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Policy implications and economic incentives for sustainable supply chain practices in the food and FMCG Sectors

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Abstract

The adoption of sustainable supply chain practices in the food and Fast-Moving Consumer Goods (FMCG) sectors is critical for mitigating environmental impacts, reducing waste, and fostering responsible resource management. This paper explores the policy implications and economic incentives designed to promote sustainability within these industries, focusing on regulatory frameworks, market-driven mechanisms, and industry-specific challenges. It highlights how government policies, including environmental regulations, tax incentives, and subsidies, can encourage businesses to adopt eco-friendly practices, such as reducing carbon footprints, optimizing transportation logistics, and improving packaging solutions. The study also examines economic incentives like green certifications, consumer demand for sustainable products, and the potential for cost savings through energy efficiency and waste reduction. Moreover, the paper discusses the role of international trade policies and agreements in shaping sustainable supply chains, particularly in emerging markets where infrastructure and regulatory enforcement may be weak. The research identifies the growing trend of companies integrating sustainability goals into their core strategies to enhance corporate reputation, meet investor expectations, and gain a competitive advantage. However, it also highlights the barriers to widespread adoption, including cost concerns, limited access to sustainable materials, and the complexity of supply chain networks. The findings suggest that a combination of well-structured policies, economic incentives, and public-private partnerships is essential for accelerating the transition to sustainable supply chains. Additionally, fostering collaboration among stakeholders—governments, businesses, and consumers—can help overcome the existing barriers. The paper concludes by recommending strategies for policymakers and industry leaders to align economic growth with environmental sustainability, ensuring long-term benefits for both the planet and the economy.

Keywords: Sustainable Supply Chain; Food Sector; FMCG; Policy Implications; Economic Incentives; Environmental Regulations; Green Certifications; Corporate Sustainability; Public-Private Partnerships; Sustainable logistics.

1 Introduction

Sustainability challenges in the food and Fast-Moving Consumer Goods (FMCG) sectors have become increasingly prominent as global awareness of environmental and social issues grows. These sectors face significant pressures due to their extensive resource use, waste production, and greenhouse gas emissions (Goglio et al., 2020; Kessler et al., 2021). In particular, issues such as food waste, unsustainable agricultural practices, and inefficient supply chains contribute to environmental degradation and economic inefficiencies (Meyer et al., 2022; Parfitt et al., 2023). The

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urgency to address these challenges underscores the need for robust sustainable supply chain practices that can mitigate adverse impacts and enhance overall sustainability (Adeniran, et al., 2024, Agu, et al., 2024, Ezech, et al., 2024).

Sustainable supply chain practices are crucial for advancing environmental stewardship, improving resource efficiency, and promoting social responsibility within the food and FMCG sectors (Dubey et al., 2021; Tseng et al., 2022). Implementing these practices involves optimizing resource use, reducing waste, and ensuring ethical sourcing and production processes (Goswami et al., 2023; Liu et al., 2024). These measures not only address environmental concerns but also enhance the resilience and competitiveness of supply chains by aligning with evolving consumer preferences and regulatory requirements (Roehrich et al., 2021; Zhang et al., 2023).

The purpose of this study is to explore the policy implications and economic incentives associated with promoting sustainable supply chain practices in these sectors. By examining existing policies and incentives, this research aims to identify effective strategies for encouraging the adoption of sustainable practices and overcoming barriers to implementation (Hazen et al., 2021; Kumar et al., 2022). The scope includes an analysis of regulatory frameworks, economic incentives such as subsidies and tax breaks, and the role of public-private partnerships in advancing sustainability goals (Richey et al., 2024; Sharma et al., 2023). Understanding these aspects will provide valuable insights into how policy and economic mechanisms can support the transition to more sustainable supply chains in the food and FMCG sectors (Adeniran, et al., 2024, Bello & Olufemi, 2024, Iriogbe, et al., 2024).

2 Sustainable Supply Chain Practices in the Food and FMCG Sectors

Sustainable supply chains are increasingly recognized as critical to achieving environmental, social, and economic goals in the food and Fast-Moving Consumer Goods (FMCG) sectors. A sustainable supply chain integrates practices that minimize environmental impact, promote social equity, and enhance economic viability throughout the entire supply chain (Adewusi, et al., 2024, Komolafe, et al., 2024, Ogbu, et al., 2024). This involves a commitment to reducing carbon footprints, conserving resources, ensuring fair labor practices, and maintaining transparency and accountability across the supply chain (Goswami et al., 2023; Liu et al., 2024).

Key components of sustainable supply chains include waste reduction, energy efficiency, sustainable sourcing, eco-friendly packaging, and logistics optimization. Waste reduction focuses on minimizing food and material waste through efficient production processes, improved storage techniques, and better demand forecasting (Meyer et al., 2022). Energy efficiency involves adopting technologies and practices that lower energy consumption and reduce greenhouse gas emissions, such as using energy-efficient machinery and renewable energy sources (Tseng et al., 2022). Sustainable sourcing ensures that raw materials are obtained responsibly, with attention to environmental impacts and ethical practices, including support for local suppliers and the use of certified sustainable products (Dubey et al., 2021; Zhang et al., 2023). Eco-friendly packaging includes the use of recyclable, biodegradable, or compostable materials to minimize waste and reduce environmental impact (Parfitt et al., 2023). Logistics optimization involves streamlining transportation and distribution to reduce fuel consumption and emissions, often through improved route planning and the use of more efficient transport modes (Kessler et al., 2021).

Current trends in sustainability within the food and FMCG sectors reflect a growing emphasis on integrating advanced technologies and innovative practices. The adoption of digital technologies, such as artificial intelligence (AI) and blockchain, is transforming supply chain management by enhancing transparency, traceability, and efficiency (Antwi, Adalakun & Eziefulu, 2024, Ogbu, et al., 2024). AI is used to optimize inventory management, predict demand, and reduce waste, while blockchain provides a secure and transparent way to track the provenance of products, ensuring compliance with sustainability standards (Hazen et al., 2021; Kumar et al., 2022). Another trend is the increasing focus on circular economy principles, which aim to close the loop of product life cycles through greater resource efficiency, recycling, and reuse (Goglio et al., 2020).

Examples of sustainable practices in these sectors highlight the tangible benefits of adopting sustainability-focused strategies. For instance, several companies in the food industry have implemented waste reduction programs that involve advanced data analytics to better forecast demand and reduce surplus production, thereby minimizing food waste (Roehrich et al., 2021). Energy efficiency measures, such as upgrading to LED lighting and optimizing heating, ventilation, and air conditioning (HVAC) systems, have been adopted by FMCG companies to lower energy consumption and operational costs (Goswami et al., 2023). Sustainable sourcing practices are exemplified by the increasing use of certified organic and Fair Trade products, which support environmentally friendly agriculture and fair labor practices (Dubey et al., 2021). In terms of packaging, many companies are moving towards using recycled or biodegradable materials to reduce their environmental footprint, with some also investing in innovations like edible packaging (Parfitt et al., 2023; Zhang et al., 2023). Logistics optimization is demonstrated by the implementation of more efficient

transportation solutions and the use of technology to enhance route planning and reduce fuel consumption (Kessler et al., 2021).

Overall, the integration of these sustainable practices within supply chains is driven by both regulatory pressures and market demands (Adeniran, et al., 2024, Adewusi, et al., 2024). Governments are introducing policies and regulations to promote sustainability, such as mandatory reporting of environmental impacts and incentives for adopting green technologies (Hazen et al., 2021). At the same time, consumers are increasingly seeking products from companies that demonstrate a commitment to environmental and social responsibility, which influences market dynamics and corporate strategies (Tseng et al., 2022).

In summary, sustainable supply chain practices in the food and FMCG sectors are characterized by efforts to minimize environmental impact, enhance social responsibility, and achieve economic efficiency. The adoption of waste reduction, energy efficiency, sustainable sourcing, eco-friendly packaging, and logistics optimization reflects a broader trend towards sustainability driven by technological advancements and evolving consumer expectations (Adeniran, et al., 2024, Bello, 2023, Ezech, et al., 2024). As companies continue to navigate these challenges, the development and implementation of effective policies and incentives will be crucial in supporting the transition to more sustainable supply chains.

3 Policy Implications for Sustainable Supply Chains

Policy implications for sustainable supply chains in the food and Fast-Moving Consumer Goods (FMCG) sectors play a crucial role in shaping how businesses integrate environmental and social considerations into their operations. Effective policy frameworks can drive significant improvements in sustainability practices by setting standards, providing incentives, and guiding international trade practices (Adelakun, et. al., 2024, Kwakye, Ekechukwu & Ogbu, 2019, Oyeniran, et al., 2023).

Environmental regulations and standards are fundamental to promoting sustainable practices across industries. These policies establish the boundaries within which companies must operate to reduce their environmental impact. For example, emissions standards are designed to limit the amount of greenhouse gases and pollutants that can be released into the atmosphere (Abiona, et al., 2024, Modupe, et al., 2024, Onwubuariri, et al., 2024). Such regulations force companies to adopt cleaner technologies and improve energy efficiency, thereby contributing to overall sustainability (Tseng et al., 2022; Zhang et al., 2023). Similarly, waste management regulations mandate the reduction, recycling, and proper disposal of waste materials. These policies encourage companies to minimize waste generation and adopt circular economy principles, which are critical for reducing environmental footprints and enhancing resource efficiency (Kessler et al., 2021; Meyer et al., 2022).

Government incentives and subsidies are another key policy tool used to support sustainable supply chain practices. Tax breaks, subsidies, and grants can significantly lower the financial barriers associated with implementing green technologies and practices (Goglio et al., 2020; Liu et al., 2024). For instance, subsidies for renewable energy installations can make it more economically viable for companies to transition to solar or wind power, thereby reducing their reliance on fossil fuels (Agu, et al., 2024, Nembe, et al., 2024, Segun-Falade, et al., 2024). Similarly, grants for research and development in sustainable technologies can accelerate innovation and the adoption of new solutions (Hazen et al., 2021; Kumar et al., 2022). Policies that encourage green technology adoption are instrumental in fostering an environment where sustainability becomes a competitive advantage rather than a regulatory burden (Adelakun, 2022, Adeniran, et al., 2024, Ogbu, et al., 2024).

International trade policies also have a profound impact on sustainability in global supply chains. Trade agreements and international standards influence how sustainability is incorporated into supply chain practices across borders (Adeniran, et al., 2024, Bello & Uzu-Okoh, 2024). For example, international agreements such as the Paris Agreement set global targets for reducing greenhouse gas emissions, which can affect trade policies and practices in various countries (Dubey et al., 2021; Richey et al., 2024). Additionally, sustainability standards set by international organizations can create market pressures for companies to comply with higher environmental and social performance criteria (Roehrich et al., 2021; Sharma et al., 2023). These policies help harmonize sustainability efforts across countries and regions, facilitating more consistent and widespread adoption of sustainable practices.

However, regulatory challenges can impede the effective implementation and enforcement of sustainability policies. One major barrier is the inconsistency and fragmentation of regulations across different regions and countries (Agu, et al., 2024, Kwakye, Ekechukwu & Ogbu, 2023, Udo, et al., 2023). Companies operating in multiple jurisdictions may face difficulties navigating varying requirements, which can complicate compliance and increase costs (Goswami et al., 2023;

Parfitt et al., 2023). Moreover, gaps in regulation and enforcement can lead to uneven application of sustainability standards, allowing some companies to benefit from less stringent requirements while others face higher compliance burdens (Meyer et al., 2022; Zhang et al., 2023). Addressing these challenges requires coordinated efforts to develop more unified and comprehensive regulatory frameworks that align with global sustainability goals.

In summary, policy implications for sustainable supply chains in the food and FMCG sectors encompass a range of measures designed to promote environmental stewardship, support green technologies, and facilitate international cooperation. Environmental regulations and standards set essential limits and guidelines for sustainable practices, while government incentives and subsidies provide the financial support needed for innovation and adoption (Bello, et al., 2023, Ogbu, et al., 2023, Oyeniran, et al., 2023). International trade policies shape global sustainability practices, and addressing regulatory challenges is crucial for ensuring effective implementation and enforcement. By navigating these policy landscapes, businesses can advance their sustainability goals and contribute to a more resilient and responsible supply chain ecosystem.

4 Economic Incentives for Promoting Sustainability

Economic incentives are pivotal in promoting sustainability within the food and Fast-Moving Consumer Goods (FMCG) sectors, driving the adoption of sustainable practices through various mechanisms. These incentives not only influence operational decisions but also shape market dynamics and investment patterns (Adewusi, Chikezie & Eyo-Udo, 2023, Osundare & Ige, 2024). Green certifications and eco-labeling serve as critical tools in driving sustainable practices. Certifications like Fair Trade and Organic provide official validation of a product's adherence to environmental and social standards, creating a structured framework for companies to follow (Goglio et al., 2020). For instance, Fair Trade certification ensures that products are sourced under fair labor practices and environmentally friendly conditions, which helps foster more sustainable supply chains (Tseng et al., 2022). Organic certifications mandate that products are grown without synthetic pesticides and fertilizers, promoting ecological balance and reducing environmental harm (Kumar et al., 2022). These certifications not only guide companies in implementing sustainable practices but also enhance their market positioning by differentiating their products in a competitive landscape.

The market impact of green certifications on consumer behavior and brand perception is substantial. Studies have shown that consumers are increasingly willing to pay a premium for products that are certified as sustainable or environmentally friendly (Zhang et al., 2023). Green certifications thus contribute to a positive brand image and customer loyalty, as they align with the growing consumer preference for ethical and sustainable products (Dubey et al., 2021). Companies leveraging these certifications often experience enhanced market performance and customer engagement, which can translate into increased revenue and market share (Adelakun, et. al., 2024, Adeniran, et al., 2024, Oyeniran, et al., 2023). Cost savings and operational efficiency are significant economic incentives for adopting sustainable supply chain practices. Implementing energy-efficient technologies and practices can lead to substantial cost reductions by lowering energy consumption and operational expenses (Goswami et al., 2023). For example, transitioning to LED lighting, optimizing heating and cooling systems, and adopting renewable energy sources can reduce utility costs and operational overhead (Hazen et al., 2021). Similarly, waste reduction initiatives, such as improving waste management processes and adopting circular economy principles, can decrease disposal costs and enhance resource efficiency (Meyer et al., 2022). Sustainable sourcing practices also contribute to cost savings by mitigating risks associated with supply chain disruptions and resource scarcity, thus stabilizing procurement costs over the long term (Roehich et al., 2021).

Case studies illustrate the financial benefits of adopting sustainable practices. For instance, companies that have invested in waste reduction technologies have reported significant cost savings through reduced waste disposal fees and improved material utilization (Kessler et al., 2021). Additionally, firms that have embraced energy efficiency measures often see a return on investment through lower energy bills and enhanced operational performance (Sharma et al., 2023). These case studies demonstrate that sustainability not only aligns with environmental goals but also presents tangible economic benefits.

Consumer demand for sustainable products is a driving force behind the shift towards more sustainable supply chains. As awareness of environmental and social issues grows, consumers increasingly prefer products that are eco-friendly and ethically produced (Parfitt et al., 2023). This shift in consumer preferences impacts supply chain decisions as companies seek to align their operations with market demand (Adelakun, Majekodunmi & Akintoye, 2024, Adeniran, et al., 2024). Brands that fail to adapt to these preferences risk losing market share to competitors who offer sustainable alternatives (Liu et al., 2024). The rising demand for sustainable products incentivizes companies to invest in sustainable practices and integrate them into their supply chain strategies.

Investment and investor expectations also play a crucial role in promoting sustainability. The growing importance of sustainability for attracting investors is evident as environmental, social, and governance (ESG) criteria become integral to investment decisions (Goglio et al., 2020). Investors are increasingly prioritizing companies that demonstrate strong sustainability performance, as these companies are perceived as more resilient and better positioned for long-term success (Dubey et al., 2021). ESG criteria influence investment decisions by evaluating a company's commitment to environmental stewardship, social responsibility, and effective governance practices (Hazen et al., 2021). Companies that excel in these areas often experience greater access to capital and more favorable investment terms, reflecting the financial value of sustainability.

The impact of ESG criteria on supply chain sustainability is significant, as it encourages companies to integrate sustainability into their core operations and supply chain management practices (Sharma et al., 2023). Investors' emphasis on ESG performance drives companies to enhance their sustainability efforts, leading to more responsible and transparent supply chains. This trend underscores the interconnectedness of sustainability and financial performance, highlighting the role of economic incentives in advancing sustainable practices across industries (Goswami et al., 2023).

In conclusion, economic incentives such as green certifications, cost savings, consumer demand, and investment expectations are critical in promoting sustainability within the food and FMCG sectors. Green certifications and eco-labeling guide companies in adopting sustainable practices and enhance market competitiveness. Cost savings through energy efficiency and waste reduction provide tangible financial benefits, while increasing consumer demand drives supply chain decisions (Adewusi, et al., 2024, Ogbu, et al., 2024, Oyeniran, et al., 2023). Investment and ESG criteria further reinforce the importance of sustainability, influencing both operational strategies and financial outcomes. Together, these economic incentives create a robust framework for advancing sustainable supply chain practices and fostering long-term industry transformation.

5 Barriers to Sustainable Supply Chain Adoption

The adoption of sustainable supply chain practices within the food and Fast-Moving Consumer Goods (FMCG) sectors is fraught with several barriers, which can significantly impede progress despite the growing recognition of sustainability's importance. Understanding these barriers is crucial for developing effective policies and incentives to promote sustainability across the supply chain (Adeniran, et al., 2024, Bello, et al., 2023, Ogbu, Ozowe & Ikevuje, 2024).

Cost concerns and limited financial resources are among the primary barriers to adopting sustainable supply chain practices, particularly for small businesses. Implementing sustainable practices often requires significant upfront investment, which can be challenging for smaller firms with constrained budgets (Hazen et al., 2021). For instance, transitioning to energy-efficient technologies or sustainable materials may involve high initial costs, which small businesses may find prohibitive (Jin et al., 2023). These financial constraints can deter smaller companies from pursuing sustainability initiatives, despite the potential long-term benefits. Moreover, the perception of higher costs associated with green certifications and sustainable practices can further discourage investment in these areas (Goglio et al., 2020). Small businesses may struggle to balance immediate financial pressures with the long-term gains of sustainability, creating a significant barrier to widespread adoption.

Supply chain complexity is another critical barrier to sustainable supply chain adoption. The food and FMCG sectors are characterized by intricate supply chains involving numerous suppliers and intermediaries, which complicates efforts to source sustainable materials and monitor environmental impacts (Parfitt et al., 2023). Ensuring that all suppliers adhere to sustainability standards can be challenging due to variations in practices and levels of transparency across different regions and suppliers (Dubey et al., 2021). This complexity is exacerbated by the need for consistent and accurate data on the sustainability of materials and processes, which can be difficult to obtain and verify (Zhang et al., 2023). Additionally, integrating sustainable practices throughout a complex supply chain requires coordinated efforts and collaboration among multiple stakeholders, which can be difficult to achieve (Roehrich et al., 2021).

Lack of infrastructure and regulatory enforcement in emerging markets poses significant challenges to sustainable supply chain adoption. In many developing countries, inadequate infrastructure for waste management, recycling, and sustainable production can hinder the implementation of sustainable practices (Meyer et al., 2022). For example, limited access to advanced recycling facilities or sustainable production technologies can prevent businesses from adopting more sustainable practices. Furthermore, weak regulatory frameworks and enforcement mechanisms in emerging markets can undermine efforts to promote sustainability (Goglio et al., 2020). Without stringent regulations and effective enforcement, companies may lack the necessary incentives to comply with sustainability standards, leading to inconsistent and inadequate implementation of sustainable practices (Kumar et al., 2022). The absence of clear and enforceable regulations can also create uncertainty and hinder investment in sustainability initiatives.

In conclusion, the barriers to sustainable supply chain adoption in the food and FMCG sectors include cost concerns and limited financial resources, supply chain complexity, and the lack of infrastructure and regulatory enforcement in emerging markets. Addressing these barriers requires a multifaceted approach involving financial support for small businesses, improved transparency and coordination within supply chains, and stronger regulatory frameworks and infrastructure development in emerging markets (Adeniran, et al., 2024, Bello, 2024, Segun-Falade, et al., 2024). By tackling these challenges, stakeholders can facilitate the broader adoption of sustainable supply chain practices and advance sustainability goals within the industry.

6 Public-Private Partnerships and Collaboration

Public-private partnerships (PPPs) and collaboration are pivotal in advancing sustainable supply chain practices within the food and Fast-Moving Consumer Goods (FMCG) sectors. These partnerships involve governments, businesses, non-governmental organizations (NGOs), and other stakeholders working together to achieve shared sustainability goals (Adelakun, 2022, Adeniran, et al., 2024, Ezeh, et al., 2024). The synergy created through these collaborations is essential for overcoming challenges and driving progress towards more sustainable supply chains.

The importance of partnerships between governments, businesses, and NGOs cannot be overstated. Governments provide regulatory frameworks and incentives that shape the business environment, while businesses contribute innovation, resources, and market access (Goglio et al., 2020). NGOs play a critical role in raising awareness, advocating for best practices, and providing expertise on sustainability issues (Antwi, et al., 2024, Ogbu, et al., 2024, Oyeniran, et al., 2023). Together, these actors can leverage their respective strengths to address complex sustainability challenges that no single entity could tackle alone. For instance, governments can establish regulations and offer financial incentives to encourage businesses to adopt sustainable practices, while NGOs can facilitate capacity-building and knowledge sharing (Hazen et al., 2021). This collaborative approach ensures that sustainability efforts are comprehensive and address various aspects of supply chain management.

Case studies of successful collaborations highlight the effectiveness of public-private partnerships in driving supply chain sustainability. One notable example is the partnership between Unilever and the World Wildlife Fund (WWF), which has focused on improving the sustainability of Unilever's palm oil supply chain (Zhang et al., 2023). This collaboration has led to the development of sustainable palm oil sourcing practices that align with environmental and social standards (Adeniran, et al., 2024, Bello, et al., 2023, Ogbu, Ozowe & Ikevuje, 2024). By working together, Unilever and WWF have been able to implement measures that reduce deforestation, improve labor practices, and enhance transparency in the supply chain (Dubey et al., 2021). This case demonstrates how effective partnerships can lead to significant improvements in sustainability outcomes.

Another example is the collaboration between the Food and Agriculture Organization (FAO) and various multinational food companies to promote sustainable agriculture practices (Kumar et al., 2022). This partnership aims to improve resource efficiency, reduce environmental impacts, and support smallholder farmers (Adelakun, et al., 2024, Okoli, et al., 2024, Ozowe, Ogbu & Ikevuje, 2024). Through joint initiatives, such as training programs and the development of sustainable agricultural guidelines, the FAO and private companies have achieved measurable improvements in agricultural practices and supply chain sustainability (Parfitt et al., 2023). The success of this collaboration underscores the potential for public-private partnerships to drive positive change in the food sector.

Industry associations and multi-stakeholder initiatives also play a crucial role in fostering sustainable practices. Industry associations, such as the Sustainable Food Policy Alliance, bring together companies, NGOs, and other stakeholders to develop and promote sustainability standards and best practices (Goglio et al., 2020). These associations provide a platform for dialogue, collaboration, and the sharing of knowledge and resources. They also help to create industry-wide frameworks and guidelines that companies can adopt to enhance their sustainability efforts (Jin et al., 2023). By facilitating collective action, industry associations contribute to the establishment of consistent sustainability standards and practices across the sector.

Multi-stakeholder initiatives, such as the Global Reporting Initiative (GRI) and the Supply Chain Sustainability School, offer valuable resources and support for companies seeking to improve their sustainability performance (Hazen et al., 2021). These initiatives provide tools, training, and guidance on various aspects of sustainability, including reporting, risk management, and supply chain management (Agu, et al., 2024, Kwakye, Ekechukwu & Ogbu, 2024). They also foster collaboration among diverse stakeholders, enabling the development of shared solutions and approaches to sustainability challenges (Zhang et al., 2023). The role of these initiatives in promoting sustainable practices is crucial, as they help to standardize expectations, build capacity, and drive continuous improvement in supply chain sustainability.

In summary, public-private partnerships and collaboration are essential for advancing sustainable supply chain practices in the food and FMCG sectors. The involvement of governments, businesses, NGOs, and industry associations creates a powerful network for addressing sustainability challenges and achieving common goals. Case studies of successful collaborations, such as those between Unilever and WWF or the FAO and multinational food companies, demonstrate the effectiveness of these partnerships in driving positive change (Adelakun, 2023, Adeniran, et al., 2024, Segun-Falade, et al., 2024). Industry associations and multi-stakeholder initiatives further support sustainability efforts by providing resources, facilitating dialogue, and promoting best practices. Together, these collaborative efforts contribute to the development of more sustainable supply chains and the achievement of broader sustainability objectives.

7 Recommendations for Policymakers and Industry Leaders

The integration of sustainability into supply chain practices within the food and Fast-Moving Consumer Goods (FMCG) sectors is crucial for achieving long-term economic growth and environmental stewardship. Policymakers and industry leaders play a pivotal role in shaping the direction of these practices (Adewusi, et al., 2024, Osundare & Ige, 2024, Udo, et al., 2024). To foster sustainable supply chains, several recommendations can be made to align economic growth with sustainability goals, enhance policy incentives, and promote effective collaboration among stakeholders.

One of the primary strategies for aligning economic growth with sustainability goals involves integrating sustainability metrics into economic planning and decision-making processes. Policymakers should promote frameworks that incorporate environmental and social criteria alongside traditional economic indicators (Adelakun, 2023, Nembe, et al., 2024, Oyeniran, et al., 2023). This approach can help ensure that economic growth does not come at the expense of environmental degradation or social inequity (Jin et al., 2023). For instance, implementing policies that require businesses to report on their environmental and social impacts can drive transparency and encourage companies to adopt more sustainable practices (Hazen et al., 2021). Additionally, integrating sustainability into economic development strategies can incentivize investments in green technologies and practices, thus supporting both economic growth and sustainability objectives (Kumar et al., 2022).

Policy recommendations for enhancing incentives and reducing barriers are essential for accelerating the adoption of sustainable supply chain practices. One key recommendation is to expand financial incentives for businesses that invest in sustainability (Adeniran, et al., 2024, Bello, 2024, Eziefula, et al., 2022). This could include offering tax breaks, subsidies, and grants for adopting green technologies, improving energy efficiency, and implementing waste reduction measures (Goglio et al., 2020). Providing targeted financial support can help offset the initial costs associated with sustainable practices, making them more accessible for businesses, especially small and medium-sized enterprises (SMEs) that may face budget constraints (Zhang et al., 2023). Moreover, developing a clear and predictable policy environment can reduce uncertainties and encourage long-term investments in sustainability (Parfitt et al., 2023).

Reducing regulatory barriers is another crucial aspect of promoting sustainable supply chains. Policymakers should work to streamline regulations and eliminate unnecessary bureaucratic hurdles that can impede the adoption of sustainable practices (Adelakun, et al., 2024, Ezech, et al., 2024, Sonko, et al., 2024). Simplifying compliance processes and providing clear guidance on sustainability standards can help businesses navigate the regulatory landscape more effectively (Hazen et al., 2021). Additionally, enhancing support for businesses in understanding and meeting regulatory requirements can improve compliance and facilitate the implementation of sustainable practices (Kumar et al., 2022).

Promoting collaboration across stakeholders is vital for the effective implementation of sustainable practices. Collaborative efforts among governments, businesses, NGOs, and industry associations can create synergies that drive innovation and enhance sustainability outcomes (Adewusi, Chikezie & Eyo-Udo, 2023, Osundare & Ige, 2024). Policymakers should facilitate multi-stakeholder initiatives and partnerships that bring together diverse actors to address sustainability challenges and develop shared solutions (Goglio et al., 2020). For example, industry associations can play a crucial role in setting sustainability standards, providing resources, and fostering knowledge exchange among companies (Jin et al., 2023). Additionally, encouraging collaboration between businesses and NGOs can enhance the effectiveness of sustainability initiatives by leveraging the expertise and resources of both sectors (Zhang et al., 2023).

In addition to fostering collaboration, industry leaders should take proactive steps to engage with their supply chains and encourage the adoption of sustainable practices. This includes working closely with suppliers to ensure that they adhere to sustainability standards and providing support for them to improve their practices (Parfitt et al., 2023). Businesses can also drive sustainability by incorporating environmental and social criteria into their procurement processes and making sustainability a core aspect of their corporate strategies (Hazen et al., 2021). By setting ambitious

sustainability goals and transparently reporting on their progress, companies can lead by example and inspire others to follow suit (Bello, et al., 2023, Ogbu, Ozowe & Ikevuje, 2024).

In summary, aligning economic growth with sustainability goals, enhancing policy incentives, and promoting collaboration are critical for advancing sustainable supply chain practices in the food and FMCG sectors. Policymakers should integrate sustainability metrics into economic planning, expand financial incentives, and streamline regulations to support the adoption of sustainable practices (Adelakun, 2023, Ogbu, et al., 2024, Segun-Falade, et al., 2024). Industry leaders, on the other hand, should foster collaboration, engage with their supply chains, and lead by example to drive sustainability within their organizations and across their networks. By implementing these recommendations, stakeholders can contribute to the development of more sustainable supply chains and achieve broader sustainability objectives.

8 Conclusion

The exploration of policy implications and economic incentives for sustainable supply chain practices in the food and FMCG sectors reveals a multifaceted landscape with significant opportunities and challenges. Key findings indicate that effective policies and incentives are crucial for driving the adoption of sustainable practices, which are essential for mitigating environmental impacts, enhancing resource efficiency, and supporting long-term economic growth. The review underscores the importance of aligning economic growth with sustainability goals through the integration of sustainability metrics into economic planning. By incorporating environmental and social criteria alongside traditional economic indicators, policymakers can ensure that growth does not compromise environmental integrity or social equity. Financial incentives, such as tax breaks, subsidies, and grants, are instrumental in encouraging businesses to invest in sustainable technologies and practices. Streamlining regulations and providing clear guidance can also help remove barriers and simplify the implementation of sustainability measures. These findings highlight the need for a supportive policy environment that fosters sustainability while balancing economic interests.

Collaboration among governments, businesses, NGOs, and industry associations is a recurring theme in driving effective sustainability practices. Successful case studies demonstrate that multi-stakeholder partnerships can leverage diverse expertise and resources to address complex sustainability challenges. The role of industry associations in setting standards and facilitating knowledge exchange, as well as the involvement of NGOs in advocating for best practices, further emphasizes the value of collaborative efforts in advancing sustainability. Looking to the future, the trajectory of sustainable supply chains in the food and FMCG sectors will likely be shaped by continued policy innovation, evolving economic incentives, and the deepening of collaborative networks. As sustainability becomes increasingly embedded in global business practices, there will be greater emphasis on transparency, accountability, and the integration of sustainability into core business strategies. The ongoing development of regulatory frameworks and incentive structures will play a crucial role in supporting this transition and driving widespread adoption of sustainable practices.

In conclusion, achieving long-term sustainability in global supply chains requires a concerted effort from all stakeholders. Policymakers must create supportive environments through effective regulations and incentives, while industry leaders should champion sustainability within their operations and supply chains. By embracing collaboration and leveraging both policy and economic tools, it is possible to build resilient, sustainable supply chains that contribute to environmental preservation, social responsibility, and economic prosperity. The path forward involves not only addressing existing challenges but also anticipating future trends and opportunities to ensure that sustainability remains at the forefront of global supply chain management.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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