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# FINANCIAL SUSTAINABILITY OF FAST-MOVING CONSUMER GOODS COMPANIES IN NIGERIA: THE ROLE OF GREEN LOGISTICS PRACTICES

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# Abstract

Financial Sustainability has increasingly taken center stage in today's organizations. This study, which investigates the relationship between green logistics practices and financial sustainability in FMCG firms in Nigeria, is highly relevant in the current business landscape. It aligns with the current trend of organizations focusing on factors that improve effectiveness and integrate financial and environmental concerns into their operations, especially among fastmoving consumer goods firms. Despite this, studies have established that FMCG firms face financial sustainability, probably due to poor management of green logistics practices. The study, therefore, aims to address this issue urgently. A survey research design using a questionnaire was adopted to collect data from the respondents. Data was gathered using a simple random sampling technique. Out of 519 questionnaires administered, 502 were retrieved, coded, and analyzed using descriptive and regression. The findings revealed that green logistics practices significantly affected financial sustainability. The study concluded that green logistics practices promote firm financial sustainability. This study recommended that the management of FMCG firms in Nigeria adopt a holistic approach to sustainability, integrating green logistics practices into their broader sustainability strategy to enhance their long-term sustainability.

**Keywords:** Environmental Sustainability, Fast Moving Consumer Goods, Firm Sustainability, Green Logistics Practices, Product Sustainability

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# Introduction

The fast-moving consumer goods firms in Nigeria have struggled with some enterprise sustainability-related issues, which has affected the firm's sustainability. In Nigeria, various businesses have complained about providing consumers various options, from private goods to public services (Ogiemwonyi et al., 2020). There are fundamental challenges in the Nigerian marketplace, ranging from a lack of information and communication technology implementation to resistance to technology advancement adoption (Akpan et al., 2016). The Nigerian consumer goods sector faces environmental sustainability constraints, which have resulted in low sales, less profit-generating business activities, an insatiable supply of capital, and low-intensive products, as well as other issues such as high taxes and poor power generation that impede business, as previously mentioned (Cyril et al., 2020).

Faced with several challenges over the previous years, the Nigerian consumer goods sector has needed help (Ogiemwonyi et al., 2020). Operational performance is affected negatively as the sector is susceptible to low consumer spending due to decreased demand and supply from lower global oil prices, which disruptions have hit oil production because it has had to devote resources to finding alternative energy sources (Oyedijo et al., 2021). Several factors contribute to the challenges of firm sustainability in the fast-moving consumer goods sector, which has received less attention in recent years. These factors, individually or collectively, determine how organizations achieve their corporate objectives while remaining sustainable (Rakhmangulov et al., 2017). Growth in Nigeria's economy and FMCG sector weakened by 1.3% in 2022 due to a drop in Oil output to one million barrels per day, reflecting technical challenges, insecurity, the rising cost of production, theft, lack of payment in Joint Venture, persistent underinvestment, inflation at 22.04%, disruption activities and depressed consumer demand, depreciating naira, all had a toll on FMCG business sustainability within the period. (Nigeria Extractive Industries Transparency Initiative, 2022; World Bank, 2023).

Despite the current challenges, Africa's fast-moving consumer goods sector, with its potential for a large market, presents a promising future. The continent's population of around one billion remains relatively under-served by fast-moving consumer goods firms (Meyer et al., 2019). With Africa in a prime position to dominate the fast-moving consumer goods business, the FMCG firms are faced with issues of lack of human resource skills, technological backwardness, weak management systems, and entrepreneurial capabilities, insufficient use of information technology, unavailability of appropriate and timely information, and low product quality. However, according to Makanga and Paul (2017), these challenges also present organizational growth and improvement opportunities, leading to higher firm sustainability. This potential for improvement and growth should inspire and motivate industry professionals and academics in the audience.

Due to global economic growth and a worldwide network of supply chains, the logistics network has become more complex and distantly located. More considerable distances covered in transportation tend to increase emissions, resulting in more significant environmental problems. The term "green logistics" is related to planning, controlling, and implementing the flow and process of logistics by incorporating modern logistics techniques to minimize environmental hazards (Chhabra et al., 2017). This logistics flow should also satisfy the customers and the organization's goals, reducing the effect of these activities on the environment. Specifically, it is undeniable that the manufacturing and logistics sectors have been duly called upon to contribute enormously to dealing with these issues since their activities essentially destroy the environment, especially regarding CO2 emissions (Jazairy, 2020). According to Baah et al. (2020a; 2020b), most environmentally oriented research in the past focused on the manufacturing sector, with few concentrating on the transport sector, even though the sector significantly consumes energy and petroleum, contributing to air pollution and global warming. Although several environmental initiatives have been to reduce negative

manufacturing impacts, the increasing number and usage of vehicles and the rise in traffic congestion and global warming indicate the need to keep the transport sector under constant observation (Teixeira et al., 2018).

Companies and governments in emerging markets have recognized the significance of collective action in addressing sustainability challenges. They have recently implemented green logistics practices to balance economic gains and environmental performance protection (Gilal et al., 2019). The combination of practices is critical to successfully implementing green logistics practices. Green logistics techniques' most common technical and practical parts are green design, procurement, production, transportation, packaging, and reverse logistics (Choudhary et al., 2019). Evidence from the fast-moving consumer goods sector suggests that collaborative activities across the supply chain may encourage the adoption of technical approaches such as clean technologies in logistics management (Wang et al., 2018a). This emphasis on collaboration underscores the need for collective action in addressing sustainability challenges, highlighting the urgency and importance of the issue.

Over the past two decades, interest in green logistics and sustainable supply chains has expanded quickly, and the subject is now receiving widespread attention. Many academics, management professionals, and policy officials are increasingly interested in addressing the historical difficulty of adapting to the constantly changing commercial, economic, social, and physical environments, including fluctuating consumer demands, economic downturns, and environmental changes. The manufacturing and service sectors have produced much literature on supply chain management over the past few decades, but the fast-changing consumer goods industry has received very little attention (Kumar et al., 2017). The academic community needs to pay more attention to logistics decision-making process elements and their effects on various areas of business sustainability. Again, the characteristics that distinguish consumer goods supply chains from other types of supply chains, combined with the growing ethical, societal, and environmental challenges involved in their business, necessitate the development of concrete decision tools based on the substantial linkage of various attributes with different performance dimensions considering sustainability. Although the literature provides various types and subdivisions of key performance indicators related to firm sustainability, it is still an unresolved challenge that requires the collaborative use of all available resources, know-how, and constant study (Trivellas et al., 2020).

Consumer groups, environmental advocacy groups, and policymakers are increasing pressure on firms to address their supply chain challenges. This urgency is driven by escalating environmental, social, and ethical issues (Jermsittiparsert et al., 2019). The growing awareness of these environmental implications has led many scholars to focus on studying and researching green supply chain management (GSCM) in various fields and sectors (Rakhmangulov et al., 2017). The specific needs outlined in fast-moving consumer products logistics call for immediate improvement in the circumstances of product storage and transit and for real-time information to prevent adverse outcomes and waste (Rakhmangulov et al., 2017). Stakeholders now expect corporate responsibilities to extend beyond product quality to include social and environmental sustainability. Despite the interest of many academics, studies on green logistics practices and business sustainability remain sparse and fragmented (Waheed et al., 2020). This is particularly true in the fast-moving consumer items market.

Supply chain logistics are significant in environmental damage and wasteful resource utilization (Zaman & Shamsuddin, 2017). With its heavy reliance on automobile transportation for logistics activities, Nigeria faces environmental degradation challenges. Urbanization and industrialization have made the logistics operations of manufacturing companies a serious threat to human life and the environment in Nigeria, one of the fastest-expanding economies in Africa (Chukwuka & Eboh, 2018). However, businesses are increasingly embracing green logistics practices to mitigate the negative impact of logistics operations on the environment,

society's safety and health, and access to the global market. Studies point to green strategies and policies as a potential solution to the environmental, social, and economic issues that supply chain activities have sparked. Several studies on green logistics management practices (GLMPS) have been conducted in different regions of the world. However, the research on green supply chain practices and performance in Africa, notably Nigeria, has not gained enough scholarly attention (Nsikan et al., 2019). Besides, existing studies on supply chain sustainability primarily focus on environmental sustainability (Baz et al., 2021).

Various scholars have examined green logistics and financial sustainability at different times with varied outcomes (Albekov et al., 2017; Aldakhil et al., 2018; Awaysheh et al., 2020). However, there is evidence of a decline in financial sustainability, primarily as it affects fastmoving consumer goods firms in Nigeria (Shetty & Chaudhuri, 2018). Kishore and Ghosh (2016) observed that firms face challenges meeting their financial goals because managers' performances are not adequately evaluated. This lack of transparency seriously affects the financial sustainability of the selected fast-moving consumer goods firm in Lagos State, Nigeria. Also, most of the studies on green logistics focused on factors influencing consumer's green product purchase decisions, green brand image, corporate social sustainability reporting, financial performance, responsibility accounting, and profitability (Adegbie et al., 2020; Erhinyoja & Marcella, 2019). Some financial performance reports of fast-moving consumer goods firms in Nigeria are usually exaggerated. Some are mere management's perception of white-coated branding that lacks a significant basis (Nwaulune et al., 2023). Teng et al. (2023) observed that some investors have been misled about stock prices by non-transparent capital market players, thinking that some announced and reported market prices are products of procedural competence. Abiahu et al. (2020) noted that the financial performance of fastmoving consumer goods firms in Nigeria is shrouded with lots of uncertainties as high stock prices of some corporate organizations are far from the actuality of the underlying economic realities of these highly rated fast-moving consumer goods firm' financial performance.

Ucheagwu et al. (2019) observed that there are systemic issues and inconsequential economic policies, lack of adequate information disclosure, and insider trading by capital market operators result in a lack of transparent activities and lack of openness, thereby making market share prices questionable in terms of financial performance. The past failure and unacceptable performance of many corporate organizations worldwide, including consumer goods firms, were due to financial mismanagement and unseemly choice of sources of finance (Wan et al., 2016). This financial mismanagement remains a significant challenge for the selected fastmoving consumer goods firms in Lagos State, Nigeria. There is also a disconnect between the capital market dynamism, stock prices, and the economic realities of firms that benefited from fluctuating market share prices in the Nigerian economy (Egbunike & Abiahu, 2017; Ibidunni & Okere, 2019). The place of fast-moving consumer goods firms operating in Lagos State, Nigeria, is a combination of aggressive competition and unparalleled harsh business environment, insecure economic and political landscapes, and unstable exchange, creating uncertainties (Ucheagwu et al., 2019). The fast-moving consumer goods firms operating in Nigeria undoubtedly are critically exposed to high vulnerabilities experienced over the years of systemic failures, unmitigated fluctuation of exchange rates, perennial double-digit inflation rate effects, kidnapping and insecurity menace, insurgencies, the multiplicity of taxes and dreadful infrastructural deficit, epileptic power supply, absence of water and deplorable accesses roads (Aguguom & Olanipekun, 2021). Again, extant literature has shown that scholars have yet to thoroughly investigate the effect of green procurement on financial sustainability (Nazir et al., 2024; Waqas et al., 2020). Hence, this study intends to bridge the existing gap by evaluating the effect of green procurement and financial sustainability of fastmoving consumer goods firms in Lagos State, Nigeria.

# **Literature Review**

# **Green Logistics Practices**

Innovation is critical to the growth of the "green logistics" sector (Teixeira et al., 2018), sometimes called sustainable or eco-friendly logistics. It alludes to applying ecologically friendly procedures in distributing and transporting commodities. Its objectives are to reduce logistics operations' adverse effects on the environment while advancing efficiency and sustainability (Baah & Jin, 2019). Green logistics practices comprise a range of approaches and programs that aim to minimize waste production, optimize energy use, cut carbon emissions, and encourage using renewable resources. According to Abdullah et al. (2020), green logistics maximizes transportation routes and modes to reduce fuel use and greenhouse gas emissions. This can be achieved through route planning, load consolidation, and using alternative modes of transportation such as rail or waterways whenever feasible (Agyabeng-Mensah et al., 2020). Efficient routing and load optimization software can help minimize empty miles and maximize vehicle capacity. According to Teixeira et al. (2018), green logistics promotes using renewable energy sources and fuels to lessen dependency on fossil fuels. This entails switching to biofuels, electric or hybrid cars, and investigating renewable energy sources like solar or wind turbines for warehouse and distribution center power (Migdadi & Elzzgaibeh, 2018). Green logistics techniques benefit the environment and financial savings and improve brand recognition and regulatory compliance. Logistics organizations may significantly lower their carbon impact while contributing to a greener, more sustainable future by embracing innovation and implementing sustainable practices (Agyabeng-Mensah et al., 2020; Li et al., 2021).

The characteristics of green logistics, as outlined by An et al. (2021), encompass various interconnected operations. These operations, such as transporting goods from the point of origin to the destination and back, material handling, information processing, and information sharing with supply chain partners, form a complex and crucial part of the field. According to Zaman & Shamsuddin (2017), green logistics practices are a crucial part of supply chain management, which ensures that a company's resources, raw materials, products, and services are efficiently managed to boost production efficiency and ensure customer satisfaction to bolster competitive advantage and enhance performance. Transportation, inventory control, warehousing, and information processing and distribution from the supplier to the final customer are all included in logistics operations (Osman et al., 2022). The logistics sector's expansion is anticipated to positively impact trade, consumption, and output growth, all of which will support economic growth (Rezaei et al., 2018).

Green logistics techniques play a crucial and urgent role in the fight against climate change and the preservation of ecosystems. By safeguarding natural resources, reducing carbon emissions, and enhancing air quality, they contribute significantly to our ecosystems' sustainability and promote a healthier environment (Agyabeng-Mensah et al., 2020). According to Li et al. (2021), energy conservation, fuel economy, and route optimization are ways green logistics techniques save costs. Through cost reduction, companies can increase profitability and their bottom line. A competitive edge can also be gained by adopting sustainable practices, which draw in eco-aware clients, improve brand recognition, and guarantee environmental laws are followed. Green logistics techniques reduce risk, maximize customer happiness, optimize resource use, and pave the way for a more sustainable future (Trivellas et al., 2020). Practitioners' attention has been drawn to logistics' contribution to environmental pollution, rising resource and energy consumption, and how it can be managed to ensure environmental and social sustainability while enhancing financial performance due to its complex nature and the rising demand for logistics strategies, including reverse logistics, environmentally

friendly packaging and design, carbon management, transportation and distribution, information technology, warehousing, and production (Migdadi & Elzzqaibeh, 2018).

#### **Green Production**

Regardless of size, green production refers to the process by which manufacturing organizations seek to replace antiquated production methods with more environmentally friendly options, resulting in lower waste generation (Liu et al., 2020). To minimize environmental impact, Zameer et al. (2020) define green production as an effective strategy needed in the design and production activities essential for developing new goods and production system operations. Reducing wasteful resource use, recycling, and harmful emissions are a few examples of green manufacturing techniques. It is a manufacturing strategy that incorporates thoughtful planning and management with an awareness of how operations and products impact resources and the environment. In recent years, businesses have demonstrated significant interest in adopting eco-friendly tactics by creating products and services that adhere to environmental safety standards (Zhu et al., 2023).

A sustainable approach called "green production" focuses extra attention on how products are made and how they are run to minimize their harmful environmental effects. Li et al., 2020). Green production got underway with the rise of eco-innovation in the early 1990s. Fu et al. (2022) claim that green production can improve social, economic, and environmental outcomes by reducing waste and costs, offering a promising future. According to Waheed et al. (2020), eco-innovation is a novel production approach that minimizes negative impacts on resource utilization and environmental risk. To create new market prospects and boost potential advantages while concentrating on environmental issues in businesses, researchers (Lotfi et al., 2018) have deemed green manufacturing methods as a critical problem. To reduce the impact on the environment, green production is a system that integrates the design of goods and processes that affect manufacturing planning and control, as well as the identification, quantification, evaluation, and management of the flow of environmental waste (Maruthi & Rashmi, 2015).

#### **Green Procurement**

Purchasing products and services with minimal influence on the environment is known as "green procurement" (Shen et al., 2017). The demand for fuels, energy-efficient systems, recyclable goods, and clean technology drives the development of environmentally responsible corporate practices. In green procurement, an organization is more concerned with the environmental impact of its buying decision than the cost of goods and services, according to Liu et al. (2020). The term "green procurement" describes using ecologically friendly methods in business operations to meet resource, commodity, utility, and service demands. One element of sustainable buying is the approach and dedication to social responsibility and ethical business practices (Fang & Zhang, 2018). Green procurement stems from pollution prevention ideas and practices. According to Song et al. (2017), Green procurement, often known as green or environmental impact. Green procurement rules apply to all organizations, regardless of size (Siminică et al., 2020).

Alzubi and Akkerman (2022) underline that cooperation and collaboration with internal and external suppliers are critical to the sustainability of the supply chain and green procurement. This collaboration is essential for reassessing items, packaging, measuring systems, and distribution strategies. Businesses can significantly increase resource efficiency by buying eco-friendly items from eco-friendly suppliers and vendors. Importantly, green purchasing guidelines frequently incentivize businesses to purchase resource-efficient goods like low-flow faucets and energy-efficient lightbulbs (Zhang, 2020), which benefit the environment and lead to significant cost savings. Additionally, the waste stream can be reduced by sourcing from vendors with no eco-friendly packaging. These cooperative initiatives result in cost and

efficiency savings, general resource conservation, and a win-win scenario (Ivanova, 2020), reassuring businesses about the economic viability of green procurement.

#### **Green Transportation**

According to Wann-Ming (2019), green transportation refers to a diverse transport system that focuses on efficiently and effectively using resources, modifying the transport structure, and making more environmentally conscious decisions, such as carpooling, public transportation, bicycles, and walking. According to Li (2016), green transport is any mode of travel that does not negatively impact the environment. Green transport can be personal, such as a quick e-bike, or public, such as an electric city vehicle. Additionally, walking is an ecological mode of transportation. Sustainability is the common denominator among all green transportation methods. (Hamurcu & Eren, 2020) Sustainable transport is powered by non-depletable resources, rendering them sustainable for future generations. According to Chen et al. (2022), green transportation, also known as sustainable transportation, refers to modes of transportation, such as fossil fuels, that do not negatively impact the environment. Green transportation modes utilize renewable energy sources such as wind and solar, hydroelectricity, and biomass. Green transportation reduces reliance on diminishing natural resources, such as petrol, diesel, fossil fuels, and natural gas, to significantly reduce environmental impact. Transportation sustainability is one of the world's most pressing issues. Transportation-related greenhouse gas emissions have increased dramatically (Chu et al., 2018).

Green transportation emphasizes the environmental friendliness of urban transportation and promotes social fairness. It minimizes traffic congestion, lowers pollution, fosters social fairness, and intelligently manages resources (Wang et al., 2018b). The essence of green transportation is to create a transportation system that promotes sustainable growth of cities while meeting individual transportation demands and achieving maximum traffic efficiency with the least amount of social expense (Maheshwari et al., 2012). The transportation industry is crucial to the economy's development and growth. Proper transportation infrastructure, systems, and networks provide access to essential services and goods. It boosts economic activity by increasing connectivity and integration between rural, urban, and international markets. As a result, it drives job creation, which expands employment options (Rabbani et al., 2020). Jahromi et al. (2021) state that green transportation is offered with the concept of sustainable development, which is the shift from vehicle-centered to environmentally oriented transportation practices.

#### **Green Packaging**

Using materials and production procedures, green packaging, sometimes called sustainable packaging, lowers energy consumption and the environmental impact of packaging. In many cases, biodegradable and recyclable materials take the role of plastic and Styrofoam in environmentally friendly packaging solutions, according to Rabnawaz et al. (2017). Packaging designs with low environmental impact are called green packaging, also known as sustainable packaging or eco-friendly packaging, according to Jafarzadeh et al. (2020). Reducing package waste, making the most of sustainable materials (such as recyclable or biodegradable packaging components), and using renewable energy sources during production are some ways to do this. Sustainable packaging is about being conscious of the enterprise's carbon footprint (Hao et al., 2019). Green packaging combines environmentally favorable manufacturing methods with recyclable and biodegradable materials for product packaging, resulting in a container with a low environmental impact and minimal energy consumption. With the continuous advancement of modern material civilization and the constant development of science and technology, the packaging of refuse left behind after using a product has placed significant pressure on the environment. (Liu & Pang, 2017).

Green packaging conveys a duty towards maintainability, ecological activities of organizations, and green item characteristics in the marketplace (Ghodeswar & Kumar, 2014). Green packing

encourages and utilizes packaging, improving item management (Kumar et al., 2017). Green packaging implies that containers do not affect future generations, should not squander and reduce underground resource utilization, should respect human needs as far as wages are concerned, and should provide good working conditions (Quoquab et al., 2017). Wandosell et al. (2021) defined green packaging as environmentally friendly as it uses biodegradable, efficient, and recyclable material. Prakash and Pathak (2017) consider packaging to be one of the essential tools for attracting green consumers, and it also affects their purchase decisions. Therefore, a brand image of green products would help increase buying behavior.

#### **Reverse Logistics**

According to the quadruple bottom line approach (Kleindorfer et al., 2005), a business's success in reverse logistics must consider not only its financial performance but also its effects on the environment, social conditions, and the economy (Maheswari et al., 2019). This underscores the importance of considering reverse logistics's environmental, social, and economic impacts, making it a crucial aspect of supply chain management. By capturing and recovering the values of the used items, reverse logistics is one of the most effective ways to reduce resource waste and environmental damage (Gao et al., 2017). Prakash and Barua (2016) state that reverse logistics strategies are becoming more popular due to corporate social responsibility and quickly advancing technology. Based on multi-objective mixed integer programming, Yu and Solvang (2016) proposed a novel framework for planning and developing a general reverse logistics network. An open-loop reverse logistics network with collection, inspection, recovery, and disposal centers was the subject of Zandieh and Chensebli's (2016) study. A two-stage stochastic programming methodology with risk aversion was presented by Soleimani and Govindan (2014) as a method for creating and organizing a supply chain network that includes reverse logistics. The planning horizon was specified about a particular era, even though their model was developed in an uncertain setting.

Emphasizing the financial benefits, adopting a reverse logistics program is not just a choice but a necessity for achieving financial success (Gooran et al., 2018). According to Govindan et al. (2015), reverse logistics is the opposite of forward logistics within the supply chain. It entails the process of planning, implementing, and regulating the flow of items back to the manufacturer or a secondary market. Traditional supply chains feature intrinsic uncertainty related to pricing, quality, time, and the quantity of returned goods. This differentiates them from reverse logistics (Govindan & Bouzon, 2018). Due to these uncertainties, supply chain managers must enforce a high level of complexity in designing a reverse logistics strategy (Babazadeh et al., 2015). If a food item has imperfections on it or its packaging, it is regarded as unsaleable even though it is still safe to eat (Holweg et al., 2016).

#### **Financial Sustainability**

A business that has achieved financial sustainability sells a product or service at a price that covers its expenses and generates a profit. Financial sustainability is one of the most essential features for the evaluation of the financial health of an establishment. Providing inventory and expenditures from the sources helps financial sustainability (Tsindeliani et al., 2019). The ratio of sources of borrowed and proprietary cash to inventories determines financial sustainability. The ability to launch, expand, and run a staffing company with both short- and long-term financial stability is known as financial sustainability (Sazonov et al., 2015). According to Bolívar et al. (2016), risk-averse investors may consider financial sustainability a secondary requirement for making investment decisions. However, it is a critical control parameter that supports shareholder value. It lowers the risk of refinancing and bankruptcy, resulting in risk-adjusted excess returns in an imperfect capital market with financing constraints and insolvency expenses. Investment choices that consider an economic activity or project's Environmental, Social, and Governance (ESG) aspects are called sustainable finance (Shekarian et al., 2022). Financial sustainability is a firm's ability to cover its operational and

financial obligations and mitigate financial risk while retaining a sufficient part of its earnings to finance expansion (Imhanzenobe & McMillan, 2020).

According to Doshiro et al. (2023), financial sustainability can be defined as an economic process's capacity to reproduce itself, maintain its capacity to do so, and maintain its structural integrity. This means that to achieve operational excellence, a sustainable economy must make appropriate use of the instruments required to improve economic processes. A company's financial performance is undoubtedly a crucial success component, but social and ecological responsibility has also emerged as a crucial success factor, according to Bajdor et al. (2021). Sanchez-Flores et al. (2020) related the concept of financial sustainability to using financial statement items and introduced some selected financial ratios to assess profitability, efficiency, liquidity, and solvency. Asaleye et al. (2018) identified some ratios that promote the financial sustainability of manufacturing firms, which in turn promote employment and economic growth on a large scale. Also, stakeholders play a significant role in the financial sustainability of a company (Sanchez-Hernandez et al., 2016).

According to Reddy et al. (2018), financial sustainability is an essential indicator of a company's performance. The ability of a company to make and increase profits is determined by its commercial activity and capacity. Business capacity is financial management's ability to get funds from the cheapest and best source to finance a firm's assets. Jordão & Almeida (2017) defined business activity as the company's efficiency in utilizing assets to expand output capacity. When a profitable company may tolerate high debt levels because it can pay financial commitments resulting from debt acquisition more remarkably, profit-making organizations are more inclined to add additional debt to their capital structure than loss-making firms, demonstrating the importance of financial sustainability in financial decisions. Return on equity, which is stated as a ratio of earnings before interest and taxes to total equity, is used to assess financial sustainability. Financial sustainability is more closely related to elements of a company's financial statements (Zabolotnyy & Wasilewski, 2019).

Financial sustainability is an essential indicator of a company's economic performance; it shows how well it meets defined financial goals and maximizes shareholder wealth (Churchill, 2020). To reach this point, a company must create a plan that includes long-term goals and the resources required. Furthermore, the organization must closely check its financial flow to ensure that outgoing expenses do not exceed incoming funds (Mucharreira et al., 2019). Given the above opinion, the researcher defines financial sustainability as the ability of a business to meet its day-to-day operational, sales, administrative, and other expenses and achieve shareholders' return on investment by operating profitably. However, Operationally, financial sustainability refers to the economic and financial performance of the selected fast-moving consumer goods firm.

#### **Green Logistics Practices and Financial Sustainability**

Key findings from Afum et al. (2021) and Baah et al. (2024) shed light on the diverse impacts of green logistics on different performance dimensions. Afum et al. (2021) found that Search Engine Optimization (SEO) has a direct, significant positive impact on environmental and social performance but not on financial performance. However, when integrated into sustainable supply chain management, SEO significantly impacts all sustainability performance dimensions. Similarly, Baah et al. (2024) discovered that sustainable logistics practices greatly influence environmental reputation and financial performance.

Environmental reputation did not have any mediation effect between waste management and financial performance; however, it did have a partial mediation effect between financial performance and sustainable transportation and information sharing, and a full mediation effect between financial performance and reverse logistics, sustainable packaging and distribution, and green monitoring and evaluation. Also, Osman et al. (2022) found that customers increasingly request green transport, typically accepting moderately higher prices for green

transport. Zhang et al. (2020) conducted a study in the context of developed countries to explore the linkage between green logistics and economic development and growth. The findings revealed that the logistics industry is a backbone in improving and uplifting countries' economic growth.

Sroufe & Gopalakrishna-Remani (2019) in their study, found that green supply chain practices enhance financial performance through the firm's access to the international market, which increases sales and market share; besides, green practices in the supply chain increase market share enhance brand image, attract potential customers, which increase in net income, and minimizes the cost of sales (Laari et al., 2017). A panel study was conducted by Aldakhil et al. (2018) to investigate the determinants of green logistics in BRICS member states. The findings showed that green practices in logistics operations are positively correlated with sustainable economic and environmental growth. Furthermore, Agyabeng-Mensah et al. (2020) investigated green warehousing and economic performance. The results showed that green warehousing and logistics optimization negatively influence economic performance but improve economic performance through supply chain sustainability. In the same vein, findings from the study of Migdadi & Elzzqaibeh (2018) showed three significant clusters of green manufacturing strategies: agile environment, caretaker environment, and lean environment.

Khan & Qianli (2017) researched to investigate the impact of green supply chains on manufacturing firms' economic and environmental performance in developing countries of Asia, particularly Pakistan. They discovered a strong positive correlation between environmental performance and green practices, such as green product design, customer cooperation, green procurement of raw materials and components, and green transportation and distribution. Green purchasing habits have a detrimental impact on a company's profitability. Khan and Qianli (2017) investigated the effects of eco-friendly supply chain and logistics methods on businesses' financial and environmental performance. The results indicate that green practices improve economic performance in terms of a greater level of customer satisfaction and trust, increase the efficiency of operations, and enhance environmental sustainability, such as reduction in carbon emissions and solid waste.

Green logistics plays a crucial role in economic performance by delivering cost savings, improving product quality, increasing product price, boosting sales and profit margin, expanding market share and efficiency, creating new market opportunities, enhancing employee motivation and satisfaction, improving corporate image, and providing access to financial opportunities (Laari et al., 2017; Geng et al., 2017; Maware et al., 2024). It also significantly contributes to environmental sustainability, a responsibility that all stakeholders in the logistics industry should take seriously. Miroshnychenko et al. (2017) found that the adoption of ISO 14001 hurts the financial performance of companies. The work of Afum et al. (2021), Baah et al. (2024), and Mucharreira et al. (2019) submitted that there is a positive relationship between environmental remediation cost and financial performance, while Nwaulune et al. (2023), Erhinyoja & Marcella (2019), found a negative relationship between environmental remediation cost and financial performance. It has been found that countries and businesses are showing an increasing tendency toward sustainability (Lotfi et al., 2018; Nazir et al., 2024), and it is argued that this is happening because sustainability is associated with higher profitability, efficiency, and competitiveness (Nazir et al., 2024).

### **Theoretical Underpinning**

The institutional and triple-bottom-line theories serve as the foundation for this investigation. The institutional theory concentrates on the various institutions that generate external and internal organizational pressures and the accompanying organizational responses created within each business. Owing to the characteristics of green logistics management, the variables related to organizational supplies can be best explained by institutional theory. In addition, the triple bottom line theory provides a valuable perspective for evaluating business sustainability

and green logistics. The triple bottom line method and its differing expectations are primarily linked to sustainability principles as measured in the three social, economic, and environmental dimensions.

Institutional theory posits that the external environment influences organizations, including their stakeholders' norms, values, and expectations (Lok, 2019). This theory suggests that firms will adopt green logistics practices in response to pressures from their stakeholders, such as customers, regulators, and NGOs, who are increasingly concerned about environmental sustainability. In the context of Fast-moving Consumer Goods (FMCG) firms, green logistics practices can include reducing carbon emissions through cleaner transportation, optimizing packaging to reduce waste, and using renewable energy sources. The triple bottom line theory emphasizes the importance of balancing social, environmental, and economic performance in achieving sustainable development. This theory suggests that firms should strive to balance these three dimensions of sustainability in their operations, including their logistics practices (Svensson et al., 2018). In the context of FMCG companies, green logistics techniques should lessen their adverse effects on the environment and enhance social and economic outcomes. For instance, utilizing electric vehicles for transportation can save operational costs, improve community health and well-being, and reduce carbon emissions and air pollution.

Both institutional and triple-bottom-line theories can explain the relationship between business sustainability in FMCG enterprises and green logistics practices. On the one hand, businesses that implement green logistics techniques in response to stakeholder demand from the outside may find it easier to uphold their credibility and reputation, which will support sustainability over the long run. For instance, businesses that use sustainable packaging solutions might draw in more eco-aware clients, boosting revenue and profitability. On the other hand, firms that adopt green logistics practices in alignment with the triple bottom line may achieve greater sustainability by creating value across multiple dimensions.

## Methodology

The methodology section of this study outlines the process employed to collect primary data from employees of selected fast-moving consumer goods (FMCG) companies in Nigeria. It elucidates the rationale behind the population's selection, the survey design, data collection instruments, and the analytical techniques utilized for the study. The study targeted employees of prominent FMCG companies operating in Nigeria. Specifically, the population comprised 13,783 individuals employed by Bua Foods Plc, Cadbury Nigeria Plc, Flour Mills Nigeria Plc, Honeywell Flour Mill Plc, Dangote Sugar Refinery Plc, Nascon Allied Industries Plc, PZ Cussons Nigeria Plc, and Unilever Nigeria Plc. These companies were chosen due to their active involvement in green logistics activities, spanning procurement, manufacturing, packaging, transportation, reverse logistics, waste management, warehousing, and sustainability efforts (Shebeshe & Sharma, 2024). Moreover, being listed on the Nigerian Stock Exchange allows the selected companies to represent a significant portion of the FMCG sector in Nigeria.

A survey research design was employed for data collection, utilizing questionnaires as the primary instrument with a cross-sectional approach. Olubiyi (2022a, 2022b,2022c, 2024), Olubiyi et al. (2023), Adeyemi and Olubiyi (2023), Ukabi et al. (2023), Uwem et al. (2021) have adopted this method in their respective research and found it helpful. The choice of a questionnaire was informed by its suitability for obtaining direct responses and feedback and its compatibility with the respondents' literacy levels (Zikmund et al., 2009). This method facilitated the systematic gathering of information on various aspects of green logistics practices within the selected FMCG companies. The data was collected by distributing questionnaires to 519 target respondents, a number determined using the Taro Yamane formula, within the selected FMCG firms. A study employed a simple random sampling

technique to ensure the sample's representativeness. Of the 519 questionnaires distributed, 502 were returned, coded, and considered suitable for analysis. Questionnaires facilitated efficient data collection, providing researchers with insights into the perceptions and practices related to green logistics among employees of the selected companies.

The data collected from the field was analyzed using regression analysis techniques. This method was chosen to explore the relationships between variables, providing deeper insights into the factors influencing green logistics performance. The results of this analysis are crucial for understanding the effectiveness of green logistics practices in the selected FMCG companies.

#### **Model Specification**

Y = f(X)Y = Dependent Variable X = Independent Variable Where: Y = Financial Sustainability (FS) X = Green Logistics Practices (GLP)  $Y = f(x_1, x_2, x_3, x_4, x_5)$ Where:  $x_1$  = Green Production (GP)  $x_2$  = Green Procurement (Gproc)  $x_3$  = Green Transportation (GT)  $x_4 =$  Green Packaging (GPkg)  $x_5 =$ Reverse Logistics (RL) **Regression Equation** FS = f(GP, Gproc, GT, GPkg, RL) $FS = \alpha_0 + \beta_1 GP + \beta_2 Gproc + \beta_3 GT + \beta_4 GPkg + \beta_5 RL + \mu_i$  ...... Regression equation 1

# **Research Results**

This section deals with the presentation and analysis of data collected to investigate the effect of green logistics practices (green production, green procurement, green transportation, green packaging, and reverse logistics) on the environmental sustainability of selected fast-moving consumer goods firms in Nigeria.

Table	1	Summary	of	multiple	Regression	of	green	logistics	practices	and	financial
sustainability of selected fast-moving consumer goods firms in Nigeria.											

Ν	Model	В	Sig. T		ANOVA	R	Adjusted	F	
					(Sig.)		$\mathbb{R}^2$	(5,496)	
502	(Constant)	3.561	.000	6.386	0.350 <sup>b</sup>	0.106 <sup>a</sup>	0.001	1.117	
	Green production	-0.083	.641	.467					
	Green procurement	0.006	.938	.078					
	Green	0.159	.123	1.543					
	Transportation								
	Green packaging	0.005	.949	.064					
	<b>Reverse</b> logistics	0.058	.095	1.675					
	Predictors: (Constant), Green Production, Green Procurement, Green Trans								
	Green Packaging, Reverse Logistics. Dependent Variable: Financial Sustainability								

Table 1 shows the multiple regression analysis results for the green logistics practices components on the financial sustainability of selected fast-moving consumer goods firms in

Lagos State, Nigeria. The results showed that green procurement ( $\beta = 0.006$ , t = 0.78, p > 0.05), green transportation ( $\beta = 0.159$ , t = 1.543, p > 0.05), green packaging ( $\beta = 0.005$ , t = 0.064, p > 0.05) and reverse logistics ( $\beta = 0.058$ , t = 1.675, p > 0.05) all have positive and insignificant effect on financial sustainability of selected fast moving consumer goods firms in Lagos State, Nigeria while green production ( $\beta = -0.083$ , t = 0.467, p > 0.05) showed a negative and insignificant effect on financial sustainability. This implies that green production, procurement, transportation, packaging, and reverse logistics are not important factors in the fast-moving consumer goods firms that drive financial sustainability.

The R-value of 0.106 supports this result, and it indicates that green logistics practices components have a weak positive relationship with the financial sustainability of selected fast-moving consumer goods firms in Lagos State, Nigeria. The coefficient of multiple determination  $Adj.R^2 = 0.001$  indicates that about 0.1% of the variation that occurs in the financial sustainability of selected fast-moving consumer firms can be accounted for by green logistics practices. In comparison, the remaining 99.9% of changes are accounted for by other variables not captured in the model. The predictive multiple regression models are thus expressed:

 $FS = 3.561 + -0.083GP + 0.006RL + 0.159GProc + 0.005GT + 0.058GPkg + U_i --- Eqn \ (i) \ (Predictive Model)$ 

Where: FS = Financial sustainability

GP = Green Production

GProc = Green Procurement

GT = Green Transportation

GPkg = Green Packaging

RL = Reverse Logistics

The regression model showed that by holding green logistics practices to a constant zero, financial sustainability would be 3.561, which is positive. In the predictive model, it is seen that all the variables are insignificant, so the management of the company can downplay these variables, which is why they are not included in the prescriptive model. The results of the multiple regression analysis, as seen in the prescriptive model, indicate that when all other variables of green logistic practices (green procurement, green transportation, green packaging, and reverse logistics) are improved by one unit, financial sustainability would also increase by 0.006, 0.159, 0.005 and 0.058 respectively and vice-versa. This implies that an increase in green procurement, transportation, green packaging, and reverse logistics would increase the financial sustainability of selected fast-moving consumer goods firms in Lagos State, Nigeria. Also, the F-statistics (df = 5, 496) = 560.928 at p = 0.000 (p > 0.05) indicates that the overall model is insignificant in predicting the effect of green logistics practices on the financial sustainability of selected fast-moving consumer goods firms in Lagos State, Nigeria. The result suggests that such fast-moving consumer goods firms should downplay the variables. Therefore, the null hypothesis (H<sub>0</sub>1) states that green logistics practices have no significant effect on the financial sustainability of selected fast-moving consumer goods firms in Lagos State, Nigeria, was accepted.

## **Conclusion and Discussion**

The aggregated results of multiple regression analysis for hypothesis two showed that green logistics practices (green production, green procurement, green transportation, green packaging, and reverse logistics) have positive and insignificant effects on the financial sustainability of selected fast-moving consumer goods firms in Lagos State, Nigeria. (*Adj.R2* = 0.106; F(1,117) = 560.928, p > 0.05). (Adj. R2 = 0.106; F(1,117) = 560.928, p > 0.05). Thus, the combination of the independent sub-variables was insignificant in predicting the financial

sustainability of selected fast-moving consumer goods firms in Lagos State, Nigeria. These findings suggest that while green logistics practices may not directly predict financial sustainability, they are still important for the firms' overall sustainability and environmental impact.

Our empirical findings resonate with the research of Khan and Qianli (2017), who investigated the impact of green supply chains on manufacturing firms' economic and environmental performance in developing countries of Asia, particularly Pakistan. Their findings, which showed that green purchasing negatively affects a firm's profitability, align with ours. Similarly, Agyabeng-Mensah et al. (2020) found that green warehousing and logistics optimization negatively influence economic performance but improve economic performance through supply chain sustainability. These alignments with existing research provide a comprehensive understanding of the complex relationship between green practices and financial sustainability.

Also, Miroshnychenko et al. (2017) found that the adoption of ISO 14001 hurts the financial performance of companies. Green et al. (2019) found that green practices capacitate firms to create goodwill among green buyers, generating higher market value and sales and improving financial performance.

Conversely, Baah et al. (2024) discovered that environmentally friendly logistics methods significantly impacted both financial performance and environmental reputation. Environmental reputation did not have any mediation effect between waste management and financial performance; however, it did have a partial mediation effect between financial performance and sustainable transportation and information sharing, and a full mediation effect between financial performance and reverse logistics, sustainable packaging and distribution, and green monitoring and evaluation. Also, Osman et al. (2022) found that customers increasingly request green transport, typically accepting moderately higher prices for green transport. Zhang et al. (2020) conducted a study in the context of developed countries to explore the linkage between green logistics and economic development and growth. The findings revealed that the logistics industry is a backbone in improving and uplifting countries' economic growth. Afum et al. (2021) found that search engine optimization (SEO) directly positively impacts environmental and social performance rather than financial performance. However, through sustainable supply chain management, SEO tends to significantly impact all sustainability performance dimensions, including environmental, financial, and social performance.

Correspondingly, Sroufe & Gopalakrishna-Remani (2019) in their study found that green supply chain practices enhance financial performance through the firm's access to the international market, which increases sales and market share; besides, green practices in the supply chain increases market share, enhances brand image, attract potential customers, which increase net income, and minimizes the cost of sales (Laari et al., 2017). A panel study was conducted by Aldakhil et al. (2018) to investigate the determinants of green logistics practices in BRICS member states. The findings showed that green practices in logistics operations positively correlate with sustainable economic and environmental growth. Empirical research was carried out by Khan et al. (2018) on developed European nations to investigate the effects of logistics performance on macroeconomic and environmental metrics. The findings demonstrated that while strong logistical performance promotes economic expansion, it harms environmental sustainability regarding air pollution, climate change, and global warming.

Furthermore, Agyabeng-Mensah et al. (2020) investigated green warehousing and economic performance. The results showed that green warehousing and logistics optimization negatively influence economic performance but improve economic performance through supply chain sustainability. Similarly, findings from the study of Migdadi & Elzzqaibeh (2018) showed three significant clusters of green manufacturing strategies: agile environment, caretaker

environment, and lean environment. The performance of the agile strategic group is high to moderate; however, the performance of the caretaker and lean was moderately low. Each strategic group adopted different combinations of perfectly matched green actions with performance indicators. This is one of the first studies that report the green manufacturing strategic patterns in the Middle East; most previous studies have not addressed the significant actions and performance indicators in detail, and most previous studies have not clustered or grouped the manufacturing firms based on green key performance indicators. Likewise, the results obtained from Agyabeng-Mensah et al. (2020) indicated that Green Logistics Management Practices (GLMPS) positively influenced social and environmental sustainability. However, GLMPS negatively influenced business performance. The results also showed that using the mediation effect technique, supply chain traceability, and logistics ecocentricity greatly enhances GLMPS and increases business performance and environmental sustainability.

In emerging Asia, especially Pakistan, Khan and Qianli (2017) investigated the effects of green supply chains on industrial companies' financial and environmental performance. They discovered a strong positive correlation between environmental performance and green practices, such as green product design, customer cooperation, green procurement of raw materials and components, and green transportation and distribution. Green purchasing habits have a detrimental impact on a company's profitability. Khan and Qianli (2017) investigated the effects of eco-friendly supply chain and logistics methods on businesses' financial and environmental performance. The results indicate that green practices improve economic performance in terms of a greater level of customer satisfaction and trust, increase the efficiency of operations, and enhance environmental sustainability, such as reduction in carbon emissions and solid waste. Green et al. (2019) found that green practices capacitate firms to create goodwill among green buyers, generating higher market value and sales and improving financial performance.

In conclusion, the study investigated the effect of green logistics practices (green production, green procurement, green transportation, green packaging, and reverse logistics) on the environmental sustainability of selected FMCG firms in Lagos State, Nigeria. From the empirical results, green logistics practices were vital in enhancing environmental sustainability among FMCG firms in Lagos State, Nigeria. Based on the study's empirical results, it was concluded that green logistics practices play a crucial role in enhancing environmental sustainability among FMCG firms in Lagos State, Nigeria. By implementing these practices, FMCG firms can reduce their environmental impact, support sustainable supply chains, mitigate transportation-related pollution, promote eco-friendly packaging, and manage waste effectively. These actions create a more socially sustainable business environment in Lagos State.

Given the study's results, the study recommended that these firms' management explore innovative solutions that reduce their environmental impact, such as implementing waste reduction strategies, investing in renewable energy sources, and using sustainable transportation methods. Furthermore, the study has contributed to the broader literature on green logistics and sustainability by highlighting the importance of a holistic approach that integrates green logistics practices into a firm's broader sustainability strategy. By viewing green logistics practices as a strategic advantage that can enhance their competitive position, FMCG firms can differentiate themselves from competitors, attract customers increasingly concerned about sustainability, and contribute to long-term business success. Overall, the study's findings contribute to understanding the role of green logistics practices in enhancing sustainability performance in FMCG firms in Lagos State, Nigeria, and can inform future research in this field. The study was survey in nature, meaning it captured data simultaneously. Longitudinal data would have allowed for a more robust analysis of the relationship between green logistics practices and sustainability performance over time. Also, this study relied on a quantitative research design. Future studies could adopt a mixed-methods approach, incorporating qualitative data to provide a more comprehensive understanding of the relationship between green logistics practices and sustainability performance.

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**Data Availability Statement:** The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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