

# Digitalization on business model innovation: a systematic literature review on current studies

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## ARTICLE INFO

### Article history

Received July 29, 2023

Revised October 02, 2023

Accepted April 25, 2024

### Keywords

Digitalization

Business model

Literature review

## ABSTRACT

This research examines business model innovation (BMI), which has recently received attention from academics and practitioners due to the enhancement of global competition and the constant need to adapt to the changing environment. Therefore, the main objective of this study is to provide an overview of state-of-the-art research on business model innovation by conducting a systematic literature review. The author's review provides a deeper understanding and detail on the main components of Business Model Innovation (BMI). Likewise, the author's research identifies the role of digitalization in Business Model Innovation. This study comprises a comprehensive literature evaluation with a particular focus on studies linked to the use of digital technologies and business models to understand better attempts to promote the usage of digital systems. This study aims to promote the academic conversation about how industrial companies might use digital technologies to innovate business models and create a sustainable industry. Implementing new business models that promote the implementation of digital systems necessitates an essential shift of the corporate ecosystem into one in which appreciation is jointly generated by suppliers, environment partners, and consumers through resource optimization and efficient functioning and use of technology.

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## 1. Introduction

Currently, we are entering the fourth industrial revolution (Industry 4.0) through the capitalization of the use of digital systems, namely, revolutionizing the way of doing business in the industrial value chain [1], [2]. We are witnessing a new era in which the industry is becoming increasingly 'smart' with Internet of Things (IoT) technology, intensive data exchange, and predictive analytics [3]. Numerous advantages have been identified, including how process automation and optimization can raise productivity and profitability by lowering costs, accelerating production, and drastically lowering errors [4], [5].

Most industry professionals see this shift favorably; recent BCG and PwC estimates predict that Industry 4.0 will boost productivity by 15-20% and increase revenue by more than 20% over the next five years. These data demonstrate the considerable potential for business model innovation offered by using digital technologies in business-to-business (B2B) contexts and the additional income and value-generating opportunities they present [6]. [7] asserts that businesses that maximize the benefits of big data and analytics-driven digital platforms would surpass their competitors regarding revenue growth and operational effectiveness.

Numerous industrial organizations may be inspired to test novel business models utilizing digital technology by the potential and advantages identified [7]. Following the given solution (such as pay-

per-service units, performance-based), this business model develops and structures value over the product lifecycle claim [8]. Companies must innovate their business models to deliver the benefits, constructing them around digital technologies like big data analytics, digital platforms, and artificial intelligence. Business model innovation is described by [9] as "designed, new, non-trivial modifications to the most important elements of the business model of the organization and the design of the structure that links various elements." This suggests that business model innovation might concentrate on incorporating new components into the various parts of the business model and across elements, harmonizing them within the value production framework [10].

Meanwhile, the authors discover mounting evidence that a great deal of established players across sectors are not yet prepared to gain from the adoption of digital technology. The literature has highlighted several difficulties with business model innovation. For instance, finding, choosing, and implementing tailored digital technologies to improve operations is a significant barrier for many businesses [11].

A further barrier is the requirement for a greater comprehension of how to build, modify, assess, and sell/buy immaterial offerings. This is seen in the case of cutting-edge internet-based service-based company models, wherein the deal guarantees a specific outcome for the consumer rather than a good or service itself [12]. According to [13], [14], the new requirements for digital technology and business model innovation allowed continual development to compete with rivals and offer long-term value to customers. Therefore, leveraging the adoption of technological advances works in tandem with business model innovation, which calls for new offers and procedures that specify how value is generated, provided, and collected amongst suppliers, customers, and various other industry participants.

Nevertheless, the study literature in this area still has many holes. In order to identify underlying study themes and offer objectives for future research on business model innovation, the researcher opted to perform a systematic literature review. In order to enhance academic debate on how digital technologies promote business model innovation, this specific purpose is to suggest a study agenda.

## 2. Method

This study comprises a comprehensive literature evaluation focusing on studies linked to the use of digital technologies and business models to understand better attempts to promote the usage of digital systems. A systematic review differs from a general review [13] since it uses a repeatable, scientific, open method involving a theoretical review of previous findings. By doing this, bias is less likely to occur, and data analysis is seen as more legitimate. These advantages produce more trustworthy outcomes, which give conclusions a solid foundation [15].

Using one of the largest interdisciplinary collections of abstracts and citations of literature with peer review, Scopus, the author's library service, did the literature searches. Research from both large and small publishers, such as Elsevier, Emerald, Springer, and Wiley, is included in the database. There is a high degree of certainty that studies on technology usage and associated fields with a business or managerial focus will be found because this database comprises diverse research projects that are continuously reviewed. Specific keywords, such as Industry 4.0 and the Internet of Things, are utilized to locate pertinent articles. The writers chose publications that adhered to the guidelines [16] using interpretive analysis. Following the initial search, the articles were further filtered in three steps as show in Fig. 1.

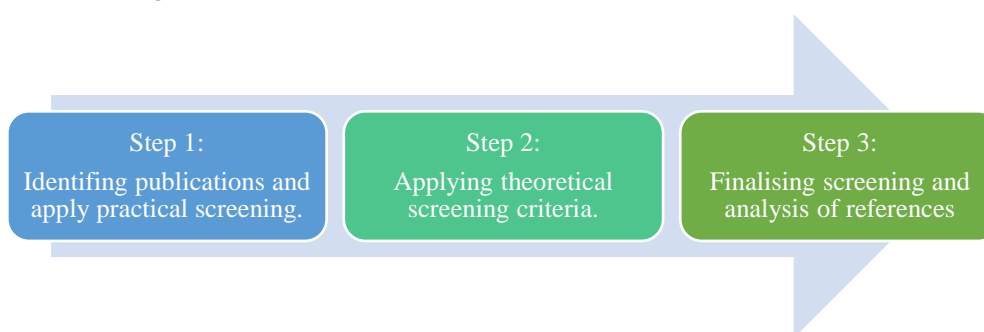


Fig. 1. The Steps to Find the Articles

As we can see in Chart 1 above, each step can be described in three steps. The first step is identifying publications and applying practical screening. Establishing some practical screening standards is the first step in ensuring that only high-quality journals are considered in the review. In order to enable the researcher to concentrate more on journal articles and book chapters, conference papers, work papers, feedback, and book article reviews were thus removed from the search. Other quality standards, such as journal ratings, were not considered while sorting. The explanation is that given how rapidly the field is developing, papers on the application of digital technologies are occasionally not published in prestigious journals. The keywords chosen in the literature analysis were created to cover the utilization of digital systems and issues closely related to similar phenomena studies. In addition to "use of digital systems," the search also included the terms "digitalization," "IoT," "Internet of Things," and "Industry 4.0."

Additionally, to satisfy the search criteria, relevant publications must contain the term "business model" in the heading, abstract, or keywords. Only accessible to students majoring in business, environmental sciences, economics, and social sciences, in this instance, the search turned up 196 items that were judged pertinent for examination. All articles' citations, abstracts, and keyword data have been transferred to an Excel document for additional examination.

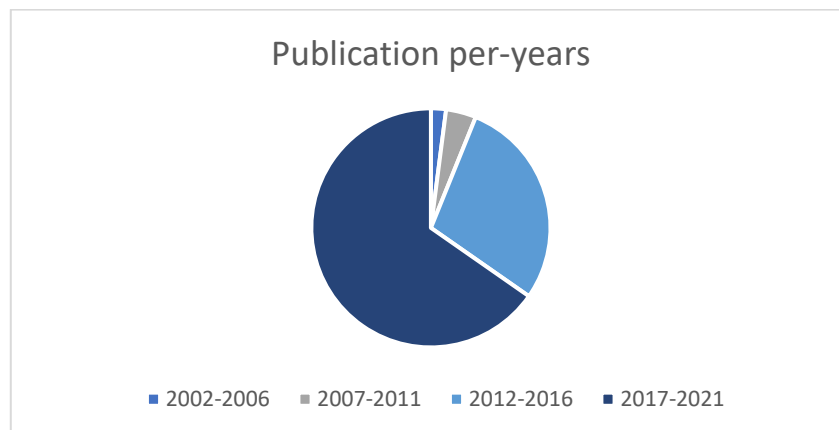
The second step is applying theoretical screening criteria. Theoretical or empirical research involving elements related to the implementation of technological systems and business models being their primary objective are preserved for further analysis due to the study's focus on implementing digital system business models. Remarkably, all summaries are thoroughly evaluated, and full papers are only selected for those that emphasize specific elements related to the commercialization of the adoption of digital systems or particular components of business models. A total of 114 articles were chosen for defense following the subsequent phase of screening.

The last step is screening, analyzing references, and interviewing with experts in the field. In this step, all 114 papers that passed the selection requirements were accessed and thoroughly read for the last analysis of content. Each article's citation references serve as an additional literature study source. The open-coding analysis of the content method was applied to the analysis of the articles. This method involves writing comments and titles in the text according to how they relate to the study topic. It is acknowledged that every research may contribute to various titles when reviewing studies inductively. Following that, all titles were gathered to debate their worth generation, delivery, and capture—the three components of the business model.

### 3. Results and Discussion

#### 3.1. Article Reviews, Journal Outlets, Theoretical Perspectives

This graphic illustration of 114 articles published over the years shows that this field is still growing. Articles in the 2002-2006 period were still around 2.63%, then followed by a steady increase until the 2007-2011 period rose to 4.39%. In 2012-2016, it rose to 28.07%, and in 2017-2021, it clearly shows that the topic has proliferated to 64.91%. In this case, it can be concluded that this topic is essential to discuss. An overview of publications per year as show in [Fig. 2](#).



**Fig. 2.** The distribution of Publications per-years

One hundred fourteen articles have been published in 73 journals, demonstrating the topic's relevance to various research disciplines. The input of diverse research activity will help the debate of this study's findings to continue expanding. Numerous journals also publish papers on environmental and social transformation and articles on marketing, innovation, and production management. Additionally, exceptional edition contributions (i.e., six articles) are currently not included in the systematic search, which accounts for the Sustainability journal's lower ranking in the chart. The authors do, however, hope that following the release of the unique edition contributions, the sustainability publications will not simply rise to the top of the list of publications but also take the lead in fostering discussions on adopting digital systems and sustainable business models. Top journal as show in [Table 1](#).

**Table.1** Top journals with at least two publications included in the review

Journal	Number of Articles
International Journal of Production Economics	6
Technological Forecasting and Social Change	5
International Journal of Innovation Management	4
Journal Of Business and Industrial Marketing	3
Research-Technology Management	3
Technology In Society	3
Business Horizons	2
Business Process Management Journal	2
Industrial Management and Data Systems	2
Info	2
International Journal of Production Research	2
International Journal of Social Ecology and Sustainable Development	2
Journal Of Information Technology Teaching Cases	2
Journal Of Manufacturing Technology Management	2
Quality-Access to Success	2
Review Of Managerial Science	2
Service Business	2
Strategic Change	2

<sup>a</sup> Source. [\[15\]](#)

The authors also discover that a wide range of theoretical stances are used extensively in the growing literature on implementing digital systems and business models within a business-to-business setting. Depending on the utilization of digital systems, the elements of the business model, and the primary sources, [Table 2](#) presents the theoretically examined themes. Researchers employ a variety of theoretical frameworks to comprehend and clarify events that involve the application of digital technology and business models. The following theoretical viewpoints are specifically mentioned in this review: resource-based views and dynamic capacities, service-dominant logic, network theory, platform literature, transition theory, sustainability, entrepreneurship, and transaction cost economics. However, we restrict our debate to just a few theoretical viewpoints— from which we can gather sufficient data from research to make valuable inferences.

The authors discover evidence of medium to minimal degrees of maturity in the use of theories when attempting to comprehend whether the mainstreaming of digital technologies facilitates innovation and the actualization of business models concerning previous similar review studies. The prevailing viewpoint on the subject is the resource-based perspective, frequently used to highlight the significance of the assets and skills of a business in preserving its edge over its rivals [\[17\]](#), [\[18\]](#) detect expenditures in expertise growth, collaboration with clients, big data, and intellectual and financial assets [\[19\]](#) that must guarantee the resulting utilization of digital systems and business models. Previous research has addressed the need for new capabilities. The studies on flexible abilities, which are commonly referenced in order to refer to an organization's ability to adapt to quickly changing settings, are also related to the RBV sub-stream. For instance, [\[19\]](#) created a framework that distinguishes digital system utilization activities in the phases of "sensing," "seizing," and "reconfiguring" dynamic capabilities as they relate to the worth idea, delivery of value, and value

capture of business model elements. Researchers who have made dynamic capabilities the focal point of their framework advocate for an environment-strategy-structure fit [20] for facilitating the dynamics of digital business models and changing policy to accommodate the usage of digital systems [21].

**Table.2** Statement of Perspective and References

Theoretical Perspective	Digitalization	BM-Value Creation	BM-Value Delivery	BM-Value Capture	Key References
Resource-based view (RBV) and dynamic capabilities (M)	-Conceptualizing digitalization capabilities -Internet of Things (IoT) strategy	-Value co-creation with customers -Developing absorptive capacity	-Mass service customization -Dynamic orchestration of supply chains	-Reconfigure offers, resources and revenue streams	Gauthier et al., 2018; Hasselblatt et al., 2018; Kohtamaki and Helo, 2015; Raichinger et al., 2018
Transition theory (L)	-Enabler for new pathways	-Radical innovation -Possible pathways	-System is transitioned -Structural changes	-Focus workable actions to economic and social systems	Gorissen et al., 2016; Sung, 2018; Parida et al., 2015
Enterprenuership (L)	-Generate value from technology	-Oppurtunity recognition -Creativity -Distruptive business models	-New actors in the ecosystem	-Generate value from technology	Ehret and Wirtz, 2017; Krotov, 2017
Transaction cost theory (L)	-Reduced measurement cost	-Encourage non-ownership contracts	-Deliver outputs	-Manage downside risk	Ehret and Wirtz, 2017
Platform theory (L)	-Digital platform perspective	-Build information module	-Integration between back-end and fron-end	-Customization and standardization	Cenamor et al., 2017; Eloranta and Turunen, 2016

<sup>b</sup> Source: [15]

The authors also want to draw attention to four theoretical stances that lack maturity. [22] provide a transformational business model innovation strategy based on a transitional concept that encourages more dramatic alterations in business models instead of constant adaptation to inferior solutions. The shift towards an economic and social framework that can support innovative change is crucial, even though other scholars have suggested action plans that are specific and feasible. Some researchers use entrepreneurial theory to hasten the value created by technology, building on the urge for more radical transformation [21]. To do this, business owners thinking about using more expensive resources recognize the upside potential and join the ecosystem of IoT asset owners. Similarly, [23] calls for increased innovation and entrepreneurship in creating more revolutionary business models that unlock the full potential of implementing technological systems and the Internet. Transaction cost theory was used by [24] to illustrate how IoT might help reduce downside risk and promote non-proprietary contracts where production is bought. The studies by [25], [26] and [27] acknowledge the significance of platform thinking in implementing digital transformation and seeking advantageous possibilities; they recommend using the platform to share knowledge and accomplish greater degrees of modification as well as efficiency in operation via front-end and back and back-end integration. In order to derive insightful conclusions from visible phenomenon-based studies regarding the adoption of digital technologies and business models, the authors urge a more thorough adoption of theoretical approaches.

The overall conclusions derived from the literature review have significant research implications. The authors have specifically outlined three conceptual implications that can assist in guiding the creation of a research plan for the future on adopting digital technologies with business model innovation. First, researchers and practitioners focus on the promising adoption of digital systems.



However, a literature review shows that studies regarding digital systems are widespread, and there is a need to distinguish between digital technologies and the use of digital systems. A progressive starting point for research is establishing a mutually agreed definition of the use of digital systems, which is currently lacking. The authors of this special issue contend that digital systems should be capable of depicting the application of technological advances to new business models new income streams, and producing value potential in industrial ecosystems. This emphasizes adopting digital systems as something that "refers to a conclusion, not a goal in itself," assuring how to profit from implementing digital platforms via business model innovation lies at the core of the crucial conversation on adopting digital systems.

Second, the authors underline the necessity for the business model strategy from the standpoint that it has sub-components, which are creating value, delivery of value, and value capture, for it to perform well, building on the discussion of business model innovation literature. Understanding the effects of using digital technology is quite helpful in all regards. Companies who want to use digital technologies and reap the benefits must examine and comprehend their inadequacies in each aspect after this. Businesses may be adept at handling the difficulties related to appreciating the distinctive value of their goods and figuring out how to extract the monetary benefit (i.e., extracting advantage), but they lack a deeper understanding of the kinds of tactics. The partnership must fulfill its obligations (i.e., deliver value). This point of view highlights the necessity of business model "alignment." [28] claim that business model alignment ensures all parts cooperate to carry out the organization's overarching business logic. The 'misalignment' of a business model may also cause value leakage, which has a detrimental effect on performance. Therefore, an essential agenda item for future research is identifying topics relating to the prior events and procedures that result in business model alignment or misalignment.

A need for an "ecosystem" perspective has emerged from a research survey on implementing digital technologies and business model innovation. Instead of considering the viewpoint of ecosystem actors (suppliers, clients, business collaborators, and digital actors), existing business model innovation approaches frequently adopt an overly firm-centric approach. As a result, there are still many unanswered problems around digital transformation, including activity distribution, responsibilities, revenue and cost communication frameworks, purchasing, generating value, and profit capture [29]. Implementing new business models that promote the implementation of digital systems necessitates an essential shift of the corporate ecosystem (especially concerning customers) into one in which appreciation is jointly generated by suppliers, the environment partners, and consumers through resource optimization and efficient functioning and use of technology.

The authors highlight the key research themes relating to the interactions between using digital systems, developing innovative business models, and sustainable industries. They also make recommendations for further research. The literature has significantly benefited from the existing research, but there is still room for more investigation in several areas related to the digitization of business model innovation. The authors list the gaps that the scientific community needs to close below. The author categorizes this theme for future research as a part of business model innovation.

First, how can businesses handle a variety of business models that are supported by digital technology? Companies must create cutting-edge services for their clients as they transition to the digital world. It is currently unclear how to create such fresh business models, integrate them with product-centric goods and services, and control how they affect a company's entire business strategy. Companies risk cannibalizing their current business models when switching to sophisticated digital business models, which would spark fierce internal resistance and undermine attachment to value development initiatives.

Second, how can digital technology deployment be overseen to create value through a fluid innovation in the service process? The advantages of using agile methods have been extensively researched in the IT sector. However, its application in traditional industries may become more crucial as businesses must innovate iteratively, gradually developing programs and statistics to derive more significant benefits than adopting computerized systems.

Third, examining how company culture has evolved due to digital servitization is required. As delivery firms increasingly concentrate on cutting-edge service-based business models, an internal cultural change is required.

Fourth, research into how the use of digital systems may render it more accessible to integrate the front-end (such as the delivery of services system) and back-end (such as the head positions of power) is also necessary to lessen the difficulties posed by geographic distance as it allows for distant submit of fresh functionality.

In order to discover distinct revenue models, including cost-per-use and memberships, and distinct models for revenue that can correspond to changes in customer needs, research on what kinds of revenue models must exist to record appreciation from digital companies should also be conducted. Future research can determine the circumstances in which specific revenue models perform well and how to influence customers to modify how they buy digital products.

#### 4. Conclusion

This study aims to promote the academic conversation about how industrial companies might use digital technologies to innovate business models and create a sustainable industry. According to the literature assessment, the deployment of digital technology can enable a sustainable industry, and a crucial enabler is the business model. Over the past three years, there has been exponential growth in the body of knowledge about business strategies for implementing digital technologies, and numerous significant results have been published. Considering the review and evaluation of the body of literature, it can be seen clearly that digital adoption shows a link to business model innovation. The framework's logic shows that adopting digital systems driven by diversified digital technologies enables business model innovation. The elements of worth generation, delivery, and capture then shift, offering long-term benefits for the sector.

#### Acknowledgment

The researcher would like to thank those who have helped complete this article, especially when collecting data and reviewing the contents of the article.

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