclusions about its effectiveness in improving the business model innovation process should be considered preliminary.

As the analysis of the process models has shown, they are specialized in different application fields, such as data-driven (Hunke et al., 2017) or circular economy (Pieroni et al., 2021) business model innovation. Future research can apply the proposed process model for business model innovation in business practice (e.g., case studies) and further specify it. Considering the widespread utilization of internet-based

Table 3
Synthesis of process phases for business model innovation.

	① Initiation	② Ideation	③ Lifecycle analysis	④ Competitor analysis	⑤ Integration	⑥ Roadmap	
Focus	Company	Target customer segments	Target customer segments	Target customer segments	Company	Company	
Preparation	Objective	<ul style="list-style-type: none"> - Prioritize change of the current BM - Identify and remove obstacles - Define target customers - Develop shared vision 	<ul style="list-style-type: none"> - Design a basic BM concept, based on BM building blocks 	<ul style="list-style-type: none"> - Align BM with target customers' needs 	<ul style="list-style-type: none"> - Examine BM regarding its ability to create a sustainable competitive advantage 	<ul style="list-style-type: none"> - Achieve a balanced, consistent BM for the entire company - Attain compatibility and synergies between target customers 	<ul style="list-style-type: none"> - Implement new BM (continuously or discretely)
	Tools	<ul style="list-style-type: none"> - Stakeholder analysis - SWOT analysis - PESTLE analysis - Maturity model - Benchmarking 	<ul style="list-style-type: none"> - Similarity principle - Confrontation principle 	<ul style="list-style-type: none"> - User Story - Value lifecycle - Customer buying cycle 	<ul style="list-style-type: none"> - Competitor analysis of not-yet-customersCompetitive benchmarking 	<ul style="list-style-type: none"> - Compatibility analysis - Synergy analysis - Five Flipcharts - Comprehension questions - Prepare roadmap 	<ul style="list-style-type: none"> - Multi-project management - Parallel strategy - Replacement strategy - Five Flipcharts - Finalize roadmap - Work out simple rules
Workshops	Activities	<ul style="list-style-type: none"> - Review topic repositories - Assign topics 	<ul style="list-style-type: none"> - Review target customers - Develop value proposition - Select and combine BM building blocks 	<ul style="list-style-type: none"> - Present target customer-specific BMs - Summarize results of the reflection analysis - Design BM 	<ul style="list-style-type: none"> - Adapt target customer needs based on not-yet-customers' feedback - Revise value proposition based on competitors' value propositions - Evaluate competitors qualitatively and quantitatively 		
	Tools	<ul style="list-style-type: none"> - Five Flipcharts - Task Kanban - Resonance Board 	<ul style="list-style-type: none"> - Five Flipcharts - Task Kanban - Similarity principle - Confrontation principle - User Story - Empathy map - Construction method - Design Thinking 	<ul style="list-style-type: none"> - Five Flipcharts 	<ul style="list-style-type: none"> - Five Flipcharts - Task Kanban - Consistency check - Repeat factor vs. standardization - NABC - Market Dynamics - Porter's Five Forces - EVA Tree - Constrained Portfolio 	<ul style="list-style-type: none"> - Compatibility analysis - Synergy analysis - Product process matrix 	<ul style="list-style-type: none"> - Simple rules - Critical metrics - Cynefin-Stacey matrix
Follow-up	Activities	<ul style="list-style-type: none"> - Evaluate target customers qualitatively and quantitatively 	<ul style="list-style-type: none"> - Reflect on current BMs per each target customer segment 	<ul style="list-style-type: none"> - Improve BM in a customer-oriented way - Question non-relevant customer requirements 	<ul style="list-style-type: none"> - Ensure participants' awareness of all target customer-specific BMs 	<ul style="list-style-type: none"> - Present new BM to the top management - Make impacts in the new BM visible 	<ul style="list-style-type: none"> - Review and validate new BM and roadmap - Initiate the implementation of the BM
	Tools	<ul style="list-style-type: none"> - Reflection analysis 	<ul style="list-style-type: none"> - Reflection analysis 	<ul style="list-style-type: none"> - Reflection analysis - Plausibility check 	<ul style="list-style-type: none"> - Comprehension questions 	<ul style="list-style-type: none"> - Cross-impact analysis 	<ul style="list-style-type: none"> - Simple rules - Critical metrics

digitalization and data-driven methods, such as data analytics, data mining, machine learning, and big data, for business model innovation across various industries (Duan et al., 2020; Teece & Linden, 2017), there is a growing need for a process model that caters specifically to data-driven business model innovation. The increasing importance of sustainability (cf. 17 Sustainable Development Goals of the United Nations) makes sustainable business models increasingly important. The use of data-driven technologies in achieving the 17 Sustainable Development Goals (Bachmann et al., 2022) could further argue for combining data-driven and sustainable business model innovation.

Declaration of generative AI and AI-assisted technologies in the writing process

While preparing this work, the authors used ChatGPT only to improve language and readability. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

CRedit authorship contribution statement

Nadine Bachmann: Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization, Writing - original draft, Writing - review & editing. **Herbert Jodlbauer:** Visualization, Supervision, Project administration, Investigation, Conceptualization, Funding acquisition, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Abdelkafi, N., Makhotin, S., & Posselt, T. (2013). Business Model Innovations for Electric Mobility: What Can Be Learned from Existing Business Model Patterns? *International Journal of Innovation Management*, 17(01), 1340003. <https://doi.org/10.1142/S1363919613400033>
- Adrodegari, F., Pashou, T., & Saccani, N. (2017). Business Model Innovation: Process and Service Transformation of Industrial Firms. *Procedia CIRP*, 64, 103–108. <https://doi.org/10.1016/j.procir.2017.03.056>
- Adrodegari, F., Saccani, N., Perona, M., & Agirregomezkorta, A. (2018). Business model innovation: A process model and toolset for servitizing industrial firms. In *Practices and Tools for Servitization: Managing Service Transition* (pp. 97–120). Springer. https://doi.org/10.1007/978-3-319-76517-4_6
- Altendorfer, K., & Jodlbauer, H. (2011). An analytical model for service level and tardiness in a single machine MTO production system. *International Journal of Production Research*, 49(7), 1827–1850. <https://doi.org/10.1080/00207541003660176>
- Amit, R., & Zott, C. (2012). Creating Value Through Business Model Innovation. *MIT Sloan Management Review*, 53(3), 36–44.
- Amit, R., & Zott, C. (2016). Business Model Design: A Dynamic Capability Perspective. In D. J. Teece, & S. Leih (Eds.), *The Oxford Handbook of Dynamic Capabilities* (pp. 1–5). Oxford University Press.
- Amshoff, B., Dülme, C., Echterfeld, J., & Gausemeier, J. (2015). Business Model Patterns for Disruptive Technologies. *International Journal of Innovation Management*, 19(03), 1540002. <https://doi.org/10.1142/S1363919615400022>
- Andreini, D., Bettinelli, C., Foss, N. J., & Mismetti, M. (2022). Business model innovation: A review of the process-based literature. *Journal of Management and Governance*, 26(4), 1089–1121. <https://doi.org/10.1007/s10997-021-09590-w>
- Bachmann, N., Brunner, M., Jodlbauer, H., & Tripathi, S. (2022). The Contribution of Data-Driven Technologies in Achieving the Sustainable Development Goals. *Sustainability*, 14(5), 2497. <https://doi.org/10.3390/su14052497>
- Baden-Fuller, C., & Haefliger, S. (2013). Business Models and Technological Innovation. *Long Range Planning*, 46(6), 419–426. <https://doi.org/10.1016/j.lrp.2013.08.023>
- Baden-Fuller, C., & Mangematin, V. (2013). Business models: A challenging agenda. *Strategic Organization*, 11(4), 418–427. <https://doi.org/10.1177/1476127013510112>
- Bashir, M., & Verma, R. (2017). Why Business Model Innovation Is the New Competitive Advantage. *IUP Journal of Business Strategy*, 14(1), 7–17.
- Bergen, M., & Peteraf, M. A. (2002). Competitor identification and competitor analysis: A broad-based managerial approach. *Managerial and Decision Economics*, 23(4–5), 157–169. <https://doi.org/10.1002/mde.1059>
- Bivona, E., & Cruz, M. (2021). Can business model innovation help SMEs in the food and beverage industry to respond to crises? Findings from a Swiss brewery during COVID-19. *British Food Journal*, 123(11), 3638–3660. <https://doi.org/10.1108/BFJ-07-2020-0643>
- Bonakdar, A., & Gassmann, O. (2016). Design thinking for revolutionizing your business models. In *Design Thinking for Innovation: Research and Practice* (pp. 57–66). Springer. https://doi.org/10.1007/978-3-319-26100-3_4
- Breier, M., Kallmuenzer, A., Clauss, T., Gast, J., Kraus, S., & Tiberius, V. (2021). The role of business model innovation in the hospitality industry during the COVID-19 crisis. *International Journal of Hospitality Management*, 92, 102723. <https://doi.org/10.1016/j.ijhm.2020.102723>
- Brown, P., von Daniels, C., Bocken, N. M. P., & Balkenende, A. R. (2021). A process model for collaboration in circular oriented innovation. *Journal of Cleaner Production*, 286, 125499. <https://doi.org/10.1016/j.jclepro.2020.125499>
- Brown, T. (2008). Design thinking. *Harvard Business Review*, 86(6), 84.
- Brunner, M., & Jodlbauer, H. (2020). Mind the Gap: Requirement Engineering for Learning Factories with Maturity Model Support. *Procedia Manufacturing*, 45, 510–515. <https://doi.org/10.1016/j.promfg.2020.04.067>
- Casadesus-Masanell, R., & Ricart, J. E. (2010). From Strategy to Business Models and onto Tactics. *Long Range Planning*, 43(2–3), 195–215. <https://doi.org/10.1016/j.lrp.2010.01.004>
- Casadesus-Masanell, R., & Zhu, F. (2013). Business model innovation and competitive imitation: The case of sponsor-based business models. *Strategic Management Journal*, 34(4), 464–482. <https://doi.org/10.1002/smj.2022>
- Chatterjee, S. (2013). Simple Rules for Designing Business Models. *California Management Review*, 55(2), 97–124. <https://doi.org/10.1525/cmr.2013.55.2.97>
- Chesbrough, H. (2007). Business model innovation: It's not just about technology anymore. *Strategy & Leadership*, 35(6), 12–17. <https://doi.org/10.1108/10878570710833714>
- Chesbrough, H. (2010). Business model innovation: Opportunities and barriers. *Long Range Planning*, 43(2–3), 354–363. <https://doi.org/10.1016/j.lrp.2009.07.010>
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529–555. <https://doi.org/10.1093/icc/11.3.529>
- Clauss, T. (2017). Measuring business model innovation: Conceptualization, scale development, and proof of performance. *R&D Management*, 47(3), 385–403. <https://doi.org/10.1111/radm.12186>
- Codini, A. P., Abbate, T., & Messeni Petruzzelli, A. (2023). Business Model Innovation and exaptation: A new way of innovating in SMEs. *Technovation*, 119, 102548. <https://doi.org/10.1016/j.technovation.2022.102548>
- Cohn, M. (2004). *User stories applied: For agile software development*. Addison-Wesley signature series. Addison-Wesley Professional.
- Cooper, R. G. (1990). Stage-gate systems: A new tool for managing new products. *Business Horizons*, 33(3), 44–54. [https://doi.org/10.1016/0007-6813\(90\)90040-I](https://doi.org/10.1016/0007-6813(90)90040-I)
- Corbett, T. (1998). *Throughput accounting: TOC's management accounting system*. North River Press.
- Coskun-Setirek, A., & Tanrikulu, Z. (2021). Digital innovations-driven business model regeneration: A process model. *Technology in Society*, 64, 101461. <https://doi.org/10.1016/j.techsoc.2020.101461>
- D'Ippolito, B., Messeni Petruzzelli, A., & Panniello, U. (2019). Archetypes of incumbents' strategic responses to digital innovation. *Journal of Intellectual Capital*, 20(5), 662–679. <https://doi.org/10.1108/JIC-04-2019-0065>
- Desyllas, P., & Sako, M. (2013). Profiting from business model innovation: Evidence from Pay-As-You-Drive auto insurance. *Research Policy*, 42(1), 101–116. <https://doi.org/10.1016/j.respol.2012.05.008>
- Duan, Y., Cao, G., & Edwards, J. S. (2020). Understanding the impact of business analytics on innovation. *European Journal of Operational Research*, 281(3), 673–686. <https://doi.org/10.1016/j.ejor.2018.06.021>
- Eisenhardt, K. M., & Sull, D. N. (2001). Strategy as simple rules. *Harvard Business Review*, 79(1), 106–119.
- Enkel, E., & Mezger, F. (2013). Imitation processes and their application for business model innovation: An explorative study. *International Journal of Innovation Management*, 17(1), 1340005. <https://doi.org/10.1142/S1363919613400057>
- Ferreira, B., Silva, W., Oliveira, E., & Conte, T. (2015). Designing Personas with Empathy Map. *SEKE*, 152.
- Fingeld-Connet, D. (2014). Use of content analysis to conduct knowledge-building and theory-generating qualitative systematic reviews. *Qualitative Research*, 14(3), 341–352. <https://doi.org/10.1177/1468794113481790>
- Foss, N. J., & Saebi, T. (2017). Fifteen Years of Research on Business Model Innovation. *Journal of Management*, 43(1), 200–227. <https://doi.org/10.1177/0149206316675927>
- Foss, N. J., & Saebi, T. (2018). Business models and business model innovation: Between wicked and paradigmatic problems. *Long Range Planning*, 51(1), 9–21. <https://doi.org/10.1016/j.lrp.2017.07.006>
- França, C. L., Broman, G., Robèrt, K.-H., Basile, G., & Trygg, L. (2017). An approach to business model innovation and design for strategic sustainable development. *Journal of Cleaner Production*, 140, 155–166. <https://doi.org/10.1016/j.jclepro.2016.06.124>
- Frankenberger, K., Weiblen, T., Csik, M., & Gassmann, O. (2013). The 4I-framework of business model innovation: A structured view on process phases and challenges. *International Journal of Product Development*, 18(3–4), 249–273. <https://doi.org/10.1504/IJPD.2013.055012>
- Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press.
- Gajdzik, B., & Wolniak, R. (2022). Smart Production Workers in Terms of Creativity and Innovation: The Implication for Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 68. <https://doi.org/10.3390/joitmc8020068>
- Gassmann, O., Frankenberger, K., & Choudury, M. (2015). *Geschäftsmodelle entwickeln: 55 innovative Konzepte mit dem St. Galler Business Model Navigator* (2nd ed.). Carl Hanser.
- Gassmann, O., Frankenberger, K., & Csik, M. (2014). The business model navigator: 55 models that will revolutionise your business. *Financial Times Publishing*.
- Geissdoerfer, M., Bocken, N. M. P., & Hultink, E. J. (2016). Design thinking to enhance the sustainable business modelling process: A workshop based on a value mapping process. *Journal of Cleaner Production*, 135, 1218–1232. <https://doi.org/10.1016/j.jclepro.2016.07.020>
- Geissdoerfer, M., Savaget, P., & Evans, S. (2017). The Cambridge Business Model Innovation Process. *Procedia Manufacturing*, 8, 262–269. <https://doi.org/10.1016/j.promfg.2017.02.033>
- Gibbs, G. (1988). *Learning by Doing: A Guide to Teaching and Learning Methods*. Oxford Further Education Unit.
- Goldratt, E. M. (1990). *Theory of Constraints*. North River.
- Green, B. N., Johnson, C. D., & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: Secrets of the trade. *Journal of Chiropractic Medicine*, 5(3), 101–117. [https://doi.org/10.1016/S0899-3467\(07\)60142-6](https://doi.org/10.1016/S0899-3467(07)60142-6)
- Grots, A., & Pratschke, M. (2009). Design Thinking — Kreativität als Methode. *Marketing Review St. Gallen*, 26(2), 18–23. <https://doi.org/10.1007/s11621-009-0027-4>
- Haftor, D. M., & Climent Costa, R. (2023). Five dimensions of business model innovation: A multi-case exploration of industrial incumbent firm's business model transformations. *Journal of Business Research*, 154, 113352. <https://doi.org/10.1016/j.jbusres.2022.113352>
- Harms, R., Alfert, C., Cheng, C.-F., & Kraus, S. (2021). Effectuation and causation configurations for business model innovation: Addressing COVID-19 in the gastronomy industry. *International Journal of Hospitality Management*, 95, 102896. <https://doi.org/10.1016/j.ijhm.2021.102896>
- Hedman, J., & Kalling, T. (2003). The business model concept: Theoretical underpinnings and empirical illustrations. *European Journal of Information Systems*, 12(1), 49–59. <https://doi.org/10.1057/palgrave.ejis.3000446>
- Heikkilä, M., & Heikkilä, J. (2013). Collaborative Business Model Innovation Process for Networked Services. In J. Järveläinen, H. Li, A.-M. Tuikka, & T. Kuusela (Eds.), *Co-created Effective, Agile, and Trusted eServices* (pp. 133–147). Springer.
- Helfat, C. E., & Raubitschek, R. S. (2018). Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems. *Research Policy*, 47(8), 1391–1399. <https://doi.org/10.1016/j.respol.2018.01.019>
- Ho, J.-K.-K. (2014). Formulation of a Strategic PEST Analysis for Strategic Analysis. *European Academic Research*, 2(5), 6478–6492.
- Homburg, C. (2016). *Marketingmanagement: Strategie - Instrumente - Umsetzung - Unternehmensführung* (6th revised and expanded edition). Springer Gabler.

- Hunke, F., Seebacher, S., Schuritz, R., & Illi, A. (2017). Towards a process model for data-driven business model innovation. In *2017 IEEE 19th Conference on Business Informatics (CBI)*.
- Ibarra, D., Ganzarain, J., & Igartua, J. I. (2018). Business model innovation through Industry 4.0: A review. *Procedia Manufacturing*, 22, 4–10. <https://doi.org/10.1016/j.promfg.2018.03.002>
- Jodlbauer, H. (2007). *Wertschaffende Auslegung der Produktion*. PPS Management, 12(2), 58–61.
- Jodlbauer, H. (2016). *Produktionsoptimierung* (3rd edition). Verlag Österreich.
- Jodlbauer, H. (2020). *Geschäftsmodelle erarbeiten: Modell zur digitalen Transformation etablierter Unternehmen*. Springer Gabler.
- Jodlbauer, H., & Schagerl, M. (2016). Reifegradmodell Industrie 4.0: Ein Vorgehensmodell zur Identifikation von Industrie 4.0 Potentialen. *Informatik*, 1473–1487.
- Jodlbauer, H., & Strasser, S. (2016). Geschäftsmodellinnovationen basierend auf Industrie 4.0 sichern den zukünftigen Erfolg der Unternehmen. *Controlling Und Industrie*, 4, 109–122.
- Jodlbauer, H., Tripathi, S., Brunner, M., & Bachmann, N. (2022). Stability of cross impact matrices. *Technological Forecasting and Social Change*, 182, 121822. <https://doi.org/10.1016/j.techfore.2022.121822>
- Johnson, G., Scholes, K., & Whittington, R. (2011). *Strategisches Management – eine Einführung: Analyse*. Pearson Studium: Entscheidung und Umsetzung. wi wirtschaft.
- Johnson, M. W. (2010). *Seizing the White Space: Business Model Innovation for Growth and Renewal*. Harvard Business Press.
- Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing Your Business Model. *Harvard Business Review*, 86(12), 50–59.
- Karlsson, N. P., Hoveskog, M., Halila, F., & Mattsson, M. (2018). Early phases of the business model innovation process for sustainability: Addressing the status quo of a Swedish biogas-producing farm cooperative. *Journal of Cleaner Production*, 172, 2759–2772. <https://doi.org/10.1016/j.jclepro.2017.11.136>
- Ketter, W., Peters, M., Collins, J., & Gupta, A. (2016). Competitive Benchmarking: An IS Research Approach to Address Wicked Problems with Big Data and Analytics. *MIS Quarterly*, 40(4), 1057–1080.
- Khanagha, S., Volberda, H., & Oshri, I. (2014). Business model renewal and ambidexterity: structural alteration and strategy formation process during transition to a Cloud business model. *R&D Management*, 44(3), 322–340. <https://doi.org/10.1111/radm.12070>
- Kim, S. K., & Min, S. (2015). Business Model Innovation Performance: When does Adding a New Business Model Benefit an Incumbent? *Strategic Entrepreneurship Journal*, 9(1), 34–57. <https://doi.org/10.1002/sej.1193>
- Kim, W. C., & Mauborgne, R. (2014). *Blue Ocean Strategy, Expanded Edition: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Harvard Business Review Press.
- Kniberg, H. (2009). Kanban vs scrum. *Crisp AB. Viittuuta*, 1, 1–41.
- Kniberg, H., & Skarin, M. (2010). *Kanban and Scrum: Making the most of both*. InfoQ Enterprise Software Development series. C4Media.
- Kubíček, A., & Machek, O. (2019). Gender-related factors in family business succession: A systematic literature review. *Review of Managerial Science*, 13(5), 963–1002. <https://doi.org/10.1007/s11846-018-0278-z>
- Laasch, O. (2019). An actor-network perspective on business models: How 'Being Responsible' led to incremental but pervasive change. *Long Range Planning*, 52(3), 406–426. <https://doi.org/10.1016/j.lrp.2018.04.002>
- Landoni, P., Dell'era, C., Frattini, F., Messeni Petruzzelli, A., Verganti, R., & Manelli, L. (2020). Business model innovation in cultural and creative industries: Insights from three leading mobile gaming firms. *Technovation*, 92–93, 102084. <https://doi.org/10.1016/j.technovation.2019.102084>
- Lang, M. (2020). Business model innovation approaches: A systematic literature review. *Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis*, 68(2), 435–449. <https://doi.org/10.1118/actaun202068020435>
- Lantano, F., Petruzzelli, A. M., & Panniello, U. (2022). Business model innovation in video-game consoles to face the threats of mobile gaming: Evidence from the case of Sony PlayStation. *Technological Forecasting and Social Change*, 174, 121210. <https://doi.org/10.1016/j.techfore.2021.121210>
- Latifi, M.-A., Nikou, S., & Bouwman, H. (2021). Business model innovation and firm performance: Exploring causal mechanisms in SMEs. *Technovation*, 107, 102274. <https://doi.org/10.1016/j.technovation.2021.102274>
- Laurischkat, K., & Viertelhausen, A. (2017). Business Model Gaming: A Game-Based Methodology for E-Mobility Business Model Innovation. *Procedia CIRP*, 64, 115–120. <https://doi.org/10.1016/j.procir.2017.03.051>
- Lee, N., & Cadogan, J. W. (2013). Problems with formative and higher-order reflective variables. *Journal of Business Research*, 66(2), 242–247. <https://doi.org/10.1016/j.jbusres.2012.08.004>
- Linder, J., & Cantrell, S. (2000). *Changing Business Models: Surveying the landscape*. Accenture Institute for Strategic Change.
- Lindgardt, Z., Reeves, M., Stalk, J., & Deimler, M. (2013). Business Model Innovation: When the Game Gets Tough, Change the Game. In M. S. Deimler (Ed.), *Own the future: 50 ways to win from the Boston Consulting Group* (pp. 291–298). John Wiley & Sons, Inc.. <https://doi.org/10.1002/9781119204084.ch40>
- Mao, J.-Y., Su, F., Wang, B., & Jarvenpaa, S. L. (2020). Responding in kind: How do incumbent firms swiftly deal with disruptive business model innovation? *Journal of Engineering and Technology Management*, 57, 101591. <https://doi.org/10.1016/j.jengtecman.2020.101591>
- Markides, C., & Charitou, C. D. (2004). Competing with dual business models: A contingency approach. *Academy of Management Perspectives*, 18(3), 22–36. <https://doi.org/10.5465/ame.2004.14776164>
- Massa, L., & Tucci, C. L. (2013). Business model innovation. In M. Dodgson, D. M. Gann, & N. Phillips (Eds.), *The Oxford Handbook of Innovation Management* (pp. 420–441). OUP Oxford.
- McGovern, G. (2021). Capturing community value in civic energy business model design. *Energy Policy*, 156, 112468. <https://doi.org/10.1016/j.enpol.2021.112468>
- Mertins, K., Siebert, G., & Kempf, S. (Eds.). (2013). Springer eBook Collection Computer Science and Engineering. Benchmarking: Praxis in deutschen Unternehmen. Springer. <https://doi.org/10.1007/978-3-642-79393-6>
- Ming, X. G., Yan, J. Q., Wang, X. H., Li, S. N., Lu, W. F., Peng, Q. J., & Ma, Y. S. (2008). Collaborative process planning and manufacturing in product lifecycle management. *Computers in Industry*, 59(2), 154–166. <https://doi.org/10.1016/j.compind.2007.06.012>
- Mitchell, D., & Coles, C. (2003). The ultimate competitive advantage of continuing business model innovation. *Journal of Business Strategy*, 24(5), 15–21. <https://doi.org/10.1108/02756660310504924>
- Osterwalder, A. (2004). *The business model ontology a proposition in a design science approach*. Lausanne: Université de Lausanne.
- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*. John Wiley & Sons.
- Paiola, M., Agostini, L., Grandinetti, R., & Nosella, A. (2022). The process of business model innovation driven by IoT: Exploring the case of incumbent SMEs. *Industrial Marketing Management*, 103, 30–46. <https://doi.org/10.1016/j.indmarman.2022.03.006>
- Paré, G., Trudel, M.-C., Jaana, M., & Kitsiou, S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & Management*, 52(2), 183–199. <https://doi.org/10.1016/j.im.2014.08.008>
- Pateli, A. G., & Giaglis, G. M. (2005). Technology innovation-induced business model change: A contingency approach. *Journal of Organizational Change Management*, 18(2), 167–183. <https://doi.org/10.1108/09534810510589589>
- Pichler, R. (2013). *Scrum: Agiles Projektmanagement erfolgreich einsetzen*. dpunkt.
- Pieroni, M. P. P., McAloone, T. C., & Pigosso, D. C. A. (2019). Business model innovation for circular economy and sustainability: A review of approaches. *Journal of Cleaner Production*, 215, 198–216. <https://doi.org/10.1016/j.jclepro.2019.01.036>
- Pieroni, M. P. P., McAloone, T. C., & Pigosso, D. C. A. (2021). Developing a process model for circular economy business model innovation within manufacturing companies. *Journal of Cleaner Production*, 299, 126785. <https://doi.org/10.1016/j.jclepro.2021.126785>
- Pollard, J., Osmani, M., Cole, C., Grubnic, S., & Colwill, J. (2021). A circular economy business model innovation process for the electrical and electronic equipment sector. *Journal of Cleaner Production*, 305, 127211. <https://doi.org/10.1016/j.jclepro.2021.127211>
- Porter, M. E. (2008). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Simon and Schuster.
- Pramataris, K. C., Papakyriakopoulos, D. A., Lekakos, G., & Mylonopoulos, N. A. (2001). Personalized Interactive TV Advertising: The iMEDIA Business Model. *Electronic Markets*, 11(1), 17–25. <https://doi.org/10.1080/10196780122859>
- Pynnönen, M., Hallikas, J., & Ritala, P. (2012). Managing Customer-driven Business Model Innovation. *International Journal of Innovation Management*, 16(4), 1250022. <https://doi.org/10.1142/S1363919612003836>
- Ramaswamy, V., & Ozcan, K. (2018). What is co-creation? An interactional creation framework and its implications for value creation. *Journal of Business Research*, 84, 196–205. <https://doi.org/10.1016/j.jbusres.2017.11.027>
- Randhawa, K., Wilden, R., & Gudergan, S. (2021). How to innovate toward an ambidextrous business model? The role of dynamic capabilities and market orientation. *Journal of Business Research*, 130, 618–634. <https://doi.org/10.1016/j.jbusres.2020.05.046>
- Remané, G., Hanelt, A., Tesch, J. F. A. N., & Kolbe, L. M. (2017). The Business Model Pattern Database: A Tool for Systematic Business Model Innovation. *International Journal of Innovation Management*, 21(1), 1750004. <https://doi.org/10.1142/S1363919617500049>
- de Reuver, M., Bouwman, H., & Haaker, T. (2013). Business Model Roadmapping: A Practical Approach to Come from an Existing to a Desired Business Model. *International Journal of Innovation Management*, 17(01), 1340006. <https://doi.org/10.1142/S1363919613400069>
- Robertson, B. J. (2015). *Holacracy: The new management system for a rapidly changing world*. Henry Holt and Company.
- Rummel, F., Hüsig, S., & Steinhauser, S. (2022). Two archetypes of business model innovation processes for manufacturing firms in the context of digital transformation. *R&D Management*, 52(4), 685–703. <https://doi.org/10.1111/radm.12514>
- Sabatini, A., Cucculelli, M., & Gregori, G. L. (2022). Business model innovation and digital technology: The perspective of incumbent Italian small and medium-sized firms. *Entrepreneurial Business and Economics Review*, 10(3), 23–35. <https://doi.org/10.15678/EBER.2022.100302>
- Seidenstricker, S., Scheuerle, S., & Linder, C. (2014). Business Model Prototyping – Using the Morphological Analysis to Develop New Business Models. *Procedia Social and Behavioral Sciences*, 148, 102–109. <https://doi.org/10.1016/j.sbspro.2014.07.023>
- Siebold, N. (2021). Reference points for business model innovation in social purpose organizations: A stakeholder perspective. *Journal of Business Research*, 125, 710–719. <https://doi.org/10.1016/j.jbusres.2020.01.032>
- Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2010). Resource Orchestration to Create Competitive Advantage: Breadth, Depth, and Life Cycle Effects. *Journal of Management*, 37(5), 1390–1412. <https://doi.org/10.1177/0149206310385695>
- Sjödin, D., Parida, V., Jovanovic, M., & Visnjic, I. (2020). Value Creation and Value Capture Alignment in Business Model Innovation: A Process View on Outcome-Based

- Business Models. *Journal of Product Innovation Management*, 37(2), 158–183. <https://doi.org/10.1111/jpim.12516>
- Slack, N., Chambers, S., & Johnston, R. (2010). *Operations management*. Pearson Education.
- Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. A leader's framework for decision making. *Harvard Business Review*, 85(11), 68–76, 149.
- Sosna, M., Treviño-Rodríguez, R. N., & Velamuri, S. R. (2010). Business Model Innovation through Trial-and-Error Learning. *Long Range Planning*, 43(2–3), 383–407. <https://doi.org/10.1016/j.lrp.2010.02.003>
- Specht, D., & Behrens, S. (2005). Strategische Planung mit Roadmaps — Möglichkeiten für das Innovationsmanagement und die Personalbedarfsplanung. In *Technologie-Roadmapping: Zukunftsstrategien für Technologieunternehmen* (pp. 141–160). Springer. https://doi.org/10.1007/3-540-27282-8_8.
- Spieth, P., Laudien, S. M., & Meissner, S. (2021). Business model innovation in strategic alliances: A multi-layer perspective. *R&D Management*, 51(1), 24–39. <https://doi.org/10.1111/radm.12410>
- Spieth, P., Schneckenberg, D., & Ricart, J. E. (2014). Business model innovation - state of the art and future challenges for the field. *R&D Management*, 44(3), 237–247. <https://doi.org/10.1111/radm.12071>
- Stern, J., Stewart, B., & Chew, D. (1995). The Eva Financial Management System. *Journal of Applied Corporate Finance*, 8(2), 32–46.
- Sternad, D., & Mödritscher, G. (2022). Entrepreneurial Leaps: Growth Processes in Transition Phases Between Dynamic States. *Entrepreneurship Theory and Practice*, 46(4), 952–984. <https://doi.org/10.1177/1042258720929890>
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. <https://doi.org/10.1002/smj.640>
- Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43(2–3), 172–194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40–49. <https://doi.org/10.1016/j.lrp.2017.06.007>
- Teece, D. J., & Linden, G. (2017). Business models, value capture, and the digital enterprise. *Journal of Organization Design*, 6(1), 1–14. <https://doi.org/10.1186/s41469-017-0018-x>
- Trapp, M., Voigt, K.-I., & Brem, A. (2018). Business Models for Corporate Innovation Management: Introduction of a Business Model Innovation Tool for Established Firms. *International Journal of Innovation Management*, 22(01), 1850007. <https://doi.org/10.1142/S136391961850007X>
- Urbinati, A., Manelli, L., Frattini, F., & Bogers, M. L. A. M. (2022). The digital transformation of the innovation process: Orchestration mechanisms and future research directions. *Innovation*, 24(1), 65–85. <https://doi.org/10.1080/14479338.2021.1963736>
- Vittori, D., Natalicchio, A., Panniello, U., Messeni Petruzzelli, A., & Cupertino, F. (2022). Business Model Innovation between the embryonic and growth stages of industry lifecycle. *Technovation*, 117, 102592. <https://doi.org/10.1016/j.technovation.2022.102592>
- Voelpel, S. C., Leibold, M., & Tekie, E. B. (2004). The wheel of business model reinvention: How to reshape your business model to leapfrog competitors. *Journal of Change Management*, 4(3), 259–276. <https://doi.org/10.1080/1469701042000212669>
- Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, 52(3), 326–349. <https://doi.org/10.1016/j.lrp.2018.12.001>
- Weill, P., & Vitale, M. (2001). *Place to Space: Migrating to Ebusiness Models*. Harvard Business Press.
- Wirtz, B. W. (2011). *Business Model Management: Design - Instruments - Success Factors*. Gabler.
- Wirtz, B. W., & Daiser, P. (2018). Business Model Innovation Processes: A Systematic Literature Review. *Journal of Business Models*, 6(1), 40–58. <https://doi.org/10.5278/OJS.JBM.V6I1.2397>
- Yang, D.-H., You, Y.-Y., & Kwon, H.-J. (2014). A framework for business model innovation using market, component and innovation tool. *International Journal of Applied Engineering Research*, 9(21), 9235–9248.
- Zollenkop, M. (2009). *Geschäftsmodellinnovation: Initiierung eines systematischen Innovationsmanagements für Geschäftsmodelle auf Basis lebenszyklusorientierter Frühaufklärung*. Springer.
- Zott, C., & Amit, R. (2013). The business model: A theoretically anchored robust construct for strategic analysis. *Strategic Organization*, 11(4), 403–411. <https://doi.org/10.1177/1476127013510466>
- Zott, C., Amit, R., & Massa, L. (2011). The Business Model: Recent Developments and Future Research. *Journal of Management*, 37(4), 1019–1042. <https://doi.org/10.1177/0149206311406265>

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