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Environmental Certifications as a Catalyst for Advancing Circular Supply Chains

Les certifications environnementales comme levier de promotion des chaînes d'approvisionnement circulaires

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Abstract

Environmental certifications are crucial in changing supply chains in a global setting where ecological transition and sustainability have emerged as significant issues. They encourage businesses to embrace more environmentally friendly practices and guarantee adherence to stringent environmental requirements. In order to encourage a circular supply chain, this article examines how certifications like ISO 14001., Cradle to Cradle (C2C), LEED (Leadership in Energy and Environmental Design), and European eco-labels can be effective levers. These certifications force businesses to reconsider their production and logistical plans by defining precise environmental standards and including the concepts of resource efficiency, waste minimization, and recyclability.

This study emphasizes the critical role that certifications play in promoting sustainable supply chain management through an examination of current research and real-world case studies. It looks at how they affect stakeholder cooperation, consumer trust, and business environmental performance. The essay also addresses the difficulties and restrictions that come with putting these certificates into practice, such as the financial limitations that SMEs have and the difficulty of juggling several certification programs.

In the end, this study emphasizes that environmental certifications are strategic facilitators for the shift to a more sustainable and circular economy, not just compliance instruments. The transition to more robust and environmentally friendly supply chains may be accelerated by their broad adoption in conjunction with standardized regulatory frameworks and funding sources.

Key words: Environmental certifications; Sustainable supply chains; Ecological transition; Circular economy.

Résumé

Les certifications environnementales jouent un rôle clé dans la transformation des chaînes d'approvisionnement, dans un contexte mondial où la transition écologique et la durabilité sont des préoccupations majeures. Elles incitent les entreprises à adopter des pratiques plus écologiques et assurent le respect des normes environnementales strictes. Cet article examine comment des certifications telles qu'ISO 14001, Cradle to Cradle (C2C), LEED (Leadership in Energy and Environmental Design) et les écolabels européens peuvent agir comme leviers pour favoriser une chaîne d'approvisionnement circulaire. Ces certifications obligent les entreprises à revoir leurs stratégies de production et de logistique en établissant des normes environnementales précises et en intégrant des concepts comme l'efficacité des ressources, la réduction des déchets et le recyclage.

Cette étude met en évidence l'importance des certifications dans la gestion durable des chaînes d'approvisionnement, en se basant sur des recherches actuelles et des études de cas réelles. Elle analyse leur impact sur la coopération entre les parties prenantes, la confiance des consommateurs et la performance environnementale des entreprises.

L'article aborde également les difficultés liées à la mise en œuvre de ces certifications, telles que les contraintes financières des PME et les défis liés à la gestion de multiples programmes de certification.

Enfin, cette étude montre que les certifications environnementales ne se limitent pas à des outils de conformité, mais qu'elles sont des leviers stratégiques pour la transition vers une économie plus durable et circulaire. Leur adoption généralisée, accompagnée de cadres réglementaires normalisés et de sources de financement, pourrait accélérer la transformation des chaînes d'approvisionnement vers des modèles plus écologiques et durables.

Mots clés : Certifications environnementales; Chaines d'approvisionnement durables; Transition écologique ; Economie circulaire.

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Introduction

By emphasizing reuse, recycling, and waste reduction, the circular economy is a revolutionary economic model that aims to reinterpret conventional patterns of production and consumption. The circular economy encourages a closed-loop system in which resources are continuously optimized, lowering both environmental impact and resource dependency, in contrast to the linear economy, which takes a "take, make, dispose" strategy (Ellen MacArthur Foundation, 2020). Businesses can increase environmental performance, reduce manufacturing costs, and improve resource efficiency by incorporating sustainable concepts into supply chains (Geissdoerfer et al., 2017). However, industry-wide structural and strategic adjustments are necessary to make the shift to a circular economy. Consumer awareness, business responsibility, and regulatory frameworks are all necessary for this change (Ghisellini, Cialani, & Ulgiati, 2016).

In this regard, environmental certifications have become crucial instruments for directing companies toward sustainable operations. These certifications encourage businesses to implement sustainable sourcing, eco-friendly production methods, and responsible waste management by establishing quantifiable and explicit standards for environmental performance (Testa et al., 2016).

Organizations can incorporate sustainability into their operations by using the structured framework provided by environmental certifications like ISO 14001 (Environmental Management Systems), Cradle to Cradle (C2C), BREEAM (Building Research Establishment Environmental Assessment Method), and the European Ecolabel (Lozano et al., 2018). Businesses can increase productivity, adhere to environmental standards, and obtain a competitive edge in international marketplaces with the use of these certificates (Delmas & Burbano, 2011).

Environmental certifications are essential for improving consumer trust and business legitimacy in addition to operational efficiency. According to studies, customers are becoming more prepared to pay more for goods and services that have received sustainability certification from reliable third-party organizations (Testa et al., 2016). By reducing information asymmetry, certifications assist customers in making well-informed decisions and motivate companies to implement more accountable and transparent environmental practices (Daddi et al., 2016).

Furthermore, by encouraging ethical sourcing, circular design, and responsible production methods, environmental certifications have an impact on supply chain management. In order to

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improve traceability and strengthen cooperation among supply chain partners, certified businesses must monitor and report their environmental performance (Su et al., 2013).

The use of environmental certifications is changing from a voluntary commitment to a strategic imperative as sustainability becomes a major factor in global economic strategies.

This article explores the advantages, difficulties, and practical uses of environmental certifications as effective tools for advancing the circular supply chain paradigm. This study emphasizes the significance of certifications in promoting corporate sustainability and influencing the development of ecologically conscious supply chains by examining current research and case studies.

Problematic and Research methodology

The research is based on an exploratory qualitative approach, combining a review of scientific literature with the analysis of several concrete case studies of certified companies operating in various sectors, based on well-known certifications such as ISO 14001, Cradle to Cradle, and the European Ecolabel.

The objective is to identify the mechanisms through which environmental certifications influence logistical, organizational, and partnership practices within the supply chain. This methodology allows highlighting general trends while taking into account specific sectoral contexts.

The research methodology employed in this article is a Systematic Literature Review (SLR). This structured and replicable approach allows for the identification, selection, synthesis, and critical analysis of relevant academic studies based on predefined criteria.

In the face of the climate emergency and growing pressure to adopt sustainable economic models, the circular supply chain is emerging as a promising solution. However, its implementation remains complex for businesses due to organizational, financial, and regulatory constraints. In this context, environmental certifications are increasingly seen as incentive-based tools to help align industrial practices with the principles of the circular economy. This raises the central research question: How can environmental certifications effectively contribute to the transition toward circular supply chains, while considering the practical challenges businesses face?

Using the SLR method, the authors conducted an extensive literature search reviewed a wide variety of sources, and synthesized findings to offer a comprehensive understanding of these influencing factors. The article comprises four main sections: first, we define the research problem and outline the adopted methodology; second, we present an overview of key



environmental certifications; third, we analyze their impact through case studies; and finally, we discuss the main findings and suggest recommendations to strengthen the role of certifications in advancing circular supply chain practices.

1. Key Environmental Certifications

Eco-labels known as environmental certifications are given to businesses, goods, or services that satisfy particular sustainability standards. As third-party validations, these certifications guarantee that companies follow environmental regulations and implement strategies that support resource efficiency, pollution control, and the ideas of the circular economy (Testa et al., 2016). In order to improve corporate social responsibility (CSR) policies, lessen environmental impacts, and obtain a competitive advantage in international markets, they are essential in promoting sustainable production and consumption (Delmas & Burbano, 2011). Companies are guided in environmental management, sustainable design, and responsible supply chain activities by a number of globally recognized certifications. The following are a few of the most popular certifications:

1.1 ISO 14001 (Environmental Management Systems – EMS)

- ✓ The International Organization for Standardization (ISO) created the ISO 14001 standard, which offers a framework for businesses to create, implement, and enhance their environmental management systems (EMS) throughout time (ISO, 2015).
- ✓ This certification promotes energy efficiency, waste reduction, and pollution control while assisting firms in identifying, tracking, and managing their environmental.
- ✓ Impacts and guaranteeing adherence to environmental laws and regulations (Heras-Saizarbitoria et al., 2011).
- ✓ ISO 14001 is widely adopted across industries, from manufacturing and construction to logistics and energy sectors, as it enhances operational efficiency and corporate reputation (Arimura, Darnall, & Katayama, 2011).

1.2 Cradle to Cradle (C2C) Certification

- o The Cradle to Cradle Certified® Product Standard is a globally recognized certification that evaluates a product's sustainability based on five key criteria:
- Material health (use of non-toxic, safe materials)
- Material reutilization (recyclability and biodegradability)
- Renewable energy and carbon management

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- Water stewardship
- Social fairness (McDonough & Braungart, 2002).
- o By guaranteeing that products are made for safe reintegration into nature or ongoing usage rather than ending up in landfills, C2C certification supports the ideas of the circular economy (Braungart, McDonough, & Bollinger, 2007).
- o Because sustainable product design can greatly lessen environmental effect, this certification is especially pertinent for industries like electronics, construction materials, textiles, and packaging (Mulhall & Braungart, 2010).

1.3 The EU Ecolabel

An optional certification known as the European Union Ecolabel designates goods and services that satisfy strict environmental performance requirements at every stage of their lifecycle, from the procurement of raw materials to disposal (European Commission, 2021).

It promotes energy efficiency, lower carbon emissions, and responsible resource use and covers a wide range of items, such as furniture, textiles, detergents, home goods, paints, and tourism services (Rex & Baumann, 2007).

Due to consumers' growing preference for products with proven environmental benefits, businesses who obtain this certification gain credibility in the marketplace (Testa et al., 2015).

2. Impact of Environmental Certifications on Circular Supply Chains: How Environmental Certifications Drive Sustainable Practices?

Environmental certifications encourage businesses to implement sustainable strategies by focusing on:

- Efficient Resource Management: Certified companies are required to optimize energy and water consumption, reduce raw material usage, and implement eco-friendly sourcing practices (Lozano et al., 2018).
- Pollution Reduction: Certifications set strict limits on carbon emissions, hazardous waste, and chemical pollutants, pushing businesses toward cleaner production processes (Daddi et al., 2016).
- Recycling and Circular Economy: Many certification schemes emphasize product life cycle management, encouraging companies to adopt recyclable packaging, biodegradable materials, and closed-loop production systems (Ghisellini, Cialani, & Ulgiati, 2016).

In light of the growing importance of sustainability in international trade and consumer preferences, environmental certifications offer companies increased brand recognition, risk

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reduction, and regulatory compliance. They act as tactical instruments to address the increasing demand for ethical and ecological products while easing the shift to a circular economy.

The Impact of Certifications on Circular Supply Chains

Environmental certifications play a pivotal role in promoting circular supply chains by:

- Encouraging transparency: Certified companies are often required to disclose their environmental practices, enhancing product and material traceability (Bansal & Song, 2017).
- Promoting eco-design: Standards motivate the design of products with extended lifespans, improved reparability, and end-of-life recyclability (Ghisellini, Cialani, & Ulgiati, 2016).
- Strengthening collaboration: Certifications drive various supply chain stakeholders to collaborate toward shared environmental objectives (Kusi-Sarpong, Bai, & Sarkis, 2019). According to Zeng et al. (2011), the ISO 14001 certification, for example, offers a framework that enables businesses to methodically handle their environmental obligations, improving environmental performance. This guideline highlights how crucial it is to incorporate environmental management into business operations since doing so improves transparency and encourages cooperation between supply chain participants.

Comparably, businesses must fulfill strict requirements for social and environmental performance, accountability, and openness in order to receive the B Corporation (B Corp) accreditation. This entails evaluating how their supply chains affect the environment and collaborating closely with suppliers to guarantee that sustainable practices are maintained (Hiller, 2013).

It's crucial to understand that certification by itself does not provide the best possible environmental performance. A company's sincere dedication to incorporating sustainable practices beyond simple compliance determines how effective certifications are. The efficacy of certifications may be hampered by issues including intricate reporting requirements and a lack of consistency (Seuring & Müller, 2008). For instance, the garment industry's many certifications and regulations have resulted in a convoluted and expensive reporting procedure that confuses companies and suppliers (Turker & Altuntas, 2014).

Environmental certifications can significantly impact the promotion of circular supply chains by enhancing transparency, encouraging eco-design, and fostering collaboration. However, their success relies on the authentic dedication of companies to adopt and implement sustainable practices throughout their operations.

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Table 1: Comparison of Key Environmental Certifications and Their Impact on Circular
Supply Chains

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11.5	Textile	production	(Turker & Altuntas, 2014)	does not cover
(GOTS) chain	Standard			full supply
	(GOTS)			chain

Source: prepared by the authors

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3. Case Studies and Recent Research on Environmental Certifications in Circular Supply Chains

Environmental certifications are essential in forming sustainable supply chain processes, according to recent studies. By guaranteeing adherence to social, ecological, and societal norms, these certifications serve as tactical instruments for companies looking to align their operations with the principles of the circular economy.

3.1 The Influence of Environmental Certifications on Supply Chain Sustainability

According to Fulconis et al. (2016), supply chain management and logistics research makes a substantial contribution to managerial decision-making as well as scholarly discussion. Their research demonstrates how supply chains that embrace sustainability principles might result in a new kind of economic growth that takes social and environmental factors into account. According to the report, businesses that obtain environmental certifications are more likely to use innovative product design, cut waste, and put effective resource management techniques into place, all of which promote a circular supply chain.

Additionally, their research shows that businesses that participate in certified supply chains typically form strategic alliances with suppliers who share their environmental standards over the long run. This alignment improves the overall resilience of the supply chain in addition to the reputation of the brand (Fulconis et al., 2016).

3.2 Environmental Concerns as a Driving Force for Certified Logistics

Gourich et al. (2020) examine how environmental issues have taken center stage in social, political, and economic debates. According to their research, businesses are increasingly implementing logistical strategies to lessen their environmental effect, frequently spurred on by environmental certifications like ISO 14001 and B Corp. According to this study, companies that hold environmental certifications exhibit improved resource optimization, reduced carbon emissions, and improved operational efficiency.

The study's main conclusion is that environmental certifications provide a competitive edge in addition to being compliance tools. In terms of sustainability measures, customer trust, and regulatory compliance, businesses that include these certifications into their supply chains typically perform better than their non-certified counterparts (Gourich et al., 2020).

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3.3 Case Studies on the Impact of Certifications in Circular Supply Chains

Several real-world case studies further validate the role of environmental certifications in supply chain sustainability:

Company	Certification	Impact on Circular Supply Chain
Patagonia	Bluesign®, Fair Trade Certified TM	Reduces water and energy consumption, improves worker conditions, and promotes recycling initiatives (Patagonia, 2021).
IKEA	FSC (Forest Stewardship Council), ISO 14001	Ensures responsible sourcing of raw materials and reduces waste through circular design strategies (IKEA Sustainability Report, 2022).
Unilever	B Corp, RSPO (Roundtable on Sustainable Palm Oil)	Increases supply chain transparency, enhances resource efficiency, and reduces greenhouse gas emissions (Unilever, 2023).

Source: prepared by the authors

3.4 The Challenges and Limitations of Environmental Certifications

While environmental certifications offer numerous benefits, they also come with challenges:

- High Costs and Complex Implementation: Many small and medium-sized enterprises (SMEs) struggle with the financial and operational burden of obtaining and maintaining certifications (Seuring & Müller, 2008).
- Lack of Standardization: The existence of multiple certification systems can create confusion among companies and consumers regarding the credibility and impact of different labels (Turker & Altuntas, 2014).
- Regulatory and Compliance Barriers: Certifications must align with evolving international regulations, requiring companies to continuously update their processes to maintain compliance (Zeng et al., 2011).

Circular supply chain processes are significantly influenced by environmental certifications, as the study and case studies mentioned above show. These certificates assist businesses in achieving their long-term sustainability objectives by encouraging openness, cooperation, and resource optimization. Businesses, however, need to be ready to handle the difficulties brought on by the expense of certification and the complexity of regulations. In the future, combining

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certificates with cutting-edge digital technologies—like blockchain for improved traceability—could increase their influence on international supply chains.

Challenges and Perspectives

Although environmental certifications have many advantages, there are drawbacks as well, especially for small and medium-sized businesses (SMEs).

The certification procedure is sometimes expensive and complicated for SMEs. According to a study by Berger-Douce (2010), SMEs find it challenging to implement certified environmental management systems due to a lack of funding and human resources. The proliferation of environmental certifications may cause consumers and businesses to get confused. According to research by Dekhili and Achabou (2013), environmental labels are less successful as indicators of environmental quality when they are not credible and are not communicated well.

3.5 Strategies to Enhance the Impact of Certifications on Circular Supply Chains

Developing common criteria to facilitate the recognition and adoption of certifications is crucial. The proliferation of quality labels, particularly in agro-ecology, can reduce consumers' willingness to pay for a product when multiple labels are attached, according to a recent study (Bazillier & Suarez, 2011).

Smaller businesses might get assistance with the certification process by putting in place financial and technical assistance initiatives. Although SMEs are becoming more involved in sustainable development initiatives, a survey by Bazillier and Suarez (2011) revealed that they encounter major obstacles since they are unaware of the resources and institutional collaborations that are accessible to them.

Table 2 Comparison of Environmental Certification Challenges and Solutions

Challenge	Description	Proposed Solution	
Cost and	High costs and complexity for SMEs	Financial and technical assistance	
Accessibility			
Proliferation of	Too many certifications causing	Standardization and	
Labels	confusion	harmonization	
Credibility Issues	Lack of consumer trust in labels	Improved communication and verification	

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For environmental certifications to effectively support circular supply chains, it is essential to simplify the process for SMEs and streamline existing labels to enhance their credibility and transparency for consumers.

Conclusion

By establishing clear guidelines and praising business initiatives, environmental certifications play a crucial role in encouraging the shift to circular supply chains and fostering a more resilient and sustainable economy. However, improved stakeholder coordination and customized support for a range of market participants are essential to realizing their full potential.

The fashion business is a prime example of the intricacies brought about by multiple certifications, rules, and laws, which cause suppliers and brands to become confused and ineffective. In order to streamline procedures and accomplish climate goals, discussions at the OECD Forum have emphasized the necessity of standardizing sustainability measures and data sharing (Friedman, 2024).

Initiatives like the Circular Bioeconomy Alliance (CBA) are attempting to incorporate sustainable practices into supply chains by experimenting with agroforestry and regenerative agriculture projects in order to address these issues. These initiatives improve biodiversity protection while simultaneously helping local communities (Spring, 2024). Furthermore, the successful implementation of environmental certifications depends on good stakeholder engagement. Effective environmental management requires openness, trust, and cooperation, all of which are fostered by including important organizations and individuals who have a major influence on a company's environmental, social, and governance (ESG) policies (AWorld, n.d.).

In summary, environmental certifications are essential instruments for promoting circular supply chains, but their success hinges on stakeholders working together and giving different market participants the right kind of assistance. Certifications can more successfully propel the transition to resilient and sustainable supply chains by tackling current issues through harmonization, creative projects, and active participation.

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