

Key Factors of Sustainability-Oriented Innovation on Competitiveness of SMEs: A Review

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Innovative solutions can promote sustainability and competitiveness by creating new products and services that are environmentally friendly while meeting customer needs. Sustainability-oriented innovation includes the integration of ecological and social aspects into products, processes, and organizational structures to avoid or reduce the environmental load and achieve greater benefits in the community. These types of innovations make intentional changes to a company's products, services, or processes to generate long-term social and environmental benefits while creating economic profits for the firm. There are only a few literature review articles that investigate the link between sustainability-oriented innovations and firm competitiveness. Therefore, this systemic literature article aims to fill this research gap and present the results of a systematic literature review that focuses on the key factors affecting the sustainability innovation and competitiveness relationship. The results might trigger further research on the topic by digging deeper into the subject with case studies.

1. Introduction

New management paradigms open new innovation scenarios in different sectors (Bravi et al., 2021). Also, innovation became a key factor of competitiveness in times of ever-increasing global competition. Those firms that don't create learning organizations (Kerin, 2022), don't innovate, or do not respond to the needs of customers might lose in the competition race and ultimately may close their business. Innovation is also a desired activity of policymakers because innovation resulting in profitable products, services, and processes could lead to the growth of local and national economies. However, innovation might lead to over-exploiting natural resources and harm the environment. Therefore, innovations need to be carried out in a responsible way. This is reflected in the concept of responsible research and innovation (Lukovics, 2019).

Understanding of sustainability and its role in companies has evolved significantly in the past decades. A large number of companies have recognized that sustainability is not just about reducing negative impacts but also about creating positive contributions to society and the environment. The modern approach also called the revisionist view of sustainability, involves integrating sustainable practices into the core business strategy, considering the entire life cycle of products, fostering innovation for sustainability-oriented products and services, and engaging stakeholders more actively in decision-making processes. Increasing consumer awareness and demand for sustainable products require businesses to adopt a holistic approach to sustainability that integrates economic, environmental, and social goals while meeting the needs of stakeholders in the form of eco-design and eco-innovations (García-Sánchez et al., 2019).

There is a growing body of literature that investigates the relationship between corporate sustainability and competitiveness. However, most of these publications address various practices of large, international companies, and less attention is paid to small and medium-sized enterprises (SMEs). Previous reviews focused on the barriers and drivers as well as on policy measures to facilitate eco-innovation or, in a broader sense, sustainability-oriented innovations (Hermundsdottir and Aspelund, 2021). Also, the innovation practices of SMEs were investigated with a systematic literature review methodology that focused on different types and strategic sustainability behaviors of SMEs without paying attention to the competitiveness factors (Klewitz and Hansen, 2014). It should also be highlighted that many characteristics of SMEs and large multinational companies differ, for example, in terms of their size, ownership, access to resources, market presence, and

organizational characteristics. These differences have a significant impact on their sustainability strategy, innovation capabilities, and general business operations, which factors fundamentally determine their attitude towards sustainability products and services.

Therefore, this article addresses the identified research gap and aims to answer the following research question (RQ): what are the key factors of sustainability-oriented innovations that contribute to the competitiveness of SMEs? In order to achieve this goal, a systematic and semi-systematic literature review seemed to be an appropriate methodology that facilitates the aggregation of scholarly knowledge in this specific field and supports the identification of specific research themes that could be investigated in the future. A broader objective of the paper is to identify potential arguments for SMEs to convince them that it pays off to carry out more sustainability-oriented innovations through which they could get a competitive advantage.

The structure of the paper is organized in the following way. Section 2 provides an overview of the theoretical background of sustainability-oriented innovation and key factors of competitiveness. In the next section, the methodology of the semi-systematic literature review and the results of the thematic analysis are presented. Finally, the paper concludes with some future research perspectives.

2. Theoretical background

The definition and specification of the terminology are essential for laying the foundations of semi-structured literature research. In the context of this paper, the terminology results from the intersection of sustainability-oriented innovation, competitiveness, and small and medium-sized companies (SMEs).

2.1 Sustainability-oriented innovation

The term sustainability-oriented innovations refers to those innovations that reduce a firm's negative impact on the environment and society. This phenomenon is also called corporate environmental responsibility. It refers to the development and implementation of new ideas, processes, products, or technologies that are specifically designed to address environmental, social, and economic challenges while promoting sustainable practices and long-term well-being for current and future generations (Díaz-García et al., 2015).

The sustainability-oriented innovations concept is closely tied to the principles of sustainability, which aim to meet the needs of the present without compromising the ability of future generations to meet their own needs. Hermundsdottir and Aspelund (2021, p.3.) define the term in their review in the following way: "Sustainability innovations are innovations wherein all sustainability dimensions, including environmental, social, and economic, are considered during the whole innovation process."

In addition, the literature differentiates three types of sustainability-oriented innovations with regard to the environmental dimension: i) product innovations, ii) process innovations, and iii) organizational innovation. Product innovations are either improvements or radically new developments of products or services. These products could reduce material and energy use, including the application of environmentally friendly material and packaging, eco-design of products, and eco-labeling (Merino and Sepulveda, 2022). Process innovations result in reduced emissions, waste, material consumption, and lower consumption of energy and water. In the case of organizational innovation, examples such as green marketing and environmental management could be mentioned as examples.

2.2 Sustainability innovations and competitiveness

The traditional view of sustainability products in companies has evolved over time and often involved a limited focus on environmental or social aspects and was driven primarily by compliance and cost-saving motives. In the past, sustainability was often considered a separate and secondary concern compared to the core business goals of profitability and growth. Based on Hermundsdottir and Aspelund (2021), the traditional view of sustainability products in companies includes the following key characteristics:

- Compliance and risk mitigation: regulatory requirements and avoiding legal as well as reputational risks were major drivers for sustainability efforts.
- Cost reduction and increase of efficiency: companies saw sustainability initiatives to reduce costs and their motivation was often driven by the desire to save money rather than a strong commitment to environmental or social responsibility.
- Scope: sustainability products in companies often focused on improving the environmental performance of products or processes, with less emphasis on addressing broader social and economic issues related to sustainability.
- Short-term focus: sustainability efforts were often seen as short-term projects or campaigns rather than an integral part of the company's long-term strategy.
- Public Relations: some companies engaged in sustainability practices as a form of philanthropy or to improve their public image.

Contrary to the traditional view of competitiveness, the modern revisionist view believes that companies' sustainability efforts contribute significantly to their competitiveness. In fact, innovations for sustainability are not cost-increasing, but can drastically reduce the costs of producing and distributing goods and services. They can also improve the quality and efficiency of production. Finally, the growing number of customers should also be considered, as customers are increasingly concerned about their environment and society and are therefore more willing to buy from companies with a better image and offering environmentally friendly products and services.

2.3 Small and medium-sized companies

Small and medium-sized companies play an important role as engines of economic growth, innovation, job creation, and community development. They bring diversity, adaptability, and entrepreneurship to the business world, making them vital contributors to a thriving economy. Klewitz and Hansen (2014) highlight that SMEs, the largest proportion of firms, account for about two-thirds of global pollution and they are not smaller versions of large companies that operate and innovate differently for sustainability than their larger competitors. On the one hand, SMEs have several difficulties in launching sustainability-oriented innovations because of their resource constraints and lack of proactive behavior and planning. On the other hand, some SMEs are in a much better position to innovate radically and fast, especially in the case of the owner of the company has a sustainability mindset. In addition, it should be noted that large, international firms have far bigger possibilities to develop and bring to the market sustainability innovations than their smaller counterparts. Nevertheless, the literature suggests that owner-managers of SMEs are largely value-driven and are in a better position than large firms to compete successfully in niche markets such as sustainability-oriented innovations.

The above-presented diversity of possibilities and motivation of SMEs proves the relevance of a semi-systematic literature review that is dedicated to the investigation of key factors of sustainability-oriented innovations having an impact on the competitiveness of SMEs.

3. Methodology

This paper is based on a structured literature review that aims to detect theoretical perspectives and common issues within specific research disciplines. This review methodology is appropriate for those topics that have been conceptualized differently and researched by different research teams within diverse disciplines. The contribution of this type of review could be the mapping of a specific research field, synthesis of knowledge and definition of new research topics for further research (Snyder, 2019). The steps taken in the literature review were as follows: construction of search syntax and inclusion criteria, selection of publications, analysis, and discussion of results.

3.1 Database and search syntax

The literature search was conducted on the well-known database of SCOPUS, which has a wide coverage of high-quality academic publications. The construction of the search syntax was based on prior literature review articles and was tailored to the research question of this article. Three main elements of the search were: i) sustainability-oriented innovation, ii) competitiveness, and iii) SMEs. Overall, a total of 12 keywords were used in the titles, abstracts, and keywords. Furthermore, the target articles had to match at least one keyword in each of the three predefined groups (i.e., SME OR firm OR company AND competitive AND advantage AND factors AND sustainability OR green OR environmental OR eco AND innovation AND product). It should be highlighted at this point that the objective of this literature research was to identify emergent themes and research gaps for further research and not produce a comprehensive synthesis of articles at the intersection of sustainability, innovation, and SMEs, which is a highly challenging task.

3.2 Selection of publications

The initial search in the SCOPUS database yielded a total of 105 documents. Limiting the search to the last 10 years, 81 documents, including book chapters and proceedings, could have been identified between 2013-2023. In the screening process, only peer-reviewed journal articles and English-language articles were included, which limited the scope of the review to 48 articles. After carefully reading the abstracts and the identified articles, 22 articles were excluded because of their irrelevance to the research question. Finally, 26 articles were included in the analysis.

3.3 Analysis of articles

The analysis of the selected articles was made first on the basis of abstracts, then thematic analysis of all articles included in this review was carried out by careful reading of the articles. Thematic analysis is a systematic method that produces emerging themes from qualitative data. The method is also appropriate for the

identification of emerging subthemes. In this review, subthemes of three types of innovations, i.e. product, process and organizational innovations were classified that could contribute to the competitiveness of SMEs.

4. Results of the Review

4.1 Publication year

In the context of this literature review, a relatively low number of publications were published before the year 2021. Until 2021, only one or two Q1-Q2 level publications per year were detected in the SCOPUS database, while this number jumped up to 5-6 articles in 2021 and it is expected a peak in the current year of 2023. Based on this trend line, we can see increasing attention of top researchers towards the investigation of the impact of sustainability-oriented innovations on the competitiveness of SMEs in top academic journals.

Table 1: Themes and subthemes of sustainability-oriented innovations (SOI) in SMEs

Themes and subthemes	Factors of competitiveness	References
Product innovation		
Green product innovation	<ul style="list-style-type: none"> - Success factors are top management commitment, building networks of collaborations - Competitive enablers are corporate image, customer satisfaction, and market share - Positive influence of environmental sustainability orientation - Leadership and management support - Losing competitive advantage through licensing - Higher resources lead to more competitive advantage 	Dangelico (2016), El-Kassar and Singh (2019) Sellitto et al. (2020) Moreira et al. (2023) Andersén (2022) Idrees et al. (2023) Chen and Dimitrov (2017) Al-Abdallah and Al-Salim (2021)
Eco-efficiency	<ul style="list-style-type: none"> - Engagement in initiatives for solving social problems has the greatest influence 	Zastempowski (2022)
Organizational unlearning	<ul style="list-style-type: none"> - Dynamic capability has a positive effect on product innovation performance 	Wang et al (2022)
Waste prevention	<ul style="list-style-type: none"> - Eco-innovation packaging and managerial environmental awareness 	Sumrin et al. (2021)
Green market orientation-	Essential factor for the quality of products and sustainable success	Hu et al. (2023)
Mass customization	<ul style="list-style-type: none"> - Postponing product differentiation in favor of mass customization 	Ono and Kubo (2018)
Process innovation		
Sustainable market performance	<ul style="list-style-type: none"> - Cognitive and affective involvement increases green self-identity 	Tung et al. (2017)
Green learning	<ul style="list-style-type: none"> - Mediates the linkage between green process innovation and transformational leadership 	Pham et al. (2023)
Green supply chain management	<ul style="list-style-type: none"> - Decentralized supply chain configurations enable carbon emission reduction 	Brandenburg (2015)
Organizational innovation		
Corporate sustainability	<ul style="list-style-type: none"> - Specific capabilities rooted in the organization to implement practices - Strong corporate values, cultural heritage, and stable relationships with the territory 	Annunziata et al. (2018) Bernardi et al. (2022)
Green innovation culture-	<ul style="list-style-type: none"> - Moderation effect on green competitive advantage - Role of Certified Quality Systems 	Muisyo et al. (2022) Hinojosa-Rodríguez et al. (2014)
Eco-conscious strategies	<ul style="list-style-type: none"> - Eco-friendly practices through collaboration with academia 	Papadopoulos et al. (2014)
Green absorptive capacity	<ul style="list-style-type: none"> - Proactive environmental strategy - Leadership and management support 	Almeida and Wasim (2023), Ahmed et al. (2021)
Managerial cognitive capability	<ul style="list-style-type: none"> - Building innovation ecosystems enables hub-firms to achieve sustainable competitive advantages 	Idrees et al. (2023) Cao et al. (2020)

4.2 Emergent themes and sub-themes

As a result of the thematic analysis of the collected papers, themes and subthemes of sustainability-oriented innovation management practices in SMEs were identified. Identified factors of competitiveness are clustered into three groups (see Table 1). In the context of the research question of the paper, three groups of factors have been identified that can contribute to the competitiveness of SMEs. In line with the modern approach, owner-managers of SMEs have a special role in paying more and more attention to sustainability, and their engagement in initiatives aimed at solving social problems has a great impact on the development of new products and services. Process innovation, such as decentralized supply chain configurations and green processes, have been identified as key factors that have a significant impact on competitiveness. Key factors related to organizational innovations are certified quality systems, a proactive environmental strategy, and stable relationships, as well as collaboration with the territory, especially with academia.

5. Conclusions

The main objective of this paper was to identify factors of competitiveness in SMEs in the context of sustainability-oriented innovations. Based on this literature review, it could be concluded that there is a growing interest of scholars in the topic because more and more academic papers investigate the factors green-, eco-innovations that have a positive influence on firm performance. A wide array of factors is presented in this review that could trigger further empirical research on the topic. Overall, the identified factors are not surprising. Therefore, it is suggested to carry out more in-depth case studies that could result in more specific implications and recommendations for managers. The study has several limitations because only the SCOPUS database was used. This means that other databases might contain a larger number of more relevant papers worth reviewing. Also, the query and the syntax of keywords could be further fine-tuned with more keywords as well as more precise syntax. Furthermore, this review is qualitative and has several elements of the subjectivity of the author. Still, the results of the review could be relevant for researchers to dig deeper into the subject and identify novel factors of competitiveness.

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