

Business Model Innovation through Customer Co-Creation: A Literature Overview

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ABSTRACT

Today's world is extremely fast moving, and customer requirements as well as the customer expectations are changing unpredictably day by day. Firms need to continuously innovate their business model in order to keep up with the dynamic environment. All these changes affect the role of the customer in the supply chain and the relationships between partners, customers, and companies. Furthermore, it disrupts firms' strategies as well as their organizational structures, which forces companies to transform digitally as soon as possible. To respond to these changes and to remain competitive, firms need to adapt their existing business models and create value in new ways. To meet the new requirements, firms need to stay closer to their customers and identify new opportunities by creating value together with the customer (*customer co-creation*). This process can be supported by the digitalization and the usage of digital technologies, such as Big Data, Internet of Things and Artificial Intelligence. The goal of this paper is to give an overview of the combined research areas business model innovation and customer co-creation. A literature review has been performed to explore the emerging and undiscovered new field. Especially in the customer-centric, digital world, the value creation together with the customer plays a major role. Based on the literature future research avenues are identified and introduced.

1. Introduction

Since 1993, the internet has enabled an endless number of disruptive technologies supporting the production and distribution of new innovative products and services (Cozzolino et al. 2018). The last 10 years have experienced the most recent technological transformation with the beginning of the 4th Industrial revolution and the digitalization era (Fernández-Rovira et al. 2021). The transformation of the economy in the 21st century shows a rapid transition from a traditional industrial production model to a new, digital- and information driven society which has led to changes in the way companies work with their customers and users (Fernández-Rovira et al. 2021; Ritter and Pedersen 2020). New players are emerging and the roles of existing ones are changing, leading to new ways of creating and delivering value

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through ecosystems that go beyond individual value chains (Ibarra et al. 2018). Nowadays business environment has reached a high degree of complexity and dynamic, where product life cycles are much shorter, customer needs are changing unpredictably, competition is quickly increasing, and the economy is declining. Firms can only overcome these challenges, by keeping the market under observation, staying in close contact with customers to sense their needs, exploring risks and opportunities and adjusting their strategy accordingly (Tohănean et al. 2020).

Recent BCG and PwC reports show that due to Industry 4.0 an efficiency increase of 15–20% can be expected and that it will present more than 20% of the revenue generation over the next five years. Therefore, it is not surprising, that the need of companies collecting as much customer data as possible has grown, as this amplifies the personalization degree of the offer to the smallest detail (Fernández-Rovira et al. 2021) and enables the possibility to offer digital services to the customer (Caputo et al. 2020).

A Co-Chairman at Deloitte LLP Center made a statement and stressed the need for changing whole organizations according to new technologies: “At least 40% of all businesses will die in the next 10 years... if they don’t figure out how to change their entire company to accommodate new technologies” (Broekhuizen et al. 2021). Additionally, according to Parida (2019) the application of digital technologies enables business model innovation (BMI), which then leads to a whole business model transformation by changing the way of creating, capturing and delivering value to the customer (Parida et al. 2019). Digitalization impacts the way a value is delivered, whereas the DT impacts internal resources, capabilities, activities, and roles (Schallmo et al. 2017).

Today's extremely and fast-changing markets require a continuous BMI and adaptation by exploring new Business Models (BM) and shaping a firm's complete organization supported by the usage of new digital technologies (Latilla et al. 2020b). The flexible and fast adaption to continuous changing customer needs and market dynamics is seen as the key to survive in the digital era as well as a competitive advantage, where conventional BMs are no longer guaranteeing firm's success and profitability (Latilla et al. 2020b). The interest on the impact of digitalization on firm's BMs is increasing, as today's findings are fuzzy and the exploitation of technological opportunities are challenging firms and their strategies (Rachinger et al. 2019a; Witschel et al. 2019; Mezger 2014; Haaker et al. 2017).

As Teece has said: "Get the business model wrong, and there is almost no chance of success..." (Teece 2010a). Even though the importance of firms' BMs is confirmed by both managers and academics (Kim et al. 2019; Teece 2010a), the BMI – especially the digital transformation of BMs – are still poorly understood (Li 2020). Additionally, there are only a few studies that explore the influence of digitization on BMI (Hoch and Brad 2020; Parida et al. 2019). Furthermore, as all companies are now more customer-centric, it is also important to put the focus in understanding how the customer co-creation influences the BMI process and how companies involve them in their transformational phase.

The author gives an overview of the existing literature with the goal to emphasize the main research streams and existing gaps in this field of research. The database Scopus was identified as the most relevant one for scientific publications in management science and therefore the focus of the SLR was mainly based on Scopus data (Woschank et al. 2020). Additionally, searches have been carried out in alternative databases like Web of Science and Science Direct, but as the results did not lead to significant differences, Scopus has been selected as the main database for the SLR of this paper. The literature review has been conducted during the months March - July 2021. Key word searches like "business model innovation" AND "customer co-creation" with their different synonyms showed that there is

not a lot of literature existing in the database. The following chapter shows a summary of the findings from the literature.

2. Role of the Customer

There is a clear alignment in the literature that digitalization is pushing firms to change their BM along two key dimensions: understanding customer needs and moving from a controlled and traditional value-chain to a value network (Sahut et al. 2020). Technology has changed customer expectation and behaviour along the entire value chain (Biloslavo et al. 2020). Companies are going away from mass production and linear supply chains and moving towards non-linear mass customizations and digitally connected value networks, where the customer is playing the key role (Weking et al. 2020a). Establishing a large network with the strategic partners on time is a critical success factor for market-place BMs (Teece 2018; Witschel et al. 2019). The more partner a company includes in the value network the higher the number of product and services which a firm can offer (Urbinati et al. 2019b). Furthermore, companies are adding service elements to physical products to foster even more customized solutions (Linde et al. 2020).

In today's dynamically changing environment, the demand side is no longer clearly distinguishable between customer and supplier (Tommasetti et al. 2017). In the traditional value chain, there was a clear line between seller and purchaser, or sender and receiver, which is called *value-in-exchange*. In today's value network businesses and consumers are no longer separated, but rather striving for a common value creation, also called *value-in-use* (Skaržauskaitė 2013). As an outcome of digital BMs and digital technologies the shift of companies' roles in the ecosystem and the changed way of creating value is also called *hyperconnectivity* (Broekhuizen et al. 2021). In conclusion the customer becomes a partner and the business relationship is getting more interactive (Sjödin et al. 2021). The benefit of partnering between companies, suppliers and their customers is that firms limit their risks along the supply chain and reduces operational costs (Garzella et al. 2021).

A recent literature research identified six macro trends which support the evolution from the linear value chain towards a value network: sustainability, global, collaboration, intangible assets, flexibility, and agility (Ricciotti 2020).

In the past, the customer was viewed outside of firms' value chain, while nowadays they are an essential part of the ecosystem, as they are playing an active role in companies business activities (Mihardjo et al. 2018). Additionally, also the role of organizations has changed as the customer is the one who defines the value and not the company alone (Skaržauskaitė 2013). To address the offer to the relevant customers, companies need to specify which customer groups are relevant and need to be attracted. The needs of this specific customer group must be understood in order to derive a successful BM out of it (Ritter and Pedersen 2020; Kim et al. 2019).

There is a consensus in the literature, that focusing on intangible assets like relationships, interactivity and mutual creation shifted firms from being goods-dominated to a more customer centric strategy, who plays also an important role in the innovation and value creation phase of a company, especially applying the service dominant logic (Skaržauskaitė 2013). Due to the increase of service and solution offerings towards the customer, the relationships changes into an intensive and long-term collaboration with the goal of satisfying customer needs (Rachinger et al. 2019a). Digital technologies like Internet of Things (IoT) supports the intensification of customer relationships as due to data collection companies have a better customer understanding and can provide customized solution (Arnold et al. 2016; Verhoef et al. 2021). By using Big Data and Artificial Intelligence (AI) companies can

customize customer offerings to the smallest detail, which impacts positively customer satisfaction and increase customer loyalty (Fernández-Rovira et al. 2021).

To accomplish this, companies need to focus on activities like customer integration via key accounts, customer support, exchange with established customers, and customer integration in planning the business portfolio (Witschel et al. 2019). These activities are influencing the customer input from which companies can derive innovations and new ideas for digital solutions.

3. Customer Input

There are two types of customer involvement, one is where the customer information is used as a source for innovation and another where the customer function as a co-developer (Kim et al. 2019; Plé et al. 2010). In fact, according to Lengnick-Hall (1996) as cited in (Kim et al. 2019) next to being co-producer, a buyer, or a user, a customer is also seen as a resource. It is not rare, that customer experience is used as an input for further innovation in firms' BMs with the goal to develop new products and services according to customer feedback (Bawono and Mihardjo 2020). The literature is also distinguishing between different forms of customer participation behaviour. According to Yi & Gong (2013) generally there are two forms of customer value co-creation: (i) customer participation behaviour; and (ii) customer citizenship behaviour. The same article has derived for both forms four sub-dimensions: information seeking, information sharing, responsible behaviour, and personal interaction for the first one and for the latter: feedback, advocacy, helping, and tolerance, Yi & Gong, 2013 as cited in (Clauss et al. 2019).

The co-creation concept is based on customer needs and the ability to react fast in regards of market dynamics and instabilities caused by the globalization (Mihardjo et al. 2019c). The more digital a company becomes, the more the company do co-creation with the goal to react rapidly to customer requirements (Warner and Wäger 2019). Even though that understanding customer needs is essential in the B2B market, many firms are still not aware of what customers' opinion is about their company. A reason of that could be, that these companies are not monitoring the customer experience in real time but using single-metric approaches to measure customer satisfaction, e.g. Net Promoter Score or customer satisfaction survey. Of course, these customer satisfaction measuring methods are easy to conduct and administrate, however they do not provide the true customer insight and customer experience, as there are many dimension to customer experience which is not measurable with a single data point (Zaki 2019). Due to the intangible nature of disruptive technologies and the increasing market competition, costumer expect customization and user-specific solutions for their problems (Koç and Sandkuhl 2017). By using IoT technologies, companies can also realize new opportunities and improve customers' experiences (Sestino et al. 2020). Manufacturers are willing to create complex digital offerings (e.g. the person who gets in an elevator and his favourite Spotify song is playing also getting some information about the weather) to achieve a great customer experience, as this provides competitive advantage (Henneberg et al. 2020). It can be said, that digitalization has energized customers with more opportunities, expectations and demands that pushes provider companies to adapt accordingly (Warner and Wäger 2019). Strategically, co-creation can be used to transform value propositions by involving the customer or other parties actively (Mihardjo et al. 2018). Furthermore, by fulfilling customer expectations, the customer is also less price sensitive (Mihardjo et al. 2019a).

In contrast, digitization offers new and easy ways to get customer information and customer experiences by using IoT, Big Data or AI (Mihardjo et al. 2019b; Urbinati et al. 2019a). Due

to the influence of IoT, customer become now a collaborative partner and co-designers which opens up the innovation process and using customer feedback for new ideas or improving existing solutions (Kiel et al. 2016; Weking et al. 2020b). The use of this technologies enable companies to react quickly on changing customer needs, increase productivity and competitiveness as well as improve their business performance (Sestino et al. 2020; Clauss et al. 2019). By using the customer as a valuable asset, the competitive advantage increases (Verhoef et al. 2021). This makes also the customer centricity unavoidable in the digitalized and connected world (Sathananthan et al. 2017) and also essential for firms' digital transformation (Sathananthan et al. 2017).

Especially for B2B customers it is important and critical to understand customer experience, as they exist of multiple stakeholders which needs complex analytical tools compared to B2C customer, where there is normally one person who needs to be convinced (Zaki 2019). A recent article argues that a customer experience-based development of BMI drives companies' transformational performance (Bawono and Mihardjo 2020; Mihardjo et al. 2019b). Another recent article describes a three-step process of co-creating BMI. The article proposes a BMI framework which illustrates how companies and their customers go through a three-phase process in an agile way: value proposition definition, value provision design, and value-in use delivery (Sjödin et al. 2020). In this context, crowdsourcing and open BMs are possible ways of integrating the customer in the BMI process (Plé et al. 2010).

An article from 2010 has identified seven inputs which are mobilized by a customer participation: mental inputs, physical inputs, emotional inputs, financial inputs, temporal inputs, behavioural inputs, and relational inputs (Plé et al. 2010). Furthermore, the same authors listed the customer-based determinants which are: customer awareness, perceived role clarity, and willingness of participation (Plé et al. 2010). Indeed, the customer willingness has been pointed out also in other articles as it plays an important role in the successful co-creation phase and depends on customers expectation of positive returns (Clauss et al. 2019). On the other site, there are company-based determinants like: organizational socialization techniques, helping the customer to understand firms' expectations, developing the participation ability of the customer, and motivating the customer to participate (Plé et al. 2010).

Also, the usefulness and accuracy of customer inputs are very much dependent on the motivation of the customer. In general the literature distinguishes between intrinsic or extrinsic customer motivation (Kim et al. 2019). Intrinsic motivation relates to internal factors like the need for autonomy, competence, and relatedness, which enable the customer to contribute and give inputs to organizations while also enjoying the process itself. Extrinsic motivation relate to external factors which can be inducements like economic advantages, monetary rewards or free products and services which are pushing the customer to contribute (Kim et al. 2019). As the degree of experienced innovativeness may vary among the customers, a recent paper has defined the customer's perceived business model innovativeness (CPBMI) as the degree to which the customer perceives the BM elements (e.g value creation) as innovative (Clauss et al. 2019).

In summary it can be said, that the more accurate and useful the customer input is, the better the organizations can derive customer needs and integrate them into their BMI process (Kim et al. 2019). The findings of a recent article indicate that co-creation tactics and BMI are important for incumbent firms to ensure firm's digital transformation and its alignment with the vision and strategy of the management (Mihardjo et al. 2018).

4. Customer Co-Creation and Business Model Innovation

The main objective of firm's BMs is to exploit business opportunities and create value for the involved parties e.g. fulfilling customer's need (Zott and Amit 2010). As the trial-and-error approach is an insightful way to gain customer knowledge, it is seen as a cornerstone of a successful BMI (Günzel and Holm 2013). Due to new technological innovations customer needs have changed and influenced BM of traditional manufacturing firms. There is clearly a shift moving away from product-centric business and towards offering services. This shift influences BM components like value creation, value delivery and value capture and results in a needed BMI (Kukkamalla et al. 2020). As Teece pointed out, the sensing of customer needs is the initial step for a BMI aiming to provide a solution for a customer problem which has a price high enough to cover the costs and meet customer willingness to pay for it (Teece 2018). Furthermore, the customer involvement in the BMI process enables companies to better respond to customer requirements (Kim et al. 2019). According to a recent article, the value co-creation is on one of seven strategic capabilities next to fleet management, technology development, mergers and acquisitions, value quantification, project management, and supplier network management (Kohtamäki et al. 2019). Corresponding to Skaržauskaitė (2013), co-creation is defined as the following: *“An interactive process involving at least two willing resource integrating actors which are engaged in specific form(s) of mutually beneficial collaboration, resulting in value creation for those actors”* (Skaržauskaitė 2013). The same author identified the joint sphere, which defines the co-creation process of both, the customer, and the organization, which are equally important. Through interactions between these two parties, they are operating into each other's processes as organizations can influence the value creation process of the customer and through customers' feedback, they influence companies value creation processes (Skaržauskaitė 2013).

Furthermore, the value co-creation as such requires the development and use of new capabilities (Lenka et al. 2017). As Warner and Wäger (2019) has cited an older article from Sambamurthy (2003), in order to increase the financial performance firms should use IT to build the following three capabilities: (i) customer agility like the co-creation of user experience; (ii) partnering agility like the orchestration of different stakeholders in the ecosystem; and (iii) operational agility for achieving speed, accurateness, and cost efficiency (Warner and Wäger 2019). Moreover, a recent article has proofed empirically, that the innovativeness of value creation and value proposition positively influences customers' satisfaction (Clauss et al. 2019).

It can be said, that the customer is playing an irreplaceable key role in the BMI process, as only a successful BM is providing a value add for the customer (Teece 2018; Sathananthan et al. 2017; Johnson et al. 2008; Kim et al. 2019; Parida et al. 2019). According to the literature, there is a clear trend, that co-creating a new BM which are supported by digital technologies, positively influences the effect of BMI success (Brasseur et al. 2017). Based on the five research sites the BMI process can be divided into three phases: inception phase (recognizing a trigger followed by an idea development as a respond and the validation of the idea; evolution phase (an iterative cycle of designing and implementing activities, enabled by gained insights and experience); and diffusion phase (from designing and implementing the BM to operating it on a larger scale) (Sniukas 2020). The customer can support all the three phases with their knowledge and inputs to innovate and shape the firm's BM. This means, that a deep customer understanding is a vital capability for the searching process of a new BM, mostly in the context of digitalization (Witschel et al. 2019). For that reason, the development of a BM stands and falls with the understanding of customer needs (Clohessy et al. 2019), especially understanding how the digital offer can solve a customer problem and

simultaneously create value for them (Linde et al. 2020). To get closer to new customers and seize their needs, companies are even willing to re-design their organization and innovate their existing BMs (Latilla et al. 2020b). This human centric approach of identifying new opportunities based on customer experience is part of Industry 5.0, which offers customization based on Big Data (Mihardjo et al. 2019b). In order to meet customer needs and to create value properly it helps to involve the customer in the BM development process (Witschel et al. 2019). Furthermore, an alignment of value creation and value capture is needed in an early stage to meet customers expatiation and provide the promised value (Sjödín et al. 2020). A BMI can only be performed successfully, when the interdependent BM components value creation and value capture are continuously in alignment across all the process phases (Sjödín et al. 2020). Therefore, the continuous involvement of the customer supports the alignment on the value creation, value delivery and value capture (Sjödín et al. 2020). Additionally, for the value delivery of a firm the skills and abilities of the customer are vital (Ng et al. 2010). The basis of co-creation is the collaboration between a company and their customers. By using IoT technologies, customers can be involved in the product and service development in new ways and from the very beginning (Arnold et al. 2016; Lenka et al. 2017) as the customer co-creation includes the involvement of the customer during all the stages, such as idea finding, co-design and co-production. This close involvement in the development phase leads to a better customer experience (Mihardjo et al. 2019c).

A recent article has explored how manufacturers can develop AI capabilities and how it can be used and scaled up for BMI in digital servitization. Therefore, the authors have created a framework combining the three sets of critical AI capabilities (data pipeline, algorithm development, and AI democratization) with BMI influenced by customer co-creation, data-driven services, and scalable ecosystem integration (Sjödín et al. 2021). To support customer's success via co-creation and use of AI enabled service solutions, companies need to be agile and begin with small use cases and clear customer value propositions before scaling up (Sjödín et al. 2021). There is a clear trend of firms collaborating and co-creating during their BMI process using digital or tangible tools, which positively effects the BMI success (Brasseur et al. 2017). Furthermore, allowing co-creation in the BMI enables new prospects in the business and improves the quality of the new established BM (Brasseur et al. 2017). It accelerates and enables incumbent firms to transform to a more innovative business, drive standardization and compatibility, especially as due to co-creation the combination of firms, partners and customers capabilities could create an enhanced BMI (Mihardjo et al. 2018). Several articles have proofed the positive influence of customer value co-creation behaviour and customer satisfaction on business performance, like Bettencourt et al., 2014; Leticia Santos-Vijande et al., 2013; Lusch et al., 2007; Verma et al., 2013 as cited in (Clauss et al. 2019). An article from 2017 provides a conceptual model for measuring customer co-creation by identifying the following relevant dimensions: cerebral activities, cooperation, information research and collation, the combination of complementary activities, changes in habits, co-production, co-learning and connection.

5. Conclusion and Future Research Avenues

In summary it can be said, that in order to be successful in the value co-creation process, firms need to consider active involvement of the customer, integrating needed resource to create mutual value add, the willingness to interact, and a variety of collaboration forms (Skaržauskaitė 2013). How companies involve customers from the beginning, how idea generation takes place with the support of customer co-creation, and how the identified information can be used for the BMI process needs to be addressed in future research.

Moreover, further research is needed in identifying opportunities and the trigger for a change (Sniukas 2020). As the identification phase is representing an essential Dynamic Capability function, it is the starting point for the entire BMI process. Executive managers need these insights for building new vital Dynamic Capabilities and/or improve existing ones to remain competitive. Research on the relationship between the BM and the identification of opportunities will help managers to identify layers of entrepreneurial activities between opportunity creation and organizational structure. Furthermore, it could support finding the right customer group for the new digital BM (George and Bock 2009).

References

- Amit, R., & Zott, C [C.] (2012). *Creating value through business model innovation*. MIT Sloan Management Review, 53(3), 41–49. <https://doi.org/10.1002/smj.187>
- Amit, R. H., & Zott, C [Christoph] (2010). *Business Model Innovation: Creating Value in Times of Change*. SSRN Electronic Journal. Advance online publication. <https://doi.org/10.2139/ssrn.1701660>
- Arnold, C., Kiel, D., & Voigt, K.-I [Kai-Ingo]. (2016). *How the industrial Internet of Things changes Business Models in different manufacturing industries* (Vol. 20). <https://doi.org/10.1142/S1363919616400156>
- Bawono, M., & Mihardjo, L. (2020). *Driving transformation performance through innovation and experience model*. Management Science Letters. Advance online publication. <https://doi.org/10.5267/j.msl.2019.11.032>
- Biloslavo, R., Bagnoli, C., Massaro, M., & Cosentino, A. (2020). *Business model transformation toward sustainability: the impact of legitimation*. Management Decision. Advance online publication. <https://doi.org/10.1108/MD-09-2019-1296>
- Bouwman, H., Nikou, S., Molina-Castillo, F. J., & Reuver, M. de (2018). *The impact of digitalization on business models*. Digital Policy, Regulation and Governance. Advance online publication. <https://doi.org/10.1108/DPRG-07-2017-0039>
- Brasseur, T.-M., Mladenow, A., & Strauss, C. (2017). *Open business model innovation: Literature review and agenda for future research*. Business Informatics, 2017(4). <https://doi.org/10.17323/1998-0663.2017.4.7.16>
- Brenk, S., Lüttgens, D., Diener, K., & Piller, F. (2019). *Learning from failures in business model innovation: solving decision-making logic conflicts through intrapreneurial effectuation*. Journal of Business Economics. Advance online publication. <https://doi.org/10.1007/s11573-019-00954-1>
- Broekhuizen, T [T.L.J.], Broekhuis, M., Gijzenberg, M. J., & Wieringa, J. E. (2021). *Introduction to the special issue – Digital business models: A multi-disciplinary and multi-stakeholder perspective*. Journal of Business Research. Advance online. <https://doi.org/10.1016/j.jbusres.2020.04.014>
- Caputo, A [Andrea], Pizzi, S., Pellegrini, M. M., & Dabić, M. (2020). *Digitalization and business models: Where are we going? A science map of the field*. Journal of Business Research, 123, 489–501. <https://doi.org/10.1016/j.jbusres.2020.09.053>
- 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., Kesting, T., & Naskrent, J. (2019). *A rolling stone gathers no moss: The effect of customers' perceived business model innovativeness on customer value co-creation behavior and customer satisfaction in the service sector*. R and D Management, 49(2). <https://doi.org/10.1111/radm.12318>
- Clohessy, T., Acton, T., & Morgan, L. (2019). *(De)Mystifying the information and communication technology business model concept*. International Journal of Networking and Virtual Organisations. Advance online publication. <https://doi.org/10.1504/IJNVO.2019.100599>
- Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). *Unpacking the Disruption Process: New Technology, Business Models, and Incumbent Adaptation*. Journal of Management Studies, 55(7), 1166–1202. <https://doi.org/10.1111/joms.12352>
- Ertz, M., Leblanc-Proulx, S., Sarigöllü, E., & Morin, V. (2019). *Made to break? A taxonomy of business models on product lifetime extension*. Journal of Cleaner Production. Advance online publication. <https://doi.org/10.1016/j.jclepro.2019.06.264>
- Fernández-Rovira, C., Álvarez Valdés, J., Molleví, G., & Nicolas-Sans, R. (2021). *The digital transformation of business. Towards the datafication of the relationship with customers*. Technological Forecasting and Social Change, 162, 1–12. <https://doi.org/10.1016/j.techfore.2020.120339>
- Garzella, S., Fiorentino, R., Caputo, A [A.], & Lardo, A. (2021). *Business model innovation in SMEs: the role of boundaries in the digital era*. Technology Analysis and Strategic Management. Advance online publication. <https://doi.org/10.1080/09537325.2020.1787374>
- George, G., & Bock, A. J. J. (2009). *The Business Model in Practice and its Implications for Entrepreneurship Research*. Entrepreneurship Theory and Practice, 25(1), 16–26. <https://doi.org/10.2139/ssrn.1490251>
- Günzel, F., & Holm, A. B. (2013). *One size does not fit all-understanding the front-end and back-end of business model innovation*. International Journal of Innovation Management. Advance online publication. <https://doi.org/10.1142/S1363919613400021>
- Haaker, T., Bouwman, H., Janssen, W., & Reuver, M. de (2017). *Business model stress testing: A practical approach to test the robustness of a business model*. Futures. Advance online publication. <https://doi.org/10.1016/j.futures.2017.04.003>
- Henneberg, S., Zaki, M [Mohamed], Ismail, M., Misus, G., Leischnig, A., Heirati, N., & Cambridge Service Alliance (2020). *Driving Business Model Transformation - How ready is your digital thread?* Advance online publication.
- Hoch, N. B., & Brad, S. (2020). *Managing business model innovation: an innovative approach towards designing a digital ecosystem and multi-sided platform*. Business Process Management Journal, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/BPMJ-01-2020-0017>
- 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>
- Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). *Reinventing your business model*. Harvard Business Review, 86(12), 57–68.

- Kiel, D., Arnold, C., & Voigt, K.-I [Kai-Ingo] (2016). *The influence of the Industrial Internet of Things on business models of established manufacturing companies – A business level perspective*. In Pretorius L., Thopil G.A., & Hosni Y. (Eds.) (Vol. 68, pp. 4–19). International Association for Management of Technology Conference (IAMOT) and the Graduate School of Technology Management, University of Pretoria. <https://doi.org/10.1016/j.technovation.2017.09.003>
- Kim, S., Bowen, M., & Wen, X. (2019). *The ultimate co-creation: leveraging customer input in business model innovation*. AMS Review, 9(3), 339–356. <https://doi.org/10.1007/s13162-018-0129-8>
- Koç, H., & Sandkuhl, K. (2017). *Capability-driven digital service innovation: Implications from business model and service process perspectives*. Lecture Notes in Business Information Processing. Advance online publication. https://doi.org/10.1007/978-3-319-70241-4_9
- Kohtamäki, M., Parida, V [V.], Oghazi, P., Gebauer, H., & Baines, T. (2019). *Digital servitization business models in ecosystems: A theory of the firm*. Journal of Business Research. Advance online publication. <https://doi.org/10.1016/j.jbusres.2019.06.027>
- Kukkamalla, P. K., Bikfalvi, A., & Arbussa, A. (2020). *The new BMW: business model innovation transforms an automotive leader*. Journal of Business Strategy. Advance online publication. <https://doi.org/10.1108/JBS-02-2020-0021>
- Latilla, V., Urbinati, A [A.], Cavallo, A., Franzò, S., & Ghezzi, A. (2020). *Organizational Re-Design for Business model innovation while exploiting digital technologies: A single case study of an energy company*. International Journal of Innovation and Technology Management. Advance online publication. <https://doi.org/10.1142/S0219877020400027>
- Lenka, S., Parida, V [Vinit], & Wincent, J. (2017). *Digitalization capabilities as enablers of value co-creation in servitizing firms*. Psychology & Marketing, 34(1), 92–100. <https://doi.org/10.1002/mar.20975>
- Li, F. (2020). *The digital transformation of business models in the creative industries: A holistic framework and emerging trends*. Technovation. Advance online publication. <https://doi.org/10.1016/j.technovation.2017.12.004>
- Linde, L., Sjödin, D [D.], Parida, V [V.], & Gebauer, H. (2020). *Evaluation of Digital Business Model Opportunities: A Framework for Avoiding Digitalization Traps*. Research Technology Management. Advance online publication. <https://doi.org/10.1080/08956308.2021.1842664>
- Massa, L., Tucci, C. L., & Afuah, A. (2017). *A critical assessment of business model research*. Academy of Management Annals, 11(1), 2–108. <https://doi.org/10.5465/annals.2014.0072>
- Mezger, F. (2014). *Toward a capability-based conceptualization of business model innovation: Insights from an explorative study*. R and D Management, 44(5), 429–449. <https://doi.org/10.1111/radm.12076>
- Mihardjo, L., Sasmoko, Alamsjah, F., & Elidjen (2018). *The role of distinctive organisational capability in formulating co-creation strategy and business model innovation*, Polish Journal of Management Studies. Advance online publication. <https://doi.org/10.17512/pjms.2018.18.2.16>
- Mihardjo, L., Sasmoko, Alamsyah, F., & Elidjen (2019). *Boosting the firm transformation in industry 5.0: Experience-agility innovation model*. International Journal of Recent

- Technology and Engineering. Advance online publication. <https://doi.org/10.35940/ijrte.B1154.0982S919>
- Mihardjo, L., Sasmoko, Elidjen, & Rukmana, R. (2019). *Developing co-creation-driven innovation: The role of customer experience orientation and organizational agility*. International Journal of Recent Technology and Engineering. Advance online publication.
- Ng, I. C. L., Nudurupati, S. S., & Tasker, P. (2010). *Value co-creation in the delivery of outcome-based contracts for business-to-business service*. AIM Research.
- Parida, V [V.], Sjödin, D [D.], & Reim, W. (2019). *Reviewing literature on digitalization, business model innovation, and sustainable industry: Past achievements and future promises*. Sustainability (Switzerland), 11(2). <https://doi.org/10.3390/su11020391>
- Plé, L., Lecocq, X., & Angot, J. (2010). *Customer-Integrated Business Models: A Theoretical Framework*. M@n@gement, 13(4), 226. <https://doi.org/10.3917/mana.134.0226>
- Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Schirgi, E. (2019). *Digitalization and its influence on business model innovation*. Journal of Manufacturing Technology Management. Advance online publication. <https://doi.org/10.1108/JMTM-01-2018-0020>
- Ricciotti, F. (2020). *From value chain to value network: a systematic literature review*. Management Review Quarterly, 70(2), 191–212. <https://doi.org/10.1007/s11301-019-00164-7>
- Ritter, T., & Pedersen, C. L. (2020). *Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future*. Industrial Marketing Management. Advance online publication. <https://doi.org/10.1016/j.indmarman.2019.11.019>
- Sahut, J.-M., Dana, L.-P., & Laroche, M. (2020). *Digital innovations, impacts on marketing, value chain and business models: An introduction*. Canadian Journal of Administrative Sciences. Advance online publication. <https://doi.org/10.1002/cjas.1558>
- Sathananthan, S., Hoetker, P., Gamrad, D., Katterbach, D., & Myrzik, J. (2017). *Realizing digital transformation through a digital business model design process*. Joint 13th CTTE and 10th CMI Conference on Internet of Things - Business Models, Users, and Networks. Advance online publication. <https://doi.org/10.1109/CTTE.2017.8260996>
- Schallmo, D., Williams, C. A., & Boardman, L. (2017). *Digital transformation of business models-best practice, enablers, and roadmap*. International Journal of Innovation Management. Advance online publication. <https://doi.org/10.1142/S136391961740014X>
- Schneider, S., & Spieth, P. (2013). *Business model innovation: Towards an integrated future research agenda*. International Journal of Innovation Management, 17(01), 1340001. <https://doi.org/10.1142/S136391961340001X>
- Schuh, G., Doelle, C., & Ebi, M. (2018). *Methodology for business model related product design*. PICMET 2018 - Portland International Conference on Management of Engineering and Technology: Managing Technological Entrepreneurship: The Engine for Economic Growth, Proceedings. Advance online publication. <https://doi.org/10.23919/PICMET.2018.8481925>
- Sestino, A., Prete, M. I., Piper, L., & Guido, G. (2020). *Internet of Things and Big Data as enablers for business digitalization strategies*. Technovation. Advance online publication. <https://doi.org/10.1016/j.technovation.2020.102173>

- Sjödin, D [David], Parida, V [Vinit], Palmié, M., & Wincent, J. (2021). *How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops*. Journal of Business Research, 134, 574–587. <https://doi.org/10.1016/j.jbusres.2021.05.009>
- Skaržauskaitė, M. (2013). *Measuring and Managing Value Co-Creation Process: Overview of Existing Theoretical Models*. Socialinės Technologijos, 3(1), 115–129. <https://doi.org/10.13165/ST-13-3-1-08>
- 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.2017.06.007>
- 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>
- Tohănean, D., Buzatu, A. I., Baba, C.-A., & Georgescu, B. (2020). *Business model innovation through the use of digital technologies: Managing risks and creating sustainability*. Amfiteatru Economic. Advance online publication.
- Urbinati, A [A.], Bogers, M., Chiesa, V [V.], & Frattini, F [F.] (2019). *Creating and capturing value from Big Data: A multiple-case study analysis of provider companies*. Technovation. Advance online publication. <https://doi.org/10.1016/j.technovation.2018.07.004>
- Urbinati, A [Andrea], Chiaroni, D., Chiesa, V [Vittorio], & Frattini, F [Federico] (2019). *The Role of Business Model Design in the Diffusion of Innovations: An Analysis of a Sample of Unicorn-Tech Companies*. International Journal of Innovation and Technology Management, 16(01), 1–35. <https://doi.org/10.1142/S0219877019500111>
- Verhoef, P. C., Broekhuizen, T [Thijs], Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). *Digital transformation: A multidisciplinary reflection and research agenda*. Journal of Business Research, 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Virtanen, J.-P., Hyypä, H., Ståhle, P., Kalliokoski, S., Kähkönen, K. E., Ahlavo, M., Launonen, P., Hyypä, J., Kukko, A., & Julin, A. (2016). *New value chains to construction*, 954–965.
- 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>
- Wasono Mihardjo, L. W., Sasmoko, Alamsjah, F., & Elidjen (2021). *Role of customer experience in developing co-creation strategy and business model innovation: Study on Indonesia telecommunication firms in facing Industry 4.0*. International Journal of Business and Globalisation, 28(1-2), 48–63. <https://doi.org/10.1504/IJBG.2021.115302>
- Weking, J., Stöcker, M., Kowalkiewicz, M., Böhm, M., & Krcmar, H. (2020). *Leveraging industry 4.0 – A business model pattern framework*. International Journal of Production Economics, 225, 1–17. <https://doi.org/10.1016/j.ijpe.2019.107588>
- Witschel, D., Döhla, A., Kaiser, M., Voigt, K.-I [K.-I.], & Pfletschinger, T. (2019). *Riding on the wave of digitization: insights how and under what settings dynamic capabilities facilitate digital-driven business model change*. Journal of Business Economics. <https://doi.org/10.1007/s11573-019-00950-5>

- Woschank, M., Rauch, E., & Zsifkovits, H. (2020). *A Review of Further Directions for Artificial Intelligence, Machine Learning, and Deep Learning in Smart Logistics Sustainability* (Switzerland), 12(9), 3760. <https://doi.org/10.3390/su12093760>
- Zaki, M [M.] (2019). *Digital transformation: harnessing digital technologies for the next generation of services*. Journal of Services Marketing. Advance online publication. <https://doi.org/10.1108/JSM-01-2019-0034>
- Zott, C [C.], & Amit, R. (2007). *Business model design and the performance of entrepreneurial firms*. Organization Science, 18(2), 181–199. <https://doi.org/10.1287/orsc.1060.0232>