Sustainable Supply Chain Innovations: Exploring Green Logistics And Circular Economy Models

Dr. Kavita Sharma[1*], Dr.Tarun Kumar Makhija[2]
[1]Selinus University, Italy, frenchabsolute@gmail.com
[2]Selinus University, Italy, makhijatk@gmail.com

Abstract– *In the current era of heightened environmental awareness, sustainable supply chain management has emerged as a critical area of study. This paper examines sustainable supply chain innovations with a focus on green logistics and the implementation of circular economy models. We explore the theoretical underpinnings and practical implications of adopting environmentally sustainable practices in supply chains, and argue that integrating green logistics and circular economy strategies not only mitigates environmental impact but also enhances economic performance. This paper proposes several theoretical frameworks and methodological approaches for future research, aiming to deepen the understanding of sustainable supply chain mechanisms and their broader implications on global sustainability.*

Keywords– *Circular economy, corporate responsibility, environmental sustainability, green logistics, resource efficiency, sustainable supply chain management, supply chain optimization, technological innovation.*

INTRODUCTION

In an era defined by rapid technological advancements and escalating ecological concerns, the paradigm of global supply chains is undergoing a transformative shift. Traditionally, these supply chains have optimized for cost and efficiency, often at the expense of environmental sustainability. However, the growing pressures of climate change, resource depletion, and a significant shift in consumer behavior towards sustainability are prompting a critical re-evaluation of supply chain practices [12], [22]. These pressures are not just environmental but also economic, as unsustainable practices increasingly bear financial and reputational risks. As such, the need for sustainable supply chain innovations has never been more urgent.

The impact of climate change is evident in the increasing variability of weather patterns, affecting agricultural productivity, raw material availability, and logistics operations. Simultaneously, the world faces a stark depletion of essential resources, such as fresh water and raw materials, which are the lifelines of global supply chains. These environmental challenges are compounded by a more conscious consumer base that demands transparency, ethics, and sustainability in the production and distribution of goods. Companies face not only a moral imperative but also a market-driven compulsion to adopt sustainable practices.

The rationale for focusing on green logistics and circular economy models within this context is compelling. Green logistics aims to minimize the carbon footprint and environmental impact of transportation and warehousing, which are integral components of supply chains. This includes optimizing route planning, utilizing eco-friendly materials in packaging, and adopting technologies that reduce emissions and waste [4]. Conversely, the circular economy introduces a regenerative approach where waste is minimized, and resources are reused and recycled, extending the lifecycle of products and materials. Together, these approaches not only address the environmental imperatives but also offer pathways to economic efficiency and resilience in a resource-constrained world.

This paper aims to explore the integration of green logistics and circular economy models within supply chains, specifically how they can transform traditional practices to achieve environmental sustainability without compromising economic viability. The objectives of this research are to:

1. Assess the current landscape of sustainable supply chain practices, identifying key trends and technologies in green logistics and circular economy models.

2. Evaluate the challenges and barriers to implementing these models in both small-scale enterprises and multinational corporations.

3. Propose a framework for successfully integrating sustainable practices into supply chains, underpinned by real-world case studies and empirical data.

4. Examine the long-term impacts of sustainable supply chain practices on business performance and environmental preservation.

Through this exploration, the paper seeks to provide actionable insights and strategic recommendations for businesses striving to adapt to the evolving market demands and environmental imperatives of the 21st century. This study not only contributes to academic discourse but also guides practical implementation, offering a blueprint for future innovations in the field of sustainable supply chains.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

A. Green Logistics

Definition and Historical Development: Green logistics refers to the attempts by companies to measure and minimize the environmental impact of their logistics activities. Historically, the concept of green logistics emerged from the broader environmental movement in the late 20th century, as businesses began to recognize their role in contributing to global environmental degradation. Early initiatives focused on basic measures such as reducing packaging waste and improving the fuel efficiency of transportation fleets [6]. Over the years, the scope of green logistics has expanded significantly to include a wide range of activities across the entire supply chain—from product design to the end-of-life phase of products.

Relevant Models and Practices: One of the most effective models in green logistics is the adoption of electric vehicles (EVs) in transportation fleets. Electric vehicles help reduce the reliance on fossil fuels and decrease greenhouse gas emissions, a major contributor to global warming. Another practice is the optimization of supply chain networks. This involves strategic placement of distribution centers, efficient route planning, and load optimization to reduce travel distances and fuel consumption [14]. Advanced packaging solutions also play a crucial role; these include using biodegradable materials or designing reusable packaging that minimizes waste and resource consumption.

Case Studies and Real-World Applications: Several leading companies have successfully implemented green logistics practices. For example, a global shipping company introduced a fleet of electric delivery trucks in urban areas, significantly reducing carbon emissions [2]. However, challenges remain, such as the high upfront costs of electric vehicles and the infrastructure needed for their operation. Another case involved a major retailer that redesigned its supply chain network to optimize route efficiency, resulting in a 15% reduction in fuel usage. These examples underscore the practical benefits and obstacles in adopting green logistics, highlighting the need for continued innovation and investment in sustainable practices.

B. Circular Economy Models

Circular vs. Linear Economy: The circular economy represents a shift from the traditional linear economic model of "take-make-dispose" to one that is regenerative by design. In contrast to the linear model, which leads to significant waste and environmental strain due to the continuous extraction of resources, the circular economy emphasizes keeping resources in use for as long as possible through the principles of repair, reuse, and recycling [20]. This model not only helps reduce environmental impact but also enhances resource efficiency.

Key Elements of the Circular Economy

- **Design for Longevity**: Products are designed from the outset to last as long as possible, which minimizes waste and the demand for raw materials.
- **Renewability**: Emphasis on using renewable energy sources during production to decrease dependency on fossil fuels.
- **Reuse and Repairing**: Encourages the reuse of products and components, and when they are no longer functional in their original form, they can be repaired.
- **Refurbishing and Recycling**: Old products are refurbished for new use, and materials are recycled to create new products, thus keeping materials within the economic cycle and reducing the need for virgin materials.

Case Studies and Industrial Applications: An illuminating case study in the circular economy is that of

a European furniture manufacturer that implemented a take-back system for used furniture, which is then refurbished and resold [16]. This practice not only reduced waste but also opened up new market segments. Another example is a tech company that designed a smartphone with modular components that can be easily replaced or upgraded, significantly extending the phone's lifespan and reducing electronic waste. These cases demonstrate the circular economy's potential to drive both environmental sustainability and business innovation.

Thus, we can apparently state that the integration of green logistics and circular economy models offers a promising pathway towards sustainable supply chain management. By examining theoretical frameworks and real-world applications, this review highlights the effective strategies and existing challenges in implementing these models. As businesses continue to face global environmental pressures, the adoption of such sustainable practices is likely to become a standard, driven by both regulatory frameworks and consumer expectations [9].

METHODOLOGY

Research Design

This study employs a mixed-methods approach to comprehensively explore sustainable supply chain innovations, specifically focusing on green logistics and circular economy models. The mixed-methods design combines quantitative data analysis with qualitative insights to create a robust understanding of both the measurable impacts and the nuanced experiences of implementing sustainable practices. This approach allows for a deeper exploration of complex variables that influence sustainable supply chains and provides a balanced perspective on the effectiveness and challenges of green logistics and circular economy practices [5].

The integration of quantitative and qualitative methods will occur at several junctures throughout the research. Initially, quantitative data will provide a broad overview of trends, impacts, and correlations, which will then be enriched and contextualized by qualitative narratives and case studies. This will enable the research to not only demonstrate what is happening in terms of sustainable practices but also to explore how and why these practices are implemented, thereby revealing underlying mechanisms and motivations.

Data Collection

Quantitative: Quantitative data for this research will be collected from multiple sources to ensure a comprehensive analysis. The primary sources will include industry reports, sustainability audits, and performance data from companies that have implemented green logistics and circular economy models. Specific data points will include metrics on carbon footprint reduction, cost savings or expenditures related to the implementation of sustainable practices, and lifecycle assessments of products and materials.

The analysis of this data will involve statistical methods to identify trends, correlations, and potential causal relationships. Techniques such as regression analysis, ANOVA, and time-series analysis will be utilized to assess the impact of sustainable supply chain practices over time. The statistical software SPSS and R will be employed for their robust analytical capabilities, facilitating complex statistical testing and data visualization to enhance the interpretation of results [17].

Qualitative: Qualitative data will be collected through semi-structured interviews and case study documentation. The participants for interviews will be selected based on a criterion sampling strategy to ensure they have direct experience with the implementation of green logistics and circular economy strategies. This will likely include supply chain managers, sustainability officers, and executives from firms known for their pioneering sustainability practices.

Interviews will be designed to gather insights into the participants' experiences, perceptions, and the challenges and benefits associated with sustainable supply chain practices. The data from these interviews will be analyzed using thematic analysis, where responses will be coded and themes identified to construct a narrative around the practical implementation of sustainability in supply chains. NVivo, a qualitative

data analysis software, will be used to assist in managing, coding, and synthesizing the qualitative data, ensuring a rigorous and structured approach to thematic analysis [10].

Ethical Considerations

The research will adhere to high ethical standards to ensure the integrity and confidentiality of the data collection and analysis processes. All participants in the study will be provided with a consent form that outlines the purpose of the research, the nature of their participation, and the measures taken to protect their privacy and data. Confidentiality will be maintained by anonymizing the data, where personal and corporate identifiers are removed or masked. Data will be stored securely in encrypted forms and access limited to the research team.

Ethical approval will be sought from the institutional review board (IRB) to ensure that all planned methods meet the necessary ethical standards. Special attention will be paid to the ethical considerations around the potential impact of the research findings on participants and their organizations, ensuring that no harm comes to them as a result of their participation in the study.

By rigorously applying these methodological and ethical protocols, this research aims to provide valuable insights into the integration of green logistics and circular economy models into supply chains, offering a balanced view that combines empirical evidence with contextual depth [24].

DISCUSSION

A. Integration Challenges

Costs: Integrating sustainable practices such as green logistics and circular economy models into supply chains often involves significant initial costs. Investments are required for upgrading or replacing infrastructure, acquiring new technologies, training staff, and potentially, increased operational costs. For example, switching to electric vehicles (EVs) requires not only the higher upfront costs of the vehicles but also investment into charging infrastructure. Moreover, transitioning to circular models often necessitates redesigning products to be more durable or easier to recycle, which can increase manufacturing costs [11]. Despite these challenges, literature and case studies illustrate various strategies to mitigate these financial burdens. Many companies find that government subsidies or grants for green technologies lower the initial financial barrier [1]. For instance, IKEA has invested heavily in renewable energy solutions, partially funded by government renewable incentives, demonstrating that with strategic planning and utilization of available resources, companies can offset the high costs associated with sustainable innovations.

Organizational Resistance: Organizational resistance is another significant barrier, often rooted in a reluctance to change established processes and skepticism about the tangible benefits of new, sustainable practices. Change management is crucial here; successful integration often hinges on transparent communication and inclusive decision-making processes. Training and education also play vital roles in aligning organizational culture with new sustainability goals [19].

A case in point is the global chemical company BASF, which implemented a comprehensive change management strategy to integrate circular economy practices across its operations. By involving employees at all levels in the planning and implementation phases and clearly communicating the economic and environmental benefits of the new practices, BASF managed to reduce resistance significantly [3].

Logistical Complexities: The complexity of redesigning supply chain logistics to accommodate green and circular practices can be daunting. This often involves coordinating multiple elements, from sourcing sustainable materials to managing the logistics of product returns for recycling or refurbishment.

Companies like Dell Technologies have successfully navigated these complexities by developing closed-loop supply chains where used products are brought back into the production cycle [25]. This requires sophisticated logistics planning and collaboration with supply chain partners but results in significant reductions in waste and resource consumption.

B. Strategic Implications

Aligning with Operational Goals and Corporate Ethos: Strategically integrating sustainable practices involves aligning these initiatives with the core operational goals and corporate ethos of a company. This

alignment ensures that sustainability becomes a part of the strategic decision-making process rather than an afterthought. Companies like Patagonia, which has sustainability at its core ethos, demonstrate how such alignment can enhance brand reputation and customer loyalty, driving long-term business success [15].

Long-term Benefits and Competitive Advantages: Adopting green logistics and circular economy practices can provide several long-term benefits and competitive advantages. Environmentally sustainable practices can lead to cost savings through efficient use of resources and waste reduction. They can also insulate companies from the volatility of raw material prices by reducing dependency on natural resources. Moreover, companies that pioneer in adopting these practices often gain a competitive edge by differentiating themselves in the market. They are also better positioned to comply with future regulations related to environmental sustainability, giving them a first-mover advantage.

C. Policy Implications

Support from Policymakers: Policymakers have a crucial role in supporting sustainable supply chain practices. Effective policies could include incentives like tax breaks or subsidies for companies adopting green technologies, grants for research and development in sustainable practices, or favourable tariff rates for sustainably produced imports and exports [23].

Moreover, governments can foster public-private partnerships to develop the necessary infrastructure for sustainable supply chains, such as nationwide charging networks for electric vehicles or facilities for processing recycled materials.

In addition to incentives, regulatory frameworks can enforce minimum sustainability standards across industries. These regulations would level the playing field and ensure that all market players adopt at least basic sustainable practices.

Conclusion: Integrating sustainable practices into supply chains presents various challenges, including high costs, organizational resistance, and logistical complexities. However, with strategic planning, these challenges can be overcome, leading to significant long-term benefits and competitive advantages. Policymakers play a critical role in facilitating this transition, offering both challenges and opportunities in the quest for sustainable supply chain management. Through collaborative efforts between businesses and governments, the transition to greener and more circular supply chains can be accelerated, contributing to broader environmental and economic goals.

II. FUTURE RESEARCH DIRECTIONS

Despite substantial advancements in sustainable supply chain management, significant research gaps remain, particularly in the integration and scaling of green logistics and circular economy models. Addressing these gaps is critical for developing more effective strategies and broadening the adoption of sustainable practices across industries and regions.

A. Areas for Further Studies

Technology's Role in Facilitating Sustainable Practices: Future research should delve deeper into how emerging technologies can facilitate the transition to sustainable supply chains. This includes the use of artificial intelligence (AI) and the Internet of Things (IoT) to enhance logistics efficiency, predictive maintenance, and real-time tracking of resources. Blockchain technology also holds potential for improving transparency in supply chains, ensuring the traceability of sustainably sourced materials and ethical labor practices [7]. Investigating the interplay between these technologies and green logistics or circular principles could yield valuable insights into achieving more sustainable supply chains.

Cross-Industry Comparisons: There is a need for comparative studies across different industries to understand the unique challenges and opportunities each faces in implementing sustainable practices. Industries such as automotive, electronics, and textiles each have distinct supply chain structures, regulatory environments, and consumer expectations, which affect their approach to sustainability [21]. Cross-industry research could help identify best practices that are transferable and those that need to be tailored to specific industry characteristics.

Global Versus Local Implementation Strategies: Research on global versus local implementation

strategies for green logistics and circular economy models is essential. Such studies could explore how multinational companies can balance global efficiency with local responsiveness in their sustainability practices. This research area could also examine how companies adapt global sustainability strategies to fit local cultural, economic, and regulatory contexts, providing a nuanced understanding of globalization's impact on sustainable supply chain management [8].

B. Methodologies for Future Research

Innovative Data Collection Techniques: To capture the complex dynamics of sustainable supply chains, future research should employ innovative data collection techniques. One approach is the use of sensor technologies and big data analytics to gather precise data on resource flows, waste generation, and recycling processes [18]. This data can provide insights into the effectiveness of sustainability initiatives and help identify areas for improvement.

Interdisciplinary Research Approaches: Sustainable supply chain management is inherently interdisciplinary, touching on economics, environmental science, engineering, and business management. Future studies could benefit from an interdisciplinary approach that integrates knowledge from these fields to address the multifaceted challenges of sustainability. Collaborative research teams comprising experts from different disciplines can use a holistic approach to develop more comprehensive solutions to the challenges of green logistics and circular economy models.

Experimental and Simulation-Based Research: To test the feasibility and effectiveness of new sustainable practices before full-scale implementation, experimental and simulation-based research methods could be invaluable. For instance, using simulation models to assess the impact of a new recycling process on the efficiency of a supply chain can help predict potential bottlenecks and assess the environmental benefits without disrupting actual operations [13]. Similarly, controlled experiments can be used to study the behavioral aspects of supply chain management, such as the willingness of managers and consumers to adopt new sustainable practices.

Conclusion: Addressing the identified research gaps through these proposed methodologies could significantly advance the field of sustainable supply chain management. By leveraging new technologies, conducting cross-industry comparisons, and exploring global versus local strategies, future research can provide valuable insights that help businesses overcome the challenges of integrating sustainable practices. Moreover, adopting innovative data collection techniques and interdisciplinary approaches will enhance the depth and applicability of research findings, ultimately facilitating the transition to more sustainable global supply chains.

CONCLUSION

This research paper has explored the critical integration of green logistics and circular economy models within sustainable supply chain management, focusing on their theoretical underpinnings, practical applications, challenges, strategic implications, and future research directions. Through this comprehensive analysis, we have identified how sustainable practices not only mitigate environmental impacts but also enhance economic performance, aligning with corporate sustainability goals and responding effectively to increasing consumer demands for environmental responsibility.

Key findings from this investigation reveal that while the integration of sustainable practices like green logistics and circular economy models presents notable challenges—including high initial costs, organizational resistance, and logistical complexities—strategic approaches and innovative solutions can overcome these barriers. The case studies and theoretical models discussed underscore the benefits of adopting sustainable practices, such as reduced operational costs, enhanced corporate reputation, and compliance with regulatory standards, which collectively contribute to long-term business sustainability.

Reflecting on the sustainability of supply chain practices, it is evident that current global economic and environmental challenges demand a more integrated approach. The volatility of global resource supplies, heightened environmental regulations, and the shift in consumer preferences towards sustainability necessitate an adaptive and proactive approach to supply chain management. Sustainable supply chains

are not merely a regulatory or ethical consideration but a fundamental component of strategic business operations that can ensure long-term viability and resilience.

As we look towards a more sustainable future, the role of supply chains becomes increasingly crucial. Supply chains are at the heart of global commerce, connecting markets, people, and resources across geographical and cultural boundaries. By transforming supply chains to be more sustainable, businesses not only contribute to environmental conservation and social responsibility but also position themselves to thrive in an economy that values sustainability as a core aspect of business success.

In conclusion, the progression towards sustainable supply chains is both a challenge and an opportunity for contemporary businesses. The findings of this research advocate for a continued emphasis on innovative, technology-driven solutions and cross-sector collaboration to enhance the sustainability of supply chain practices. Future research should build on this foundation, exploring new methodologies and interdisciplinary approaches to unlock the full potential of sustainable supply chains. As businesses and policymakers work together to innovate and implement effective sustainable practices, the vision of a fully integrated, economically viable, and environmentally responsible supply chain comes closer to realization

REFERENCES
[1] Agrawal, R., Agrawal, S., Samadhiya, A., Kumar, A., Luthra, S., & Jain, V. (2023). Adoption of green finance and green innovation for achieving circularity: An exploratory review and future directions. *Geoscience Frontiers*, *15*(4), 101669. https://doi.org/10.1016/j.gsf.2023.101669
[2] Alp, O., Tan, T., & Udenio, M. (2022). Transitioning to sustainable freight transportation by integrating fleet replacement and charging infrastructure decisions. *Omega*, *109*, 102595. https://doi.org/10.1016/j.omega.2022.102595
[3] BASF is contributing toward a circular economy through innovation and multi-sector collaboration. (n.d.). https://www.basf.com/us/en/media/our-stories/sustainability-matters-2024
[4] Cheng, H., Chaudhry, H. R., Kazi, I., & Umar, M. (2024). Unlocking greener supply chains: A global innovative perspective on the role of logistics performance in reducing ecological footprints. *Journal of Innovation & Knowledge*, *9*(4), 100612. https://doi.org/10.1016/j.jik.2024.100612
[5] Chotisarn, N., & Phuthong, T. (2025). Retail Technology Use in Sustainability Practices: A Mixed-Methods Analysis of Implementation Approaches and Future Directions. *Sustainable Futures*, 100674. https://doi.org/10.1016/j.sftr.2025.100674
[6] Howells, T. D. R. (n.d.). *Sustainable logistics on the move | SAP*. https://www.sap.com/canada/blogs/sustainable-logistics-on-the-move
[7] Idrissi, Z. K., Lachgar, M., & Hrimech, H. (2024). Blockchain, IoT and AI in logistics and transportation: A systematic review. *Transport Economics and Management*. https://doi.org/10.1016/j.team.2024.09.002
[8] Jayarathna, C. P., Agdas, D., & Dawes, L. (2022). Exploring sustainable logistics practices toward a circular economy: A value creation perspective. *Business Strategy and the Environment*, *32*(1), 704–720. https://doi.org/10.1002/bse.3170
[9] Kumar, S., Darshna, A., & Ranjan, D. (2023). A review of literature on the integration of green energy and circular economy. *Heliyon*, *9*(11), e21091. https://doi.org/10.1016/j.heliyon.2023.e21091
[10] Lochmiller, C. (2021). Conducting Thematic Analysis with Qualitative Data. *The Qualitative Report*. https://doi.org/10.46743/2160-3715/2021.5008
[11] Malhotra, G. (2023). Impact of circular economy practices on supply chain capability, flexibility and sustainable supply chain performance. *The International Journal of Logistics Management*, *35*(5), 1500–1521. https://doi.org/10.1108/ijlm-01-2023-0019
[12] Mathew, M., & Spinelli, R. (2025). Decoding sustainable drivers: A systematic literature review on sustainability-induced consumer behaviour in the fast fashion industry. *Sustainable Production and Consumption*. https://doi.org/10.1016/j.spc.2025.02.011
[13] Nweje, N. U., & Taiwo, N. M. (2025). Supply chain management: Balancing efficiency and environmental responsibility. *World Journal of Advanced Research and Reviews*, *25*(1), 1547–1564. https://doi.org/10.30574/wjarr.2025.25.1.0212
[14] Oliveri, L. M., D'Urso, D., Trapani, N., & Chiacchio, F. (2023). Electrifying Green Logistics: A comparative life cycle assessment of electric and internal combustion engine vehicles. *Energies*, *16*(23), 7688. https://doi.org/10.3390/en16237688
[15] *Op-Ed: Patagonia Proves the success of Sustainable Corporations – Michigan Journal of Economics*. (2023, November 22). https://sites.lsa.umich.edu/mje/2023/11/22/op-ed-patagonia-proves-the-success-of-sustainable-corporations/
[16] Pei, X., Italia, M., & Melazzini, M. (2024). Enhancing Circular Economy Practices in the Furniture Industry through Circular Design Strategies. *Sustainability*, *16*(15), 6544. https://doi.org/10.3390/su16156544
[17] Qorri, A., Gashi, S., & Kraslawski, A. (2022). A practical method to measure sustainability performance of supply chains with incomplete information. *Journal of Cleaner Production*, *341*, 130707. https://doi.org/10.1016/j.jclepro.2022.130707

[18] Rahman, M. A., Saha, P., Belal, H., Ratul, S. H., & Graham, G. (2024). Big data analytics capability and supply chain sustainability: analyzing the moderating role of green supply chain management practices. *Benchmarking an International Journal*. https://doi.org/10.1108/bij-10-2024-0852

[19] Rehman, N., Mahmood, A., Ibtasam, M., Murtaza, S. A., Iqbal, N., & Molnár, E. (2021). The Psychology of Resistance to Change: The antidotal effect of organizational justice, support and Leader-Member Exchange. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.678952

[20] RTS - Recycle Track Systems. (2024, September 10). *What is Circular Economy & How Does It Work? : Complete Guide - RTS - Recycle Track Systems*. Recycle Track Systems. https://www.rts.com/resources/guides/circular-economy/

[21] Runtuk, J. K., Ng, P. K., & Ooi, S. Y. (2024). Challenges and Solutions in Working with Green Suppliers: Perspective from a Manufacturing Industry. *Sustainability*, *16*(20), 8744. https://doi.org/10.3390/su16208744

[22] Syed, S., Acquaye, A., Khalfan, M. M., Obuobisa-Darko, T., & Yamoah, F. A. (2024). Decoding Sustainable Consumption Behavior: A systematic review of theories and models and provision of a guidance framework. *Resources Conservation & Recycling Advances*, *23*, 200232. https://doi.org/10.1016/j.rcradv.2024.200232

[23] Tengfei, L., & Ullah, A. (2024). Impact of fiscal policies and green financing on firm innovation and firm value for green economic recovery. *Heliyon*, *10*(9), e30145. https://doi.org/10.1016/j.heliyon.2024.e30145

[24] Theeraworawit, M., Suriyankietkaew, S., & Hallinger, P. (2022). Sustainable Supply chain Management in a Circular Economy: A Bibliometric review. *Sustainability*, *14*(15), 9304. https://doi.org/10.3390/su14159304

[25] Wolk-Lewanowicz, A., Roll, K., Koch, L., Roberts, S., & Saïd Business School. (2017). Dell: The Business case for a Sustainable Supply chain. *Making Business Mutual*. https://i.dell.com/sites/doccontent/corporate/corp-comm/en/Documents/circular-case-study.pdf