SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 235

# SUSTAINABLE BUSINESS MODELS: THEORY, CHALLENGES AND DEVELOPMENT PROSPECTS

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**Purpose:** This paper aims to analyze the essence, theoretical frameworks, implementation challenges, and development prospects of sustainable business models. The research is motivated by the increasing urgency to address global environmental and social challenges, such as climate change, resource depletion, and social inequalities, which require organizations to transform their value creation processes by integrating economic, environmental, and social objectives.
**Design/methodology/approach**: The study employs a narrative literature review, synthesizing recent scientific publications from the last 15 years sourced from databases like Scopus, Web of Science, and platforms such as ResearchGate and Google Scholar. The review focuses on definitions, conceptual frameworks, challenges, innovations, and future directions of sustainable business models. The approach is interdisciplinary, covering economic, environmental, and social dimensions, and aims to refine research questions for future systematic reviews.
**Findings:** The review reveals that sustainable business models are defined by their integration of the triple bottom line-economic, environmental, and social value creation for a broad range of stakeholders. Innovation is identified as both a driver and a requirement for sustainable business model evolution, though practical implementation and impact assessment remain difficult.
**Research limitations/implications**: Future research should deepen empirical analysis, develop practical tools, and conduct detailed case studies to better understand the real-world application and effectiveness of sustainable business models.
**Practical implications:** The findings highlight the need for organizations to adopt holistic approaches and stakeholder engagement strategies, supported by tools like the TLBMC, to successfully implement sustainable business models.
**Social implications:** Widespread adoption of sustainable business models can contribute to improved environmental protection, social equity, and quality of life. By promoting responsible practices, these models can influence public attitudes, inform policy, and support progress toward sustainable development goals.
**Originality/value:** This paper provides a comprehensive synthesis of contemporary literature on sustainable business models, offering an integrative perspective on definitions, frameworks, challenges, and future research directions. It is valuable for academics, practitioners, and policymakers interested in advancing sustainable business practices and strategies.

**Keywords:** sustainable business models, triple bottom line, business model innovation, circular economy, stakeholder engagement.
**Category of the paper:** research paper.

## 1. Introduction

The context and significance of sustainable business models are extremely important in today's world due to the growing awareness of environmental and social issues. Matters such as global warming, air pollution, and climate change-which have a harmful impact on people and the environment-have become some of the driving forces of world history since the late twentieth century. Consequently, the idea of sustainable development has been incorporated into both international and regional governmental programs, forcing organizations to transform their activities in pursuit of sustainable outcomes.

Modern organizations should change the way they create, deliver, and capture value from environmental, social, and economic perspectives. In this context, business models can serve as valuable tools for introducing systemic changes in organizations striving for sustainable development. They illustrate how a company operates and help to identify the key factors influencing the achievement of its goals. Innovating these models fosters the attainment of sustainable development (Goni et al., 2021).

Contemporary literature indicates that sustainable business models are an indispensable element of the economic transformation aimed at reducing environmental impact. Bocken (2023) emphasizes that the urgency of this transformation arises from mounting environmental challenges, such as climate change and the depletion of natural resources. Achieving sustainable development requires the implementation of innovative strategies that combine economic and environmental objectives, while simultaneously supporting social well-being. These models should integrate the principles of a circular economy, efficient resource use, and the minimization of emissions and waste at every stage of operation.

The main objective of this article is to present the essence of sustainable business models in the context of theoretical frameworks, implementation challenges, and development prospects. To achieve this goal, the authors conducted a narrative literature review focused on issues related to sustainable business models.

The article poses the following research questions:

RQ1: How are sustainable business models defined?

RQ2: Are there conceptual frameworks for sustainable business models?

RQ3: What factors limit the implementation of sustainable business models?

The structure of the article is as follows. The second part of the article presents the methodological approach used in the narrative literature review. The literature review first addresses the concept of sustainable business models and the definitions of this approach

adopted in the literature. Subsequently, conceptual frameworks and challenges related to the implementation of sustainable business models are analyzed. The following sections respectively discuss the role of innovation and development prospects within sustainable business models. In the final section, a summary is provided, including answers to the research questions posed, conclusions, and recommendations for future research.

## 2. Methodology

The choice of a narrative literature review for this study was deliberate, serving as an exploratory step to map the broad and interdisciplinary field of sustainable business models. According to Hensel (2020), narrative reviews are particularly valuable for refining research questions and identifying gaps in the literature, making them a suitable precursor to systematic reviews. This approach allowed the authors to synthesize diverse perspectives from economic, environmental, and social dimensions without the rigid constraints of a systematic methodology, which may limit early-stage exploration. By adopting a narrative approach, the study captures the complexity of sustainable business models, integrating theoretical frameworks, practical challenges, and emerging trends. However, the authors acknowledge the limitations of this method, including potential subjectivity in source selection and the absence of a fully replicable search protocol, which could be addressed in future systematic reviews using frameworks like PRISMA (Abramczyk, Korbel, 2022).

In conducting the narrative literature review, the authors adopted the following approach. First, the research problem was defined, namely the growing importance of sustainable development in the process of building modern business models. Next, the aim of the literature review was specified: to examine the existing body of scientific knowledge in the field of sustainable business models. The next step involved searching the literature.

The literature review was conducted using a structured yet flexible approach to ensure comprehensive coverage of the topic. Publications were sourced from academic databases (Scopus, Web of Science) and open-access platforms (ResearchGate, ResearchRabbit, Google Scholar). The search strategy employed a combination of keywords, including “sustainable business models”, “triple bottom line”, “business model innovation”, “circular economy”, and “stakeholder engagement” connected with Boolean operators (AND/OR). The initial search yielded approximately 1200 publications, which were filtered based on predefined inclusion and exclusion criteria to ensure relevance and quality. Table 1 presents the criteria used for selecting publications.

**Table 1.**
*Literature search and selection criteria*

| Criterion | Description |
|---|---|
| Keywords | Focused on terms related to sustainable business models and related concepts. |
| Language | Only publications in English were included to ensure accessibility and consistency. |
| Publication period | Publications from the last 15 years (2010-2025) to ensure relevance to contemporary challenges. |
| Publication type | Peer-reviewed articles, books, and conference proceedings were prioritized. |
| Relevance | Publications addressing definitions, frameworks, challenges, or innovations in sustainable business models. |

Source: own elaboration.

After applying these criteria, 40 key publications were selected for in-depth analysis. The narrative approach enabled the integration of these sources to address the research questions, focusing on definitions, conceptual frameworks, and implementation challenges. Future research will build on this foundation by adopting a systematic review methodology to enhance rigor and replicability.

## 3. The concept of sustainable business models

The literature points to a lack of consistency in the definition of sustainable business models; however, it also proposes a unified perspective that emphasizes the integration of economic, environmental, and social value flows. Sustainable business models require a system of sustainable value flows among multiple stakeholders, including the natural environment and society (Evans et al., 2017).

According to Comin et al. (2019), sustainable business models integrate economic, environmental, and social aspects, creating value for all stakeholders. Direct stakeholder engagement - especially that of users - in the value creation process is crucial. These models are characterized by resource- and environment-oriented operational practices, such as efficient energy use and waste reutilization. They often rely on services, technologies, and networked collaboration (Comin et al., 2019). In turn, Geissdoerfer et al. (2018) define sustainable business models as models involving proactive management of multiple stakeholders, the creation of both monetary and non-monetary value, and a long-term perspective. They view these models as modifications of traditional business models, enhanced with sustainable development objectives. Sustainable business models can be a source of competitive advantage, and their value extends beyond profit, encompassing social and environmental benefits (Geissdoerfer et al., 2018). Additionally, sustainable business models are described as those that generate competitive advantage by delivering superior customer value while also contributing to the sustainable development of both the company and society (Bocken et al., 2014). The importance of environmental protection and improved quality of life is emphasized through the adoption of the triple bottom line approach (economic, environmental, and social).

Furthermore, the broad inclusion of stakeholders and operation within value networks is considered essential, occasionally shifting the company's priorities towards maximizing social and environmental benefits. The aforementioned authors, in defining sustainable business models, underscore the integration of economic, environmental, and social aspects to create value for a wide range of stakeholders.

Sustainable business models must integrate economic, environmental, social, and temporal dimensions, treating them as interrelated. The triple bottom line approach is essential, as it measures company performance in terms of economic, environmental, and social outcomes, with the added consideration of long-term impact (Lozano, 2018). Sustainable business models focus on creating value for both customers and the company by addressing social and environmental needs. By fostering mutually beneficial interactions between the company's business model, non-governmental organizations, and other stakeholders, it is possible to support the creation of shared value within the framework of the triple bottom line (Bocken et al., 2019). Stakeholder relationship management includes designing a sustainable value proposition, systemically considering stakeholder interests and responsibilities, integrating social and environmental issues into the organization's mission and objectives, aligning business goals with employees' values and beliefs, utilizing relationship-based leadership, and engaging customers in the value creation and delivery process (Nosratabadi et al., 2019). Incorporating the principles of sustainable development strengthens corporate responsibility and contributes to an organization's long-term stability and resilience. Cross-sector collaboration is becoming a key element in achieving these goals, enabling more holistic and sustainable solutions.

The practical dimension of sustainable business models is manifested in a variety of approaches that support their design, implementation, and transformation to achieve sustainable development. A key aspect is the development of dedicated tools, such as business modeling for the sharing economy, which enable practitioners to reflect on business model choices and bridge the gap between design and implementation, as illustrated by the example of bikesharing systems (Curtis, Mont, 2020). Furthermore, sustainable business models serve a mediating function by supporting the commercialization of innovations developed by sustainable entrepreneurs - for example, in the energy services or electric vehicle sectors, where business success depends on policy support and financing (Lüdeke-Freund, 2020). In organizational practice, sustainable business models require the adaptation of existing structures through organizational learning and the use of management tools such as the Business Model Canvas or the Sustainability Balanced Scorecard. This supports systemic innovation, for instance, in product-service systems (Schaltegger et al., 2016).

## 4. Theoretical framework for sustainable business models

Frameworks for sustainable business models can be understood as conceptual structures that help companies integrate sustainability aspects (economic, environmental, and social) into their business models. The purpose of these frameworks is to support the design, analysis, implementation, and evaluation of business models that contribute to achieving sustainable development goals, while simultaneously providing value to the enterprise and its stakeholders (Dressler, Paunović, 2019).

The key aspects of sustainable business model frameworks include: typologies and classifications, components and elements, entrepreneurial value logic, tools and methods, the innovation process, and theoretical foundations. These frameworks are often used to identify and categorize different types of sustainable business models based on various criteria, such as the source of value creation or approach to sustainability (Dressler, Paunović, 2019). They may also define the key elements or building blocks of a sustainable business model, often based on existing business models (e.g., the Business Model Canvas) and expanding them to include specific sustainability aspects, such as product return systems or factors supporting the adoption of the circular economy (Lewandowski, 2016). Sustainable business model frameworks frequently focus on the logic of creating, delivering, and capturing value in a manner that incorporates sustainability aspects (Dressler, Paunović, 2019). Additionally, they may include tools and methods supporting the design and innovation of sustainable business models, such as visual models, steps for implementing the circular economy in SMEs, or matrices of innovative business models (Lewandowski, 2016). Some frameworks focus on the business model innovation process toward sustainability, emphasizing the importance of a formal, planned, and continuous reconsideration of the elements and layers of the business model (López-Nicolás et al., 2021). A review of the literature indicates that sustainable business model frameworks are based on various theories, such as resource theory, transaction cost theory, network theory, agency theory, and contingency theory, to explain why sustainable business models can be profitable and how they influence competitive advantage (Lahti et al., 2018).

The creation of sustainable value is defined as creating value for and with customers, as well as for all other stakeholders, where a business model for sustainable development captures economic value while simultaneously maintaining or regenerating natural, social, and economic capital beyond the organization's boundaries (Lüdeke-Freund et al., 2020). Creating sustainable value is essential for a sustainable business model. A business model describes how a company creates, delivers, and captures value. In the context of sustainable development, the business model should generate social, environmental, and economic value for a wide range of stakeholders. Companies implement adaptive actions toward sustainability by creating sustainable value based on their business models. Many studies focus on analyzing the concept and essence of the sustainable business model. Building a sustainable supply chain,

fostering relationships with stakeholders and consumers, re-educating or eliminating negative environmental impact, and implementing ESG practices are examples of ways to create sustainable value (Zioło et al., 2023).

Frameworks for sustainable business models are presented as an evolution of the concept that integrates the principles of sustainable development with traditional business models by emphasizing value for all stakeholders, innovation, and addressing social and environmental issues (Comin et al., 2019). The authors present an integrative perspective in which sustainable business models emerge from the combination of traditional business approaches with a sustainability perspective, taking social and environmental aspects into account alongside economic ones. Among the key aspects of conceptual frameworks for sustainable business models, Comin et al. (2019) highlight: a focus on value for all stakeholders, integration of sustainability with other business strategies, consideration of the circular economy perspective, user engagement in the value creation process, service-based models, and the adaptation of existing models for use in the context of sustainable development.

There is growing interest in the development of tools and techniques that support companies in integrating sustainability principles into their business models. The literature presents a variety of tools specifically designed for sustainable business models. One of these is the Triple Layered Business Model Canvas (TLBMC), which extends the Business Model Canvas by adding environmental and social layers, thus allowing for the consideration of the triple bottom line (Joyce, Paquin, 2016). Another tool is the Business Innovation Kit (BIK) and Sustainability Innovation Pack, which aims to help entrepreneurs explore, discuss, and define sustainable business models (Breuer, Lüdeke-Freund, 2017). Yet another tool is the Sustainable Business Transformation (SBT) Roadmap, which assists companies in developing a plan to transform towards a more sustainable business model, taking into account various stages and key decisions (Ahmed, Sundaram, 2012).

In the context of conceptual frameworks, four key criteria for sustainable business models have been proposed. The time criterion refers to the responsibility of companies for the past, present, and future consequences of their decisions, processes, and products. The life cycle criterion requires companies to monitor all phases of their products' life cycles, from resource acquisition to end-of-life. The cost and benefit criterion calls for companies to conduct a deeper analysis of costs and benefits that goes beyond a single organization and includes various stakeholder groups. The change criterion assumes that change and its durability are essential for sustainable development (Rudnicka, 2017). The author views sustainable business model frameworks as necessary to systematically incorporate social and environmental aspects into business activities. The criteria she proposes are intended to serve as a minimum framework for designing and improving these business dimensions, and are a response to the existing definitions and models of sustainable development in the business context found in the literature.

## 5. Challenges in implementing sustainable business models

Sustainable business models, while promising to combine economic benefits with social and environmental responsibility, face numerous challenges. Sustainable development requires companies to adapt to a dynamically changing business environment and to integrate a diverse range of stakeholders. Enterprises must find a balance between innovation and traditional practices, often encountering financial and regulatory barriers. As a result, managers are compelled to make strategic decisions that, on the one hand, promote long-term growth, but on the other, require overcoming complex obstacles.

The challenges associated with implementing sustainable business models are often rooted in technology. The implementation of different types of sustainable business models involves a variety of, and often specific, technological requirements. There is no single universal technological solution that can be applied to all types of sustainable business models (Karuppiah et al., 2023). In some manufacturing sectors, inadequate or outdated technological infrastructure constitutes a significant barrier to the development and implementation of modern, sustainability-based business models. In the context of business models that promote sufficiency and product longevity, such as those related to electronics, technical difficulties may arise in designing modular and configurable products. An example is the failure of the modular smartphone project, which was due to technical difficulties and implementation problems (Agwu, Bessant, 2021). Additionally, the transition from an enterprise-centered strategy to a more user-oriented approach, often supported by digital technologies, can be technically challenging. This requires understanding customer needs and adapting the product or service offering in a sustainable way, which may necessitate advanced systems for customer interaction and personalization.

Barriers also arise in the context of economic aspects. Initially, the implementation of sustainable business models may lead to cost reductions through the identification and exploitation of "low-hanging fruits" and resource optimization. However, as sustainable business models become more advanced and complex, and as efforts toward sustainability increase, costs begin to rise. Over time, the significance of cost-oriented effects seems to diminish, while the importance of value-oriented effects increases (Høgevold et al., 2014). Additionally, the implementation of some radically different approaches to design and production aimed at promoting sustainability in various markets (e.g., bioenergy solutions) may involve high financial requirements. In the context of low-income markets, obtaining the necessary funding can be particularly challenging (Agwu, Bessant, 2021).

Enhancing sustainability is often associated with change, innovation, or the adaptation of an entity to its environment. This means that when analyzing barriers to the implementation of sustainable business models, challenges related to change management and organizational culture may also be encountered. Innovations for sustainability require more integrated thinking

and the reconfiguration of many business aspects, such as capabilities, stakeholder relationships, knowledge management, leadership, and culture (Evans et al., 2017). Additionally, in the context of cooperation with local communities and governments - especially in developing countries - a lack of community engagement and governmental collaboration can hinder the creation and delivery of sustainable value (Nosratabadi et al., 2019).

Contemporary business models have evolved and are now seen as a strategic source of competitive advantage, which suggests the need for adaptation and change in the way companies operate. It is emphasized that by restructuring their organizations from a sustainability perspective, companies innovate their traditional business models, transforming the ways in which they create and add value-an approach that is also closely linked to organizational change management (Comin et al., 2019).

## 6. Sustainable business models and innovation

Sustainable business models are increasingly recognized as essential for generating revenue while simultaneously minimizing environmental harm and maximizing social benefits (Schlüter et al., 2023). Innovation is not merely a component of these models; it often defines them, creating significant positive changes or reducing negative impacts by transforming the ways in which value is created, delivered, and captured (Ulvenblad et al., 2019). This transformation is crucial for companies to adapt to changing market conditions and societal expectations, especially in the face of environmental and social pressures (Shakeel et al., 2020). As Boons et al. argue, sustainable development requires radical and systemic innovations, and business models serve as a bridge between these innovations and corporate strategies that integrate ecological, social, and economic objectives (Boons et al., 2013). An example can be found in the Swedish agri-food sector, where sustainability has become “the new frontier of innovation” delivering both financial and non-financial benefits (Ulvenblad et al., 2019). This highlights that innovation is not only a tool but also the fundamental driving force behind sustainable business models (Bilan et al., 2020).

Innovations in sustainable business models take a variety of forms, ranging from operational optimization to organizational transformation and systemic collaboration (Ulvenblad et al., 2019). The concept of innovation in sustainable business models centers on changing value propositions, and the mechanisms of value creation, delivery, and capture, in order to align them with sustainability goals (Shakeel et al., 2020). In the manufacturing sector, business model innovations go beyond technological advancements, offering competitive advantages by identifying and utilizing untapped value in existing models (Yang et al., 2017). Within the context of the circular economy, business model innovations are essential for implementing

circular practices, requiring companies to rethink value creation and capture to close resource loops (Bocken et al., 2019). An iterative approach based on design thinking, in turn, allows for the continuous improvement of sustainable business models through human-centered methods (He, Ortiz, 2021).

Despite their crucial role, innovations in sustainable business models face significant challenges. One of the main issues is the difficulty of assessing the impact of these models, especially in the early stages when there is a lack of quantitative data, time, and expertise. Failing to consider the broader system in which sustainable business models operate can lead to incomplete sustainability assessments or even greenwashing (Schlüter et al., 2023). The high failure rate of innovations in sustainable business models results from the lack of reliable methods and the tension between traditional innovation objectives and sustainability requirements, which complicates the process due to a greater number of stakeholders and potential conflicts (He, Ortiz, 2021).

The literature proposes various tools and methodologies to support innovation in sustainable business models. Systems thinking is crucial for understanding the connections between social and environmental issues, helping to anticipate unintended consequences, particularly in the early stages of Sustainable Business Model Innovation (SBMI) (Schlüter et al., 2023). Design thinking offers an iterative, human-centered approach to designing sustainable business models, while the integration of the Framework for Strategic Sustainable Development (FSSD) with the Business Model Canvas (BMC) supports the strategic design of sustainability-oriented business models (França et al., 2017; He, Ortiz, 2021).

Innovation is indispensable for the creation and evolution of sustainable business models, enabling companies to generate value in a sustainable and competitive manner (Mignon, Bankel, 2023). However, fully realizing this potential requires overcoming challenges such as insufficient methods for impact assessment and the need for better alignment of innovation with sustainability goals (Schlüter et al., 2023). Further research should focus on precisely defining the relationships between business model innovations and sustainability outcomes, as well as on developing straightforward, accessible tools for practitioners (Mignon, Bankel, 2023).

## 7. The future of sustainable business models

The literature indicates a diversity of approaches to sustainable business. A typology of sustainable business strategies has been proposed, distinguishing four main categories. The first is pollution prevention (eco-efficiency), which focuses on minimizing environmental impact through process efficiency. The second is sustainable products and services (eco-differentiation), which involves offering innovative, environmentally friendly solutions. The third is sustainability in the value chain, which entails incorporating sustainability aspects

at every stage of the supply chain. Finally, the fourth is base-of-the-pyramid ventures, which address the needs of the poorest social groups (Gauthier, 2017). Each of these strategies requires specific capabilities and resources, highlighting the variety of paths to sustainable development. Aagaard (2019), on the other hand, argues for the need for a unified language and patterns for sustainable business models, which could facilitate the transfer of knowledge and best practices across industries. This approach complements Gauthier's typology by offering a more systematic framework for classifying and standardizing sustainable business models, which may accelerate their adoption on a larger scale.

Another important trend in the literature is the systemic and dynamic approach. Cosenz et al. (2020) introduced Dynamic Business Modeling for Sustainability (DBMfS), which leverages system dynamics to analyze complex interactions in the process of creating sustainable value. This approach allows for a better understanding of the interdependencies between business model elements, which is crucial in the context of changing external conditions. Similarly, Bocken et al. (2019) propose the Business Model Ecology (EBME) framework, which emphasizes experimentation and understanding business ecosystems. The authors stress that the success of sustainable business models requires not only model design but also continuous testing and adaptation. Compared to static typologies discussed, for example, by Gauthier (2017), systemic approaches offer a more dynamic perspective, indicating that sustainable business models must be flexible and capable of adaptation.

Technology and digitalization play a key role in the development of sustainable business models, a point frequently highlighted in the literature. Sustainable business models have been analyzed in the context of Industry 4.0, indicating a shift toward service-oriented design models, open innovation, and collaborative networks. Technologies such as the Internet of Things (IoT) and big data analytics enable traceability of products and resource optimization, opening up new business opportunities (Prause, 2015). Goni et al. (2021) complement this perspective by identifying nine key aspects of sustainable business models, including information technology (IT), the circular economy, and performance management. However, the authors note that the integration of IT with performance management processes in sustainable business models remains insufficient, representing both a challenge and an opportunity for the future. Thus, technology is both an enabling factor and a potential source of difficulties-its improper use may lead to negative environmental or social impacts.

The literature also highlights areas that require further research. Dentchev et al. (2018) call for more robust conceptualizations of sustainable business models and the application of rigorous empirical methods to move beyond descriptive case studies. Schaltegger et al. (2016), on the other hand, emphasize the need for the integration of theories at different levels-organizational and individual-as well as the development of practical management tools, such as the Sustainability Balanced Scorecard. Both works suggest that the field of sustainable business models is undergoing rapid development, offering numerous opportunities for

interdisciplinary research that can contribute to a better understanding and implementation of sustainable models in practice.

The development prospects of sustainable business models reveal a dynamically evolving field in which typologies and strategies provide the foundations for classification, while systemic and dynamic approaches offer tools for managing complexity (Aagaard, 2019; Bocken et al., 2019; Cosenz et al., 2020; Gauthier, 2017). Technology and digitalization serve as catalysts, enabling innovation, but require careful management to avoid negative consequences (Goni et al., 2021; Prause, 2015). Future research should focus on deepening the theoretical foundations and empirical validation of sustainable business models, which may accelerate their widespread adoption in practice (Dentchev et al., 2018; Schaltegger et al., 2016).

## 8. Value

This study responds to the fragmented nature of existing reviews on sustainable business models. Earlier contributions, such as those by Geissdoerfer et al. (2018) and Dentchev et al. (2018), tended to focus on selected dimensions-innovation, the circular economy, or individual industries-without offering an integrative account of the field as a whole. By contrast, the present article provides a comprehensive synthesis that combines economic, environmental, and social perspectives and captures the evolution of the concept over the past fifteen years. From an initial pool of more than 1200 publications, 40 core works were selected, which allowed for tracing definitional developments, theoretical advances, and the main challenges associated with sustainable business models.

The review also brings together and compares key conceptual frameworks, including the Triple Layered Business Model Canvas, Dynamic Business Modeling for Sustainability, and the Sustainability Balanced Scorecard. Their joint consideration makes it possible to outline a more coherent theoretical foundation while at the same time drawing attention to their managerial relevance. In this way, the article connects theoretical insights with practical tools that organizations can adopt when redesigning their value creation processes in line with sustainability principles. The study emphasizes areas where the current body of knowledge remains underdeveloped. The analysis points to the absence of a consistent and widely accepted definition of sustainable business models, a limited number of empirical investigations into their effectiveness, insufficient exploration of the role of digitalization, and a lack of robust instruments for assessing long-term social and environmental outcomes. By identifying these gaps, the article highlights promising directions for future research and establishes a platform for more rigorous empirical work.

## 9. Discussion and conclusions

This narrative review demonstrates that the concept of sustainable business models (SBMs) remains multidimensional and still lacks definitional consistency, even though recent literature increasingly emphasizes the integration of economic, environmental, and social dimensions. This confirms the importance of the triple bottom line paradigm, while also revealing the absence of universally accepted theoretical frameworks applicable to both academics and practitioners. In this respect, our study contributes to the stream of research seeking to systematize and synthesize existing approaches.

Compared with earlier contributions (e.g., Geissdoerfer et al., 2018; Dentchev et al., 2018), our findings indicate that research on SBMs is gradually evolving from fragmented case studies toward more comprehensive analytical frameworks, such as the Triple Layered Business Model Canvas (Joyce, Paquin, 2016) or Dynamic Business Modeling for Sustainability (Cosenz et al., 2020). Integrating these tools makes it possible to capture the relationships between technological innovation, stakeholder participation, and long-term environmental and social value creation. At the same time, the literature suggests that practical implementation is often constrained by high costs, insufficient assessment tools, and challenges associated with organizational change management.

The review also revealed some results that diverged from expectations. Several studies emphasized the predominance of the economic dimension, which may reflect an instrumental use of sustainability and the risk of so-called "greenwashing" (Schlüter et al., 2023). This signals that, despite the growing attention devoted to SBMs, real business model transformation remains fragmented and heavily dependent on sectoral and institutional contexts.

Nevertheless, the study has limitations stemming from the chosen methodology of a narrative literature review. The subjectivity of source selection and the absence of a fully replicable protocol may influence the completeness of the field's portrayal. Furthermore, this paper does not include empirical validation of the presented frameworks and tools, which constitutes a significant research gap.

Future studies should therefore focus on empirical investigations that assess the effectiveness of SBMs across industries and geographical contexts. Developing quantitative methods to evaluate the environmental and social impacts of business model innovations and creating accessible managerial tools to facilitate implementation appear particularly promising. In-depth case studies would be especially valuable to capture the dynamics and complexity of transitions toward sustainability.

In conclusion, sustainable business models remain a promising but still emerging area of research. Our findings highlight the necessity of holistic approaches and stakeholder engagement, while underscoring the role of innovation and digitalization as key catalysts for

change. The results suggest that the development of SBMs has the potential not only to enhance corporate competitiveness but also to significantly contribute to the achievement of global sustainable development goals.

## Acknowledgements

[1] The publication was co-financed/financed from the subsidy granted to the Cracow University of Economics - Project nr 030/ZZP/2024/PRO.

[2] The publication was co-financed/financed from the subsidy granted to the Cracow University of Economics - Project nr 033/ZZP/2024/PRO.

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