

## Determinants of Sustainability-Oriented Innovations in the Textile and Fashion Supply Chain

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**Abstract:** EU Green Deal and related regulations require the textile and fashion industries to adopt sustainable business practices and innovative solutions. The European Commission's Circular Economy Action Plan identifies the textile and fashion sector as one of seven key industries necessitating strategic sustainability transitions aligned with the Sustainable Development Goals (SDGs) and broader global challenges. In response, companies in this sector are increasingly implementing measures related to sustainable production and consumption, reducing water usage, ensuring fair labour practices, adopting sustainable managerial approaches, and fostering sustainability-oriented innovations within their supply chains. Despite growing global attention to sustainability, research on sustainability-oriented innovation (SOI) and circular supply chains in this industry remains fragmented. Therefore, this study aims to analyse the determinants of SOI in the textile and fashion supply chains. A synthetic literature review was employed to examine the key factors influencing the implementation of the SOI. The analysis identified three main categories of factors affecting SOI in supply chains: internal organizational factors, market- and consumer-driven elements, and regulatory and policy drivers. These determinants collectively support companies in pursuing SOI as a pathway to sustainable value creation. The study is grounded in the development of a conceptual model and contributes to both sustainability research and the application of the triple bottom line approach. This research offers two main contributions: first, it provides a comprehensive understanding of sustainability-oriented innovations within supply chains; second, it proposes a structured framework to examine the drivers of SOI in the textile and fashion industry. The findings serve as a foundation for future empirical studies and offer insights for stakeholders interested in advancing sustainable supply chain innovation.

**Keywords:** sustainability-oriented innovation (SOI), supply chain, textile and fashion industry.

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**1. Introduction.** The textile and fashion industry faces increasing scrutiny due to its significant environmental and social impact, accounting for 10% of global CO<sub>2</sub> emissions and 20% of wastewater output (Ellen MacArthur Foundation, 2017). Additionally, it relies on nearly 98 million tons of non-renewable resources annually for fibre production (Textile Exchange, 2022). The rise of fast fashion exacerbates these issues, making sustainability a necessity rather than a choice. This urgency is reinforced by the European Green Deal, which emphasizes circularity and sustainable practices in textiles. Despite growing awareness, many textile and fashion companies struggle to implement comprehensive sustainability measures. McKinsey and Company (2021) reported that while sustainability is widely acknowledged, not all companies have successfully integrated it into their operations. Complex supply chains and a lack of transparency hinder

sustainable practices, whereas global supply chains also raise concerns about human rights violations, poor working conditions, and underpayment, increasing the need for reform. This is because it is relevant at both the market and industry levels. Therefore, companies implement sustainable managerial practices and sustainability-oriented innovations to respond to environmental pressures, as well as increasing competitiveness and creating sustainable value for stakeholders.

Supply chains are inherently complex, balancing competing priorities. These challenges are intensifying due to increasing regulatory requirements in Europe, such as the EU Circular Economy Action Plan, alongside growing expectations from environmentally conscious consumers. Previous studies have analysed sustainability trends and gaps in the fashion industry (Abbate et al., 2024), as well as paradoxes in achieving sustainable production efficiency while meeting consumer demands (Hahn & Pinkse, 2022), as well as the gap between theoretical insights and real-world data in sustainability-oriented innovation (SOI) (Dangelico et al., 2017). Consequently, the current research is fragmented.

Research on various industries has been frequently conducted to analyse trends, identify challenges, and develop innovative solutions that contribute to sustainable development and improved performance (Gloet & Samson, 2022; Rodríguez-Espíndola et al., 2022). For example, in the food and beverage industry, SOIs include green supply chain practices, internal environmental management systems, and efforts to promote eco-friendly practices (Latino et al., 2021). Moreover, Gómez-Cedeño et al. (2015) and Hugos (2018) provided a general foundation for understanding the dynamics of sustainability-oriented innovations among sectors. In the retail industry, Gil-Saura et al. (2023) focused on measuring the influence of such innovations on customer satisfaction. Harsanto et al. (2024) explored the implementation and evaluation of sustainability practices in the manufacturing sector. Hattar et al. (2019) investigated sustainable innovations in the food industry, whereas Kasimati et al. (2024) examined similar advancements in the beverage industry. These studies highlighted how different industries adopt SOI to increase performance and address sector-specific challenges.

However, there is a significant research gap in regard to the fashion industry, which remains largely overlooked in this context. As stated by Ermini et al. (2024), “existing literature lacks successful examples of companies implementing circular economy principles and practical guidance on the strategies they should employ to effectively coordinate resources and capabilities for sustainability-oriented innovation within circular supply chains” in the textile and fashion industry. Consequently, the importance and need for a sustainability roadmap for fashion companies and future research opportunities are needed (Moretto et al., 2018).

Therefore, this study aims to answer the following research question: What are the key factors influencing sustainability-oriented innovations in the supply chain, specifically those aimed at sustainable value creation?

The aim of this research is to identify and define the determinants of sustainability-oriented innovations within the textile and fashion supply chains.

The paper is structured as follows. After the introduction, the following sections present a literature review on the Triple Bottom Line Approach, SOI, their types and methodology. This paper proposes a theoretical framework for determining the determinants of SOI in the textile and fashion supply chains and then synthesizes the conclusions of the study and discusses its limitations along with suggestions for future research.

## **2. Literature Review.**

### **2.1. Triple Bottom Line Approach in Textile and Fashion Industrial Supply Chains**

The Triple Bottom Line (TBL) is a key framework for integrating sustainability in the textile and fashion industry. Elkington (1998) introduced the framework to assess business companies' success by integrating economic, social, and environmental performance, highlighting that profitability should align with social and environmental responsibilities (Park & Kim, 2016). It encompasses environmental responsibility, social equity, and economic viability, guiding brands toward global sustainability goals (Niinimäki et al., 2020; Ozdamar-Ertekin, 2019). The environmental pillar urges action on the industry's high resource consumption. Textile and fashion, with their focus on quality and durability, are well suited for sustainable practices such as circular economy models and cradle-to-cradle production. Many high-end brands now use recycled materials and designs for zero waste, reducing their environmental impact while enhancing brand value among eco-conscious consumers.

Nevertheless, although most brands use recycled materials, a significant number do not. As stated by Alizadeh et al. (2024), the fashion industry is one of the most environmentally harmful industries. Approximately one truckload of textiles is discarded into waste disposal every second because of unsold

garments (Wren, 2022). Landfills are full of unrecycled clothing that contributes to environmental degradation. Importantly, the concept ‘to throw something away’ is misleading, as there is no ‘away’, as textiles not only accumulate in landfills but also release harmful substances that can enter groundwater and pose ecological risks. The fashion industry worldwide generates almost 92 million tons of finished products annually, using approximately 79 billion litres of water a year (Niinimäki et al., 2020), and is responsible for 3.3 million tons of carbon emissions— comparable to the EU’s total emissions, which constitute 3.5 million tons. Moreover, emissions from textile production surpass the combined total of the aviation and maritime transport industries (Wu & Li, 2019).

Fast fashion, in particular, significantly contributes to these adverse environmental impacts. If current trends persist, fashion-related waste is projected to reach 148 million tons by 2030, exacerbating environmental degradation in both terrestrial and marine ecosystems. This issue also has broader implications for social and economic sustainability (Papamichael et al., 2022). In response, an increasing number of companies are striving to increase the sustainability of their operations.

Sustainability drivers have transformed companies’ supply chains from linear to circular models. Circular supply chains create closed-loop production, minimizing waste by prioritizing reusable, recyclable, or recycled materials. This approach contrasts with the traditional “take-make-dispose” model, instead emphasizing lifecycle thinking to reduce reliance on virgin resources (De Aguiar Hugo et al., 2021; Satkiewicz, 2023).

Therefore, as Brun & Ciccullo (2022) claim, “[i]n this turbulent context, fashion firms are called at introducing sustainability practices to introduce a shift toward SSCM [sustainable supply chain management], but it needs to involve multiple actors in the supply chain.” The supply chains of companies in the textile and fashion industry are extensive; thus, to achieve sustainability and apply good practices across the sector, the synergy of actions in terms of the whole supply chain has to be implemented (Amaeshi et al., 2008). This demand for SSCM emphasizes the need for innovation and collaboration across the fashion industry. Consequently, the following chapters explore how and why SOI is emerging as a key driver of change that helps companies in the textile and fashion industry in terms of greener and more ethical practices in supply chains.

## 2.2. *Conceptualization of Sustainability-Oriented Innovations*

Sustainability-oriented innovation (SOI) has become significant because of the growing environmental and social challenges faced by industries. This chapter aims to provide a conceptualization of SOI, focusing on its definition and distinguishing between its key forms: product innovations and process/organizational innovations.

SOI is a type of innovation that integrates ecological and social aspects into products, processes, and organizational structures to achieve long-term environmental, social, and economic benefits. Therefore, this phenomenon has been researched and discussed by different scholars (Brun & Ciccullo, 2022; Hattar et al., 2019; Kasimati et al., 2024; Feniser et al., 2017; Harsanto et al., 2022) around the globe, who provide its extensive definitions and types in their papers. However, their focus varies, as some of them concentrate primarily on environmental gains, while others focus on the triple bottom line approach, demonstrating a distinction between environmental science and businesses and witnessing the need for a framework that could demonstrate the complexity of SOI.

In this context, the SOI is understood from multiple perspectives. First, in terms of the integration of ecological and social aspects, SOI is defined as incorporating both ecological and social factors into economic activities at the same time to reduce environmental impact and increase social aspects while generating financial returns (Adams et al., 2016; Dory, 2023; Mukaromah et al., 2023). Researchers Wilkerson and Trellevik (2021), Gaziulusoy (2015), and Brun and Ciccullo (2022) emphasize that SOI must be viewed as a system in which individual products or services cannot be sustainable on their own but must be part of a broader sustainable system, not to mention that organizations’ philosophy in general has to change in order for the successful integration of SOI (Adams et al., 2016).

Subsequent to the definitions, it is also necessary to examine the existing types of SOI. According to Harsanto et al. (2022) and Dory (2023), SOI is classified into two types: product innovation and process/organizational innovation.

First, product innovation involves the enhancement, reconfiguration, or replacement of products that generate revenue for a company (Trotzer, 2008). New products must be either entirely new or significantly improved to contribute to sustainability. This includes developing eco-friendly products or enhancing existing products to minimize their environmental impact, such as renewable energy technologies, energy-efficient

appliances, and sustainable materials (Dory, 2023; Hentschel et al., 2022; Papetti et al., 2014). In the textile and fashion industry, circular product design, which emphasizes durability, reparability, and recyclability from the beginning, extends apparel lifespan and enhances reuse and recycling potential (Konietzko et al., 2020). However, product innovation should not only generate economic profit for a company but also provide long-term social and environmental benefits (Dory, 2023), incorporating strategies such as eco-design, ecolabels, life cycle assessment, materials, and packaging (Harsanto et al., 2023). While product innovation shows potential, it is worth noting that applying only this type of innovation is not enough to achieve sustainability. Broader organizational and systematic changes are necessary.

Process/organizational innovations involve changes in the processes or organizational structures of a company to develop sustainability. This can include new methods of production, changes in business models, or improvements in organizational practices that lead to better environmental and social outcomes. “Process innovation is related to how existing products or services are produced. [It] shows the process of renewal in the organization“ helping enhance business performance and lead among the competitors (Harsanto et al., 2022, p.16), for instance, by transforming business model, stakeholder management practices, or by adopting circular economy principles in the company (Harsanto et al., 2022; Harsanto & Permana, 2019; Al Owais, 2024). These innovations can significantly improve the sustainability performance of a company; additionally, strong leadership should foster a supportive organizational culture and a long-term vision for sustaining such innovations.

SOI, which integrates ecological and social aspects into product development and organizational processes, is crucial for addressing global challenges and achieving long-term social, environmental, and economic benefits. The following chapter discusses the drivers of SOI that are necessary in supply chains.

### **3. Methodology and research methods**

This study employs a synthetic literature review as the primary research method to address the following research question: “What are the factors influencing sustainability-oriented innovations in the supply chain aimed at sustainable value creation?” A synthetic literature review was chosen over a systematic review due to the conceptual nature of the inquiry, which seeks to develop an integrative framework of SOI determinants rather than aggregate quantitative findings or evaluate effect sizes. The synthetic approach is particularly well suited for identifying patterns, theoretical frameworks, and knowledge gaps, allowing for the critical comparison and integration of diverse literature strands.

The literature search was conducted between January and March 2025 via the Web of Science and Scopus databases. Boolean search strings such as (“sustainability-oriented innovation” AND “textile” AND “supply chain”) and (“fashion industry” AND “circular economy” AND “supply chain management”) were used. Only peer-reviewed journal articles published between 2007 and 2025 were included. The search was limited to English-language publications. An initial yield of 720 articles was obtained. After removing duplicates and conducting title and abstract screening, 114 articles were retained for full-text review. Applying the inclusion and exclusion criteria resulted in a final sample of 65 articles. The inclusion criteria were as follows: peer-reviewed journal articles; studies addressing sustainability, innovation, or circular supply chains in the textile and fashion industry; and conceptual or empirical studies offering insights relevant to SOI. The inclusion criteria specified that studies must focus on sustainability-oriented innovation practices or strategies in the textile and fashion industry or address broader SOI themes within supply chain contexts. The exclusion criteria included nonpeer-reviewed journal articles, articles focused on innovations without a supply chain context, and studies focused exclusively on technical textile development or consumer behaviour without reference to innovation or supply chain implications. After abstract and full-text screening, 18 articles were selected for in-depth analysis on the basis of their relevance to the identified themes and conceptual framework.

A qualitative thematic analysis was carried out to synthesize findings across the selected literature. The selected studies were analysed via a thematic coding process. Key themes were identified iteratively and included internal organizational drivers (leadership commitment, organizational capabilities, strategies), market- and consumer-driven factors (demand for sustainable fashion, brand pressure, and stakeholder pressure), and regulatory and policy influences (EU Green Deal, regional and national regulations, and industry policies). The literature was grouped accordingly. The themes were then reviewed, and the strengths, contradictions, and limitations within each theme were analysed to ensure coherence and coverage.

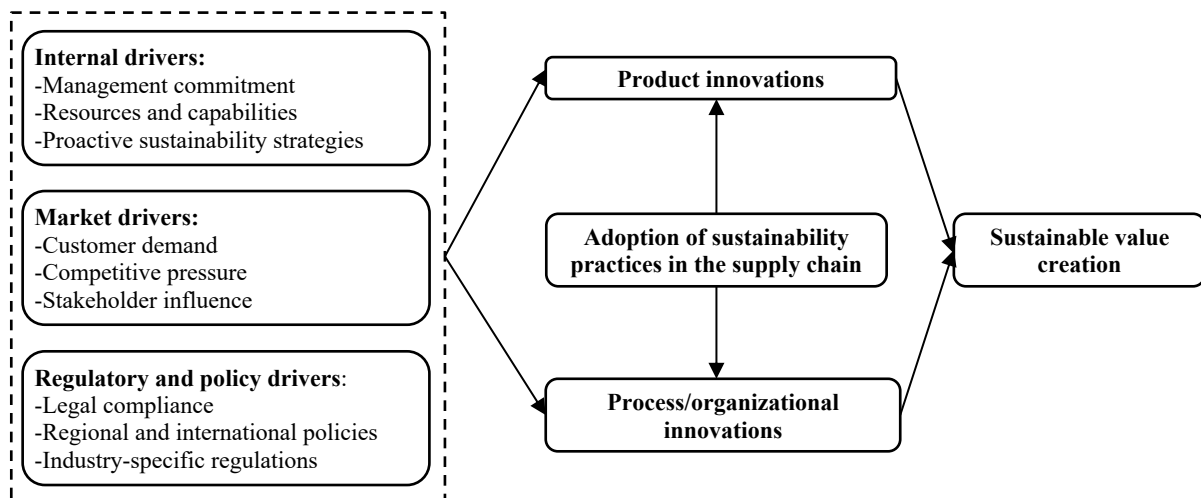
To enhance conceptual depth, a theoretical analysis was also performed using TBL theory (Elkington, 1998) and the sustainability-oriented innovation framework (Dangelico et al., 2017). The TBL approach facilitated the classification of drivers into economic, environmental, and social dimensions, whereas the SOI lens provided insights into how innovation processes intersect with sustainability goals.



Methodological guidance for conducting the synthetic literature review was drawn from Naumann (2017) and Benazzouz (2019), whose work on structured synthesis in sustainability research served as a template. Their frameworks enabled the systematic integration of findings while accommodating theoretical interpretation.

#### 4. Results

According to the literature (Brun & Ciccullo, 2022), the adoption of sustainable practices by companies is influenced by various factors, which can be categorized into three main groups (Caniato et al., 2012): 1) internal factors, which are linked to improving company efficiency and the pollution prevention approach, as well as the commitment of top management and business owners to sustainability and corporate responsibility; 2) market drivers, which are driven by customer demand for sustainable products and processes; and 3) regulatory and policy drivers, where governments and NGOs enforce stricter regulations to increase corporate accountability on environmental and social issues. Thus, the conceptual model (Figure 1) is proposed, with each factor discussed below, emphasizing the specific aspects of the textile and fashion industry.



**Figure 1.** Conceptual framework.

Source: Developed by the authors.

Internal factors, which include a company's resources, capabilities, and management commitment, are "critical for successfully applying green innovation" (Lestari & Sunyoto, 2023). To successfully implement sustainable practices, a vital role is played by the management of the company (Collins et al., 2010), as it is the leadership's responsibility to create and enable a foundation for sustainability strategies (Fairfield et al., 2011). This means that strong leadership and commitment are essential for integrating sustainability into business operations, ensuring long-term success and competitive advantage.

According to researchers Lestari and Sunyoto (2023), companies that have better resources and capabilities are more likely to adopt green innovations and sustainable practices. This suggests that a strong financial and technological setting enables firms to invest in environmentally friendly solutions and integrate them into their business models. Similarly, internal sustainability teams play a critical role in enhancing the adoption of sustainable practices (Brun & Ciccullo, 2022; Liu et al., 2019). These teams help coordinate sustainability initiatives, ensure compliance with environmental regulations, and promote a culture of sustainability within the organization. Furthermore, firms with proactive environmental strategies are more likely to implement sustainable supply chain practices (Graham, 2020). This means that companies that seek to reduce their environmental impact are more willing to work with suppliers that follow sustainable practices, use eco-friendly materials, and optimize production processes to minimize waste and carbon emissions. By integrating these factors, businesses can develop more comprehensive and effective sustainability strategies.

Market drivers are another factor for the adoption of sustainable factors. Various studies have referred to pressure from customers, competitors, and stakeholders. First, "market drivers are related to the requirements for environmental sustainability from the customers, who may be industrial clients or end consumers" (Caniato et al., 2012). Customer demands for sustainable products significantly drive companies to adopt greener practices (Lestari & Sunyoto, 2023). A significantly growing number of conscious consumers prefer organic textile products, as they feel socially responsible and want to have minimal environmental impact (Azizağaoğlu & Barış, 2018). However, owing to rising consumer demand for ecologically friendly products,

businesses have frequently used greenwashing. Research (Alizadeh et al., 2024) shows that 53% of green claims are ambiguous, misleading, or unsubstantiated. Additionally, 40% lack concrete data, raising doubts about their legitimacy and confusing consumers. Approximately 50% of green labels lack robust verification, underscoring the need for stronger monitoring, regulation, and standardization. These findings highlight that even though customer demand could be a strong motivator for the adoption of greener practices, it can also serve as superficial compliance. Greenwashing abuses customer trust, and the impact of market-driven sustainability can be significantly reduced or even destroyed.

Furthermore, another role is played by the competition factor (Graham, 2020), as such pressure pushes companies to become more sustainable than their competitors and become not only more sustainable but also more attractive from the customers' point of view. Finally, stakeholders, including community advocacy groups, employees, and local media, also have great influence, which can motivate firms to adopt sustainability practices, claiming that "firms with high adoption rates of environmental practices are more successful in product and process innovation" (Theyel & Hofmann, 2012).

Regulatory and policy drivers include government regulations, standards, and policy motivations that require companies to adopt sustainable practices. According to Caniato et al. (2012), "[l]aw is related to the requirements of both current and future regulations," highlighting the need for companies to improve their legal frameworks. Consequently, businesses must not only comply with existing laws but also anticipate and be ready to adapt to future changes to maintain sustainability.

Compliance with government regulations is a significant driver of the adoption of corporate social responsibility (CSR), which influences sustainability performance (Bux et al., 2024). In other words, when companies align with regulatory expectations, they often improve their overall sustainability efforts. However, the effectiveness of regulations can vary depending on the context. For example, Lestari and Sunyoto (2023) reported that in some cases, environmental regulations do not have a significant effect on green innovation, suggesting that other factors, such as corporate culture, may play a role in driving innovation.

Regulatory and policy drivers in the textile and fashion industry are affected by different frameworks. According to Easton (2007), "there are two main types of legislation which impact on the textile industry and the dyestuff and chemical companies who supply it: chemical control legislation [and] pollution control legislation." Chemical legislation affects the innovation, classification, labelling, supply, and use of textile dyes and chemicals. This ensures that harmful chemicals are regulated, promoting safer and more sustainable practices in industry; meanwhile, pollution legislation impacts manufacturers and users of textile dyes and chemicals by regulating the disposal of hazardous materials into the environment. It encourages companies to adopt cleaner production techniques and reduce environmental pollution (Easton, 2007).

In addition, the low recycling rate of approximately 1% of materials used for clothing production calls for more efficient recycling processes (Geldhauser et al., 2024). The EU aims to achieve high levels of textile waste collection by 2025; therefore, the focus is on textile sorting, reuse, and recycling through innovation, industrial applications, and regulatory measures such as extended producer responsibility (European Commission, 2020). Effective textile waste management can significantly reduce environmental impacts, including a reduction in global warming of up to 22.3 Mt CO<sub>2</sub> a year by 2035 (Solis et al., 2024).

In terms of the EU, the textile sector is considered one of the major focuses when "a new EU Strategy for Textiles to strengthen competitiveness and innovation in the sector and boost the EU market for textile reuse" (European Commission, 2020); consequently, the EU Strategy for Sustainable and Circular Textiles "addresses the production and consumption of textiles, whilst recognizing the importance of the textiles sector. It implements the commitments of the European Green Deal, the Circular Economy Action Plan and the European industrial strategy". Although control legislation varies across regions, it aims to protect health and the environment through regulations and risk assessment (European Commission, n.d.; U.S. Environmental Protection Agency, 1976). Consequently, continuous improvements are necessary to address these emerging challenges.

The significance of eco-certifications tied to industry-specific regulations cannot be overstated. Certifications such as the Global Organic Textile Standard (GOTS), Fair Trade, Cradle to Cradle Certified, EU Ecolabel, and Global Recycle Standards serve as reliable indicators of product and supply chain integrity, ensuring compliance with environmental and social criteria (The Conscious Insider, 2024). Yang et al. (2017) emphasized that adherence to these standards is a key determinant of sustainability within the textile and fashion industry, providing companies with a significant competitive advantage. Moreover, such certifications effectively counter the widespread issue of greenwashing—where companies falsely claim environmental benefits—by appealing to the rapidly growing segment of environmentally conscious consumers. Their

rigorous requirements foster accountability, enhancing customer trust through transparency in marketing practices.

The logic of the presented conceptual model is based on the idea that the identified drivers (internal, market, and regulatory and policy drivers) influence a company's product and process/organizational innovations and their adaptation within the company's supply chain. The success of adaptation often depends on the involvement of all stakeholders in the supply chain and timely managerial decisions. In this way, if sustainability-oriented innovations are successfully adapted, they contribute to sustainable value creation. Research by Adams et al. (2016) emphasized that SOI adaptation acts as a mediating factor for sustainable value creation and demonstrated the importance of integrating sustainability into business models and innovation processes.

In summary, the adoption of sustainability-oriented practices begins with identifying the drivers that influence product and process/organizational innovations, ultimately leading to sustainable value creation. However, achieving sustainable value creation comes with challenges, and the transition to a circular economy is still in its early stages, with only 8.6% of resources currently being reused in a circular manner (Economy Circle, 2022). Many textile and fashion suppliers within supply chains are located in developing countries across Asia and Africa, with approximately 80% of clothing exported to developed nations (Guarnieri & Trojan, 2019). As a result, not all suppliers adhere to or implement sustainable practices across economic, environmental, and social dimensions, even when they announce the adoption of SOIs.

## 5. Discussion

The research findings showed that the proposed framework aligns with previous studies on SOI in other sectors, suggesting a degree of cross-sectoral applicability. In the fashion and textile industry, SOIs include green supply chain practices and efforts to promote eco-friendly initiatives. This aligns with research on the applicability of SOIs in the food and beverage industry, where requirements for eco-certifications and the implementation of comprehensive internal environmental management systems are essential (Latino et al., 2021).

With respect to internal drivers, strong leadership commitment and a clearly articulated corporate sustainability vision are identified as essential in the literature (Fairfield et al., 2011). In terms of market drivers, the role of stakeholders is particularly significant. Moreover, increasing consumer awareness and shifting market expectations are increasingly pressuring brands to adopt sustainable practices. The research findings also highlight the issue of greenwashing, which aligns with the study by Alizadeh et al. (2024), who identified a tension between perceived and actual sustainability. Their findings reveal a disconnect between sustainability claims and in-store practices, illustrating the persistent risk of greenwashing. However, to mitigate greenwashing, companies can use SOI by incorporating sustainability not only in their marketing campaigns but also into their operations. Innovative products or services that have environmental and social benefits demonstrate commitment, build and/or increase customer trust, and contribute to sustainable value creation, as not only are empty promises being made but also a real positive impact is created. Moreover, transparency tools, third-party suppliers' certifications (e.g., GOTS), and blockchain-based supply chain tracking can enhance credibility and reduce consumer scepticism.

Sector-specific challenges also emerged and were emphasized in this study. These challenges are particularly related to the unique regulatory and policy drivers that influence the adoption of SOIs in the textile and fashion supply chains. Legislation, particularly from the EU, such as the European Green Deal and the Circular Economy Action Plan, acts as both a motivator and a compliance necessity for companies. These regulatory frameworks have begun shaping corporate behaviour, especially within EU-based firms. However, inconsistent enforcement and varied global standards present a challenge for global fashion brands seeking to maintain uniform practices across markets. This regulatory disparity highlights the importance of fashion and textile industry-wide initiatives and voluntary standards such as the Higg Index, a suite of tools developed by the Sustainable Apparel Coalition to help companies in the apparel, footwear, and textile industries measure and improve their environmental and social performance across the supply chain, or the Science-Based Targets Initiative (SBTi), which aims to create consistent expectations regarding sustainability in the supply chain. These tools serve as proxies for regulations in less strictly governed markets, guiding companies toward measurable sustainability improvements.

## 6. Conclusions

The textile and fashion industry remains one of the most environmentally impactful sectors, contributing significantly to global carbon emissions and resource depletion. Fast fashion, in particular, exacerbates the industry's environmental and ethical challenges, demanding a structural shift toward sustainability. This study

emphasizes the central role of SOI as a strategic response to these challenges, enabling companies to address both environmental concerns and competitive pressures.

Through a synthetic literature review and conceptual analysis grounded in the triple bottom line theory, this study identifies three primary categories of drivers influencing SOI in the textile and fashion supply chains: internal drivers, market and consumer-driven pressures, and regulatory and policy frameworks. The findings suggest that SOI implementation requires a holistic approach, wherein corporate leadership, consumer and other stakeholders' engagement, and regulatory alignment reinforce one another.

Importantly, while policy instruments set a foundation for sustainable transformation, their impact is often undermined by inconsistent enforcement and greenwashing practices. Therefore, both policymakers and industry leaders must collaborate to enhance transparency, accountability, and practical implementation mechanisms. For example, stronger third-party certifications, digital product passports, and global policy harmonization could serve to bridge the gap between declared and actual sustainability practices.

This research contributes to theory and practice. It encourages a shift from fragmented sustainability efforts to integrated, innovation-driven strategies aligned with sustainable value creation. This research contributes to the literature by bridging the gap between general sustainability frameworks and the specific realities of the textile and fashion supply chains. It provides a structured lens through which companies and policymakers can better understand and respond to the drivers of SOI.

From a practical perspective, firms can use this model as a tool to assess their current position and identify key areas for development. For example, a company lagging in internal leadership may benefit from integrating sustainability goals into executive performance metrics, whereas one struggling with consumer engagement might focus on transparency and communication strategies. Moreover, textile and fashion companies could implement strategies for gradually replacing hazardous materials with eco-friendly materials and use closed-loop water systems so that the release of chemicals into nature can be minimized. Meanwhile, policymakers should advocate for fiscal incentives, such as tax reductions or subsidies, for companies that adopt greener chemical solutions. Additionally, chemical safety regulations should be harmonized globally, with a special emphasis on improving alignment in emerging countries.

However, the research is not without limitations. The conceptual nature of this study and its focus on a single industry limit its empirical grounding and generalizability. Future studies should empirically test the proposed model across diverse industries and regions, incorporating real-world data to validate the theoretical insights. Furthermore, longitudinal studies could help understand the evolving nature of these drivers as sustainability becomes more integrated into core business strategies.

**Author Contributions:** For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used: “conceptualization, J.S.; methodology, J.S.; validation, J.S., G.D.; formal analysis, J.S., G.D.; investigation, J.S., G.D.; resources, J.S., G.D.; data curation, J.S.; writing-original draft preparation, J.S.; writing-review and editing, J.S., G.D.; visualization, G.D.; supervision, J.S.; project administration, J.S.; funding acquisition, G.D.

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**Драйвери та бар'єри впровадження інновацій в ланцюги постачання на принципах сталого розвитку: приклад текстильної та фешн індустрій**

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Європейський зелений курс та відповідні регуляторні ініціативи зумовлюють необхідність трансформації бізнес-моделей у текстильній і фешн індустріях шляхом впровадження практик та інноваційних рішень на засадах сталого розвитку. План дій Європейської Комісії щодо циркулярної економіки визначає цей сектор як один із пріоритетних для реалізації стратегічних змін, спрямованих на досягнення Цілей сталого розвитку та подолання глобальних викликів. У відповідь на зростання вимог щодо екологічної та соціальної відповідальності компанії дедалі активніше впроваджують підходи, пов'язані зі сталим виробництвом і споживанням, зменшенням використання водних ресурсів, дотриманням справедливих трудових практик, застосуванням сучасних управлінських моделей, а також розвитком інновацій сталого спрямування в ланцюгах постачання. Попри посилену наукову увагу до сталого розвитку, дослідження інновацій сталого спрямування (SOI) у контексті циркулярних ланцюгів постачання залишаються недостатньо систематизованими. З огляду на це метою дослідження є ідентифікація та аналіз ключових чинників впровадження SOI у ланцюгах постачання текстильної та модної індустрій. Методологічною основою роботи є синтетичний огляд літератури, що дозволив виокремити три групи детермінант впровадження SOI: внутрішньоорганізаційні чинники, пов'язані з ресурсним забезпеченням, управлінськими компетентностями та корпоративною культурою; ринкові й споживчі драйвери, що відображають вплив попиту на сталу продукцію, конкурентного середовища та ланцюгових взаємодій; нормативно-політичні чинники, у тому числі міжнародні стандарти, регуляторні вимоги та державні стимули. Сукупний вплив зазначених детермінант зумовлює розвиток інновацій сталого спрямування як необхідного елементу створення сталих цінностей у ланцюгах постачання. Результати дослідження ґрунтуються на запропонованій концептуальній моделі та роблять внесок у формування наукових підходів до оцінювання SOI з позиції концепції «потрійного критерію ефективності» (triple bottom line). Практична значущість роботи полягає у формуванні структурованого аналітичного інструментарію для оцінювання і посилення драйверів SOI у текстильній і модній галузях. Отримані висновки створюють підґрунтя для подальших емпіричних досліджень та можуть бути використані стейкхолдерами для розроблення стратегій сталого розвитку ланцюгів постачання.

**Ключові слова:** інновації сталого спрямування, ланцюг постачання, текстильна індустрія, модна індустрія.