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Sustainable Supply Chain Management Practices and Financial Sustainability of Listed Consumer Goods Firm in Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Purpose: The significance of sustainable supply chain management practice to the financial sustainability necessitated this study which aimed to evaluate the effects of sustainable supply chain management practices on financial sustainability of listed consumer goods firms in Nigeria. In the course of the study, the primary objectives of the study were to determine the effect of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria

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and to evaluate the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria.
Methodology: The population of this study comprised of all the twenty-one (21) listed consumer goods firms under Nigerian Exchange Group (NGX). The sample for this study comprised of forty (40) respondents selected from each of the three chosen consumer goods companies, totaling One hundred and twenty (120) respondents. The study adopted both purposive and stratified random sampling techniques. Primary data was collected through electronic questionnaires distributed via Google Forms. Descriptive statistical tools, including measures of central tendency such as mean, and measures of variability such as standard deviation, was employed for data analysis.
Findings: The result of the analysis reveal that: (i) with the result of hypothesis one; the results revealed that F-statistics stands at 3.478 with a p-value < than 0.05 at 0.033. This implies that the positive effect of supplier relationship management on financial sustainability of listed consumer gods firms is significant. (ii) For hypotheses two, the results revealed that F-statistics stands at 3.133 with a p-value < than 0.05 at 0.04. This implies that the positive effect of lean supply chain practices on financial sustainability of listed consumer gods firms is significant.
Originality/ Value: No research was found regarding the sustainable supply chain management practices and financial sustainability during the time period of 2024.
Conclusion and Recommendations: The study concluded that sustainable supply chain management practices enhance financial sustainability of consumer goods firms in Nigeria. The study recommended that firms should prioritize building strong relationships with suppliers, integrate sustainability considerations into their operations, implement lean supply chain practices, strengthen internal controls to mitigate fraud risk, invest in employee training, foster collaboration and knowledge sharing, and regularly monitor and evaluate performance.

Keywords: Supplier relationship management; lean supply chain practices; financial sustainability.

1. INTRODUCTION

“The integration of sustainable supply chain management (SSCM) practices in Nigeria’s consumer goods sector is crucial for enhancing financial sustainability” [1,2]. “Financial sustainability is the capacity of a firm to earn revenue or get a return on an investment that covers all expenses and makes a profit. It assesses whether a project is viable for investment and whether investing resources in it will generate a sufficient return for investors. It is also regarded as a crucial control parameter complementing shareholder value that can be viewed by risk-averse investors as a secondary condition of investment decisions” [3,4]. Nigerian consumer goods firms are recognizing the significance of adopting sustainable practices like green procurement and distribution to mitigate environmental impact and ensure long-term viability [5]. By embracing SSCM principles, these companies can also address socio-economic challenges by promoting social equity, fair labor practices, and community engagement, contributing to poverty alleviation and empowerment. Moreover, aligning with sustainability values enhances market competitiveness, attracts investment, and boosts brand loyalty, driving long-term financial goals and shareholder value [6]. Supply chain management is managing a company’s business activities by considering environmental, economic, and social issues to improve the long-term financial goals of the organization and its supply chain. Therefore, business activities have moved not only to pursue economic benefits but also to be sustainable in their operations. The need for achieving sustainability and improving supply chain performance within organizations has encouraged the development of sustainable supply chain management due to economic, social, and environmental considerations.

Despite the numerous research on sustainable supply chain management (SSCM) practices, there persists a noticeable gap in empirical analysis particularly concerning the direct financial implications of sustainable supply chain management practices on listed consumer goods firms. The challenges in implementing sustainable supply chain management (SSCM) practices within the Nigerian consumer goods industry include non-compliance with green supply management, lack of detailed insights into direct financial implications, and unexplored dynamic relationships [7]. Studies emphasize the positive impact of SSCM on business performance, such as cost reduction and enhanced brand image [8,5,9]. However, there is a gap in empirical analysis regarding the direct financial implications of SSCM on listed consumer goods firms [10] especially in Nigeria. The lack of exploration into how these practices directly affect the financial standing of Nigerian consumer goods firms highlighting a significant research gap that needs to be addressed to understand the full extent of SSCM benefits and challenges in the Nigerian consumer goods industry [11]. Furthermore, the importance of sustainable supply chain management practices (SSCMPs) in the financial performance of firms is increasing significantly. However, the influence of SSCMPs on financial performance can vary across sectors and contexts. This research aims to provide a comprehensive understanding of the influence of SSCMPs on the financial sustainability of listed consumer goods firms. For this, the influence of supplier relationships management and lean supply chain on the financial sustainability of consumer goods firms is studied.

Therefore, this study aims to comprehensively investigate the relationship between sustainable supply chain management practices and the financial sustainability of listed consumer goods firms in Nigeria. Specifically, the research seeks to explore the financial metrics impacted by these practices, elucidate the mechanisms through which they influence financial performance within the Nigerian business context. By addressing these gaps, the study aims to provide valuable insights for both academia and industry, contributing to the advancement of sustainable business practices in Nigeria's consumer goods sector.

1.1 Research Objectives

The main objective of this study was to evaluate the effects of sustainable supply chain management practices on financial sustainability of listed consumer goods firm in Nigeria. The specific objectives are:

i. To determine the effect of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria.
ii. To evaluate the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria.

1.2 Hypothesis

H_{01}: Supplier relationship management has no significant effects on the financial sustainability of listed consumer goods firms in Nigeria.

H_{02}:Lean supply chain practices have no effects on the financial sustainability of listed consumer goods firms in Nigeria.

1.3 Significance of the Study

This study is significant in that, it investigates a very germane aspect of Nigeria's economy. Quite a number of organizations may not be aware of how sustainable supply chain management practices are impacting upon the financial sustainability of their products, whether good or bad; hence, some of them may not pay attention to those practices. This study, therefore, would provide useful information to policymakers, guiding the creation of supportive frameworks for sustainable initiatives, attract investments toward responsible businesses, and empower consumers to make informed choices, thereby fostering a more sustainable and ethically conscious consumer goods industry in Nigeria. Furthermore, this research would enrich academic discourse, enhancing the institution's reputation as a hub for innovative research. Findings of this research would underline the university's commitment to addressing societal challenges, establishing its role as a leader in advancing knowledge and promoting sustainable development on a global scale.

2. LITERATUREREVIEW

2.1 Sustainable Supply Chain Management

There is no generally accepted definition of supply chain management in the literature. The concept of supply chain management evolved from two separate paths; purchasing and supply management, and transportation and logistics management. Purchasing and supply management perspective view supply chain management as being synonymous with the integration of the traditional purchasing and materials functions. However, the transportation and logistics management perspective, believes that supply chain management is synonymous with integrated logistics systems and have focus on inventory reduction both within and across organizations in the supply chain. Eventually these two perspectives evolved into an integrated supply chain management that involves all the activities along the whole supply chain. Effective supply chain management requires simultaneous improvements in both external and the internal operating efficiencies of the companies in the supply chain, at its most basic level, high on-time delivery rates, and a very low rate of products returned by customers for whatever reason. Internal efficiency for organizations in supply chain means that these organizations get an attractive rate of return on their investment in inventory on other assets and that they find ways to lower their operating and sales expenses. Companies in any supply chain must make decisions individually and collectively regarding their actions in five areas which are; production, inventory, location, transportation and information.

According to Heizer [12], “sustainable supply chain management is a set of practices that integrates an organization’s internal business processes with its suppliers to improve organizational performance by considering the environmental impact of these processes and procedures. Patterns occur from the input of raw materials and energy to the disposal of end-of-life products”. Grant et al. [13] explained that “sustainable supply chain management means ensuring that every logistics and supply chain activity is environmentally friendly, not wasteful, and focuses on reducing carbon emissions throughout the supply chain. Collective responsibility for 'greening' supply chains lies with three groups: logistics and transportation service providers, shippers and buyers as recipients of these services, and policymakers, both government and non-government”. According to Belvedere and Grando [14], “sustainable supply chain management is a strategic and transparent integration in achieving organizational goals related to social, environmental, and economic aspects through the systemic coordination of business processes, including the supply chain”. In the same vein, according to Nathaniel [15] defined “SSCM as the strategic activity of integrating an organization's environmental, social, and economic goals into its business operations. Supply chain management (SCM) early emphasis was the fast and reliable supply of raw materials and finished products to customers. As a result, the efficient operation, and continuous flow of products and information along the chain was an everyday challenge”.

According to Arampantzi and Ioannis [16], “SSCM is the management of people, materials, and resources throughout a company's supply chain. By doing this, the company can preserve its social, economic, and environmental stability. In order to increase an organization's long-term performance and survival”. According to Min et al. [17], “SSCM is the all-encompassing strategy used by firms to integrate all three TBL dimensions; economic, environmental, and social in order to promote the sustainable growth of their supply chain operations”. According to Assefa [18], “SSCM refers to the actions that enable an organization to integrate both its social and natural dimensions into its business process in order to succeed in its core objective of making a profit”. According to Giannakis and Papadopoulos, [19] “sustainable supply chain management is the movement of products and services from suppliers to consumers through a process of sustainable development that aims to ensure the long-term functioning of the supply chain. It is also a coordinated effort of the entire supply chain process to achieve objectives from the three dimensions of sustainable development economic, environmental, and social”. Bright and Stephen, [20] described “SSCM from the perspective of integrating an organization's environmentally and financially sound practices, such as recycling and the entire waste management process, in order to ensure a full supply chain lifecycle that begins with the product design state and ends with manufacturing, packaging, warehousing, distribution, consumption, and disposal. They went on to say that it was an optimum technique to guarantee that supply chain management would continue to be practiced. This sustainability in the supply chain process is the result of a number of priorities, including social responsibility, effective and efficient resource use, and environmental responsibility”. According to Dina et al. [21], “it is the application of environmentally, socially, and economically responsible manufacturing processes over the whole product life cycle”.

2.2 Sustainable Supply Chain Management Practices

According to Hong et al. [22], “sustainable supply chain management practices (SSCMPs) are defined as the management of material, capital, human and information resources through cooperation amongst different and varied SCM firms that commit to the maintenance of environmental, economic as well as social stability to ascertain long-term sustainability. Integration of suppliers is collaboration between suppliers and the company. Many concepts have been used to define the convergence of vendors, including alliances, collaborations cooperative arrangements and boundary less organizations. Integration is the foundation on which to construct an effective supply chain. Clear and close relations with suppliers allow supply chain members to improve quality by reducing costs and meeting or exceeding customer demand. Integration in a supply chain means not only linking companies with their suppliers, but also connecting companies through supply chains. Supplier partnerships are part of these relationships in the supply chain. In any partnership, a minimum of two parties are required for mutual exchange and benefits".

Green manufacturing brings environmental concerns into the SCM from product design, material choice, product manufacture and distribution to customers and product management throughout its lifespan. Several benefits accrue to a firms engaging in green manufacturing ranging from reduction in costs, improved operational efficiencies, increased flexibility, growth in sales and value to customers and improvement of the corporate image that translates into competitive advantage. However, adoption of green initiatives requires heavy initial investments including adoption of sophisticated technologies and training employees to increase their proficiency. Collaboration in the supply chain occurs when activities between suppliers and buyers are effectively coordinated such that supply chain performance accrues to both parties as seen in cost reduction and optimal use of resources. It occurs when more than two members in the supply chain share information, jointly make decisions and share benefits accruing from an increased profitability. Trust and openness are key elements characterizing supplier collaborations.

A number of views in literature have addressed and brought to the lime light aspects of sustainable supply chain practices such as corporate social responsibility, sustainable supply network management, supply chain environmental management, green purchasing strategies, environmental purchasing [23], green marketing, environmental marketing, environmental marketing management and environmental product differentiation, reverse logistics, sustainability labeling schemes, environmental management [24], Life-cycle assessments and ISO 14000-certifications [25]. "Other generic aspects connected to sustainable business practices and theories are product returns, source reduction, recycling, material substitution, re-use of materials, waste disposal, refurbishing, repair and re-manufacturing" [26]. "Green manufacturing can lead to reduced raw material costs, production efficiency, low environmental and occupational safety expenses as well as improved corporate image. It is designed to minimize the environmental impact in the manufacturing processes of products" [27]. "Firms can effectively practice green manufacturing practices through the use of solar energy, recycling of raw materials and utilize biodegradable energy sources in their manufacturing operations" [28]. "Reverse logistics focuses mainly on the return or take-back products and materials from the point of consumption to the forward supply chain for the purpose of recycling, reuse, remanufacture, repair, refurbishing, or safe disposal of the products and materials" [27].

2.3 Financial Sustainability

Financial Sustainability can be defined as the ability of firms and organization to build and maintain a strong and stable financial background. Rodríguez [29] also defined "financial sustainability as the ability of public administration to continue now and in the future current policies without causing the debt to rise continuously. In order gauge the financial sustainability of an organization, it is important to consider a variety of different financial and operational aspects, such as the sources of income, the amount of debt incurred every year, diversity of the investment portfolio of the organization and the overall profitability the firm".

Zabolotnyy and Wasilewski, [30] investigated "the concept of financial sustainability measurement. In the study, they applied the principles of sustainability, policy-makers, and researchers to face modern challenges of economic development and resource management in a long-term". Bisogno et al. [31] reported on "the internationallyauthorities which focused mainly on aiming practical guidelines explaining the information on specific indicators relating to financial sustainability". The study of Bisogno et al. [31] defined the concept and the idea behind the financial sustainability in the banking industry.

Ashov, [32], who also researched on "the impact of financial sustainability of enterprise value expansion, developed a system of indicators that characterize its financial sustainability and take measures to ensure its sustainability in improving the value of the enterprise". "In school system, especially in the private sector, financial sustainability is considered as their optimal goals” [33,34].

2.4 Theoretical Framework

“The main theory this research work revolved around is ‘Institutional Theory’. This is because of its relevance to the study. The theory explains how various practices, norms, beliefs and laws are created and diffused within different organizations over time. According to this theory, for an organization or firm to perform better, survive and sustain it, it must conform and comply with the societal, national and regional laws, practices, beliefs and norms of the specific environments in which it operates” [35]. “In this study, institutional theory provides a comprehensive framework for understanding the role of SSCMPs on a firm’s legitimacy, survival and attaining financial sustainability. From the perspective of institutional theory, it is hypothesized that the financial sustainability of food processing SMEs is influenced by their ability to adopt and embrace the best supply chain practices. Previous studies indicate that SSCMPs play a significant role in minimizing firms’ operational costs, risks and uncertainty, leading to improved profitability and financial sustainability” [36,37]. “To test the study hypothesis, this work focuses on three forms of SSCMPs: Supplier relationship management and lean supply chain practices. These forms of SSCMPs are integral to legal requirements, norms, beliefs, ethical practices and the social structure, all of which are believed to have a significant impact on a firm’s financial and operational performance” [36,38,39]. Taking this perspective into account, the study applies institutional theory to examine how listed consumer goods firm adopt and diffuse SSCMPs and assesses their influence on financial sustainability.

2.5 Empirical Review

Arthur [40] conducted “a study on how competitive advantage was impacted by the green supply chain. Retail companies were the subject of the report. Focusing on store managers' tactics to inspire sales force to maintain a competitive role in the retail sector. The analysis purposively picked 4 general managers from Georgia's medium-sized retail distributors. Using questionnaires, data was collected. The study findings showed that sustainable supply chain practices, including the implementation of green initiatives, are crucial for retail companies to achieve competitive advantage. The study was aboutorganizations and not the manufacturing sector, and that creates a gap that the current study seeks to fill”.

Chari and Chiriseri [41] researched “on barriers to sustainable procurement. Specifically, the study examined factor influencing the adoption of sustainable procurement in Zimbabwean context. Questionnaires were used to collect data from 300 employees of the administration and procurement team. The findings of the study showed that most businesses in Zimbabwe did not adopt responsible procurement practices. The study found that purchasing decisions were guided only by the lowest bid and no attention was given to environmental and social issues. The study findings suggested that inadequate management and technical support were key factors influencing successful procurement adoption. The study was done in Zimbabwe that operates in different context compared to Nigeria resulting into a contextual gap”.

Muhammad et al. [42] studied “the effect of supply chain management practices on organizational performance with the mediating role of innovation in SMEs in Pakistan. The study adopted the descriptive research design. Data were collected from 207 Respondents using the questionnaire. PLS-SEM was used to analyze the proposed hypotheses. Findings reveal that strategic partnership with supplier and level of information sharing had no influence on organizational performance. In addition, quality of information sharing, internal supply chain process, and lean practices had significant influence on organizational performance. Moreover, all five practices of supply chain management had significant and positive influence on innovation. Meanwhile, innovation significantly and positively mediated the relationship between supply chain management, five practices and organizational performance” Muhammad et al. [42] relates “the present study to the extent that it studied supply chain management on organizational performance. The study also adopts same design with the present study using questionnaire for data collection. The dimensions of quality of information sharing and lean practice examined were also examined in the present study. However, the mediating role of innovation in the study was not adopted in the present studygiven the fact that they were conducted in different geographical environments also the statistical tools used in data analysis were different”.

Mulwa [43] conducted “a study on SSCMPs and how they influence performance of United Nations Agencies. The study's aims were to assess the implementation of SSCP, the degree to which these methods were implemented, and the challenges facing the adoption of SSCP. To collect data from participants, a cross-sectional correlation model was adopted. A census of UN agencies in Kenya has been completed. Questionnaires were used in primary data collection. The study revealed that the most adopted SSCP included engagement of stakeholders, diversity in supplier networks, ethical sourcing and safeguarding the health of employees. The study was limited to UN-agencies and thus failed to cover how supply chain management practices influences the financial sustainability of consumer goods”. With a focus on food manufacturing companies listed on Nairobi Security Exchange, Okello and Were [44] conducted “a study on how organizational performance was affected by SCMPs. Product development, inventory management, lead time and innovation were the basic objectives of the report. An empirical model of a descriptive survey was used. The survey sample was 90 workers and random sampling was used as the sample size of 76 respondents. The findings examined showed that product development, inventory management, lead time and technology all affected organizational efficiency positively. The study focused on organizational performance and not financial sustainability of consumer goods, thus resulting into a conceptual gap”.

Ogunlela [45] conducted “a study on green supply chain and competitive advantage method. An exploratory model was adopted by the report. The study used primary data which was the use of questionnaires, the analysis depended. FMCG manufacturing companies in Nigeria picked a total of 41respondents. A large number of respondents concluded from the results that implementing green SCM methods increased efficiency and thus enhanced firms' competitive advantage. The study further revealed that, unlike other industries, FMCG's manufacturing firms' green supply chain management practices require close collaborative approach between supply chain stakeholders. The study is similar to the current study because it focuses on consumer goods manufacturing companies; however, it differs in that it does not relate consumer goods to sustainable supply chain management practices. Thereby living a conceptual gap”.

“Research on the impact of sustainable supply chain management (SSCM) practices on organizational performance has become increasingly essential” [20,46]. “SSCM practices are now a need for businesses that wish to flourish in the business sector. In order to improve organizational operations, boost the organization's profitability index, increase customer satisfaction, and contend with the pressure of competition present in the business environment, sustainable supply chain management is required” [47,48]. “SSCM is a fundamental component in improving an organization's effectiveness and innovativeness since it has a favorable effect on the performance of the organization. Several studies on sustainable supply chain management have been conducted as a result” [49,20,50]. According to Giannakis and Papadopoulos, [19], “SSCM techniques have a considerable and advantageous impact on organizational performance”. Renato et al. [48] discovered in their research that SSCM activities like the environmental, social, and economic dimensions have a substantial impact on an organization's performance. According to Abba et al. [47], “an organization's market performance, financial performance, and innovative performance all increase when SSCM is used effectively”. Similar to this, the empirical study by Bright and Stephen, [20] showed that increasing the use of SSCM inside a company will boost its competitive advantage and improve organizational performance. Aliu et al. [51] also demonstrated in their study how adopting sustainable practices can lower an organization's financial risk, which in turn improves its performance in terms of innovation. All of the aforementioned examples provide empirical support for the claim that implementing SSCM techniques will give a business a financial advantage. Increased sales, lower overhead costs, reduced financial risk, and an overall increase in profit are the advantages listed in the literature. Therefore, it can be said that an organization's ability to effectively manage its supply chain activities and to improve its innovative performance depends on the degree to which the organization is able to integrate its environmental, economic, and social aspects into its supply chain practice [50]. The current study filled these gaps by linking sustainable supply chain with the financial sustainability of consumer goods.

2.6 Research Gap

Doshiro et al. [52] emphasize the determinant of structural financial sustainability companies in Nigeria. Previous studies by Amelia et al. [53], Arapha [54], Joshi and Sharma [55], and Qorri et al. [56] have consistently highlighted the beneficial impacts of SSCMPs on overall firm performance. Additionally, Mwenda et al. [57] underscore the significant positive effects of SSCMPs on various aspects including supplier relationship management (SRM), customer relationship management (CRM), and lean supply chain practices, all contributing to the financial sustainability of surveyed food processing SMEs. However, to the best of the researchers ability empirical studies on the relationship between SSCMPs and financial sustainability in consumer goods firms in Nigeria are limited. This study aims to fill this gap by conducting a comprehensive empirical analysis on the effects of SSCMPs on the financial sustainability of consumer goods companies in Nigeria. Previous research emphasizes the importance of sustainability practices integrated into supply chain management, such as sustainable sourcing and green design, in enhancing financial performance and organizational sustainability.

2.7 Conceptual Models of the Study

The conceptual model for this study is depicted in the Fig. 1. The independent variable in this study is sustainable supply chain management practices, which is operationalized into three constricts: supplier integration, collaboration in SCCM and reverse logistics. The dependent variable is financial sustainability which is operationalized into production funding, loan liquidation and equitable interest.

3. METHODOLOGY

3.1 Research Design

In this study, the research employed both a cross-sectional research design and a descriptive survey approach to investigate the three hypotheses. The cross-sectional research design facilitated the collection, analysis, and description of the relationship between Sustainable Supply Chain Management Practices (SSCMPs) and financial sustainability within selected consumer goods firms listed on the Nigerian Exchange Group. Additionally, a descriptive survey design was chosen as it allowed for the gathering of information from a representative sample of the targeted population, providing an accurate depiction of existing situations.

3.2 Population of the Study

The population for this research study comprises all 21 listed consumer goods firms on the Nigerian Exchange Group (NGX). This population encompasses companies operating within the consumer goods sector and listed on the Nigerian Exchange Group (NGX), regardless of size, revenue, or specific product offerings. The inclusion criteria for the population focus on firms actively engaged in consumer goods production and trading within the Nigerian market and publicly listed on the Nigerian Exchange Group and. they are asTable 1:

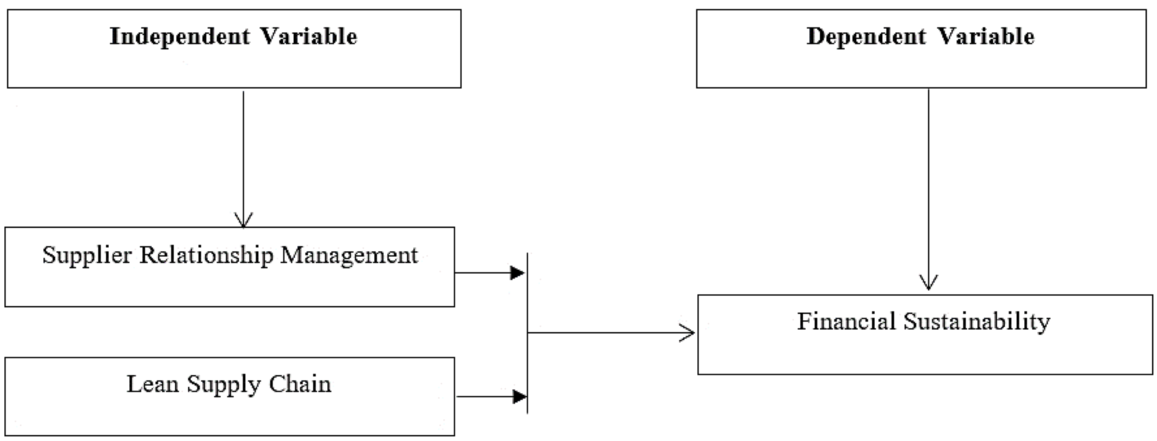

Fig. 1. Conceptual models
Source: Researcher Conceptualisation.

Table 1. Listed consumer goods firms under NGX

S/No.	Consumer Goods Firm in Nigeria
1.	BUA Food Plc
2.	Cadbury Nigeria Plc
3.	Champion Brewery Plc
4.	Dangote Sugar Refinery Plc
5.	Flourmills Nigeria Plc
6.	Guinness Nigeria Plc
7.	Nestle Nigeria Plc
8.	Nigeria Breweries Plc
9.	PZ Cussons Nig.Plc
10.	Union Dicon Salt Plc
11	Chi Limited
12	Yale Foods Limited
13	Flour Mill Limited
14	Sona Agro Allied Foods Limited
15	Vital Products Foods
16	Dansa Food Limited and
17	La Casera Company Plc
18	Unilever Nigeria PLC
19	Honeywell Flour Mills Plc
20	NASCON Plc
21	DangoteFlour Mill Plc

Note: Data collected from the Nigerian Exchange Group (NGX).

3.3 Sample Size and Sampling Technique

The sample for this study comprised of one hundred (100) respondents selected from each of the three chosen consumer goods companies, totaling three hundred (300) respondents. Three consumer goods firms have been selected based on their accessibility and prominence within the Nigerian Exchange Group (NGX) such as; Flour Mills Nigeria Plc, Nestle Nigeria Plc, and Unilever Nigeria Plc. To ensure the selection of individuals with relevant knowledge and experience pertinent to the research objectives, a combination of purposive and stratified random sampling techniques was employed.

3.4 Measurement of Variables

Table 2. Summary of Variable Measurements

Variables	Measurement	Source
Sustainable supply chain management practices	Supplier relationships managementLean supply chain	Electronic Questionnaires Distributed via Google Forms
Financial sustainability	Consumer goods real growth Significant probability of firm’s survival Adequate level of risk exposure by the firm An attractive risk-return profile for the owners	Electronic Questionnaires Distributed via Google Forms

Source:Author’sComputation(2024).

3.5 Method of Data Analysis

Descriptive statistical tools, including measures of central tendency such as mean, and measures of variability such as standard deviation, was employed for data analysis. The researcher utilized these descriptive statistics to provide a clear and concise summary of the data collected. Specifically, the mean was calculated to determine the average value of the variables under investigation, providing insights into the central tendency of the data. Additionally, the standard deviation was computed to assess the dispersion or variability of the data points around the mean. By employing descriptive statistical tools, the researcher aimed to provide a comprehensive understanding of the dataset and address the research questions effectively.

3.6 Model Specification

This research examined the effects of sustainable supply chain management practices on financial sustainability of listed consumer goods firm in Nigeria. The functional relation and the resulting model in the implicit form is:

$$FS = f(SRMP) \quad (1)$$

$$FS = f(LSCP) \quad (2)$$

$$FS = f(SRMP, LSCP) \quad (3)$$

FS = Dependent variable
$SRMP\ and\ LSCP$ = Independent or Explanatory Variables

The model in equation (3) is specified explicitly as follows:

$$FS_i = \beta_0 + \beta_1 SRMP_i + \beta_2 LSCP_i + \mu_i \quad (4)$$

μ_i = Expression of errors.

While, β_1, β_2, and β_3 are parameters of the independent variables to be estimated in the course of this study.

3.7 A-Priori Expectations

The study revealed the effects of sustainable supply chain management practices on consumer goods firms in Nigeria;

$\beta_1 > 0$, i.e., Customer relationships management is expected to have a significant positive financial sustainability;

$\beta_2 > 0$, i.e., Lean supply chain is expected to have a significant positive financial sustainability;

4. RESULTS AND DISCUSSION

4.1 Data Analysis and Presentation

Questionnaire Return Rate: The total number of questionnaire administered was three hundred (300) while two hundred and twenty (220) questionnaire copies were fully filled and returned. This indicates a response rate of over eighty-seven percent (73.3%). A 50% response rate is deemed sufficient for analysis and reporting, a 60% response rate is deemed acceptable, and a 70% response rate and higher is deemed very good, according to Mugenda & Mugenda [58]. These levels were thus chosen as appropriate benchmarks for the current investigation.

4.2 Data Analysis

SECTION A

Demographic Characteristics of Respondents

The study explored demographic characteristics of the respondents. Thisincluded the position in the company, years in the company, and annual revenue brackets of the company. The researcher focused on these three (3) demographic characteristics because of their importance to the population. Data obtained from the field regarding position in the company, years in the company, and annual revenue brackets of the company were analyzed and presented as shown in Tables 3; 4 and 4.

Table 3. Position in the company

Position in the Company	Frequency	Percentage (%)
Management	106	48.2
Employee/ Staff	106	48.2
Others	8	3.6
Total	**220**	**100**

Source: *Field Survey, 2024.*

Table 4. Year(s) in the Company

Year(s) in the Company	Frequency	Percentage (%)
Less than 1 year	41	18.6
1 – 5 years	98	44.5
6 – 10 years	10	4.5
More than 10 year	71	32.4
Total	220	**100**

Source: Field Survey, 2024.

Table 5. Annual revenue brackets

Annual Revenue Brackets	Frequency	Percentage (%)
Less than #1 million	45	20.5
Between #1-#10 million	112	50.9
Between #10-#100 million	63	28.6
More than #100 million	0	0
Total	**220**	**100**

Source: Field Survey, 2024.

The demographic characteristics of the respondents in the study evaluating the effects of sustainable supply chain management practices on the financial sustainability of listed consumer goods firms in Nigeria are crucial for understanding the context and potential implications of the research findings. The study focused on three primary demographic characteristics: position in the company, years in the company, and annual revenue brackets. These demographic factors were chosen due to their significant influence on business operations and financial performance within the consumer goods industry. Regarding the position in the company, the data from Table 3 above reveals that almost half of the respondents (48.2%) hold management positions, while (48.2%) are also employees or staff. This distribution suggests that the study encompasses perspectives from both management and non-management personnel within the consumer goods firms, which could provide a comprehensive understanding of the implications of sustainable supply chain practices across different organizational levels.

Furthermore, Table 4 above highlights the tenure distribution of respondents within their respective companies. Notably, the majority of respondents (44.5%) have been with their companies for 1 to 5 years, followed by those with more than 10 years of tenure (32.4%). This distribution implies that the study incorporates insights from both relatively new entrants and experienced veterans in the industry, offering a diverse range of perspectives on sustainable supply chain management practices and their financial implications over varying durations of employment.

In addition to personnel characteristics, the study also considers the annual revenue brackets of the respondent companies, as illustrated in Table 5. Notably, the majority of companies fall within the #1- #10 million revenue bracket, followed by the #10-#100 million bracket. The absence of respondents from companies with annual revenues exceeding #100 million suggests a focus on firms of smaller to medium sizes within the consumer goods sector. This choice of sample reflects a targeted approach to understanding the financial sustainability implications of sustainable supply chain practices among firms of varying scales within the Nigerian consumer goods industry. Overall, the demographic characteristics of the respondents provide valuable insights into the composition of the sample group and the potential implications of sustainable supply chain management practices on financial sustainability across different organizational roles, tenures, and revenue brackets within the Nigerian consumer goods sector. These insights serve as a foundational understanding for interpreting the research findings and drawing relevant conclusions regarding the broader implications for industry stakeholders and policymakers.

SECTION B

The following tables (Table 6 and 7) present the distributions of responses obtained from Section B of the questionnaire. This section addresses inquiries regarding the impacts of sustainable supply chain management practices on the financial sustainability of listed consumer goods firms in Nigeria. These inquiries span from assessing the impact of supplier relationship management on the financial sustainability of listed consumer goods firms, and to understanding the impact of lean supply chain practices on their financial sustainability. The following questionnaire items were structured to answer the research questions;

i.What are the effects of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria?

ii.What are the effects of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria?

4.3 Objective One

To determine the effect of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria.

Table 6 presents the findings related to the effect of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria. The table includes three statements and the corresponding responses on a 5 Likert scale ranging from Strongly Disagree (SD) to Strongly Agree (SA).

4.3.1 For the importance of maintaining strong relationships with suppliers is crucial for the financial sustainability of our company

The majority of respondents (97.3%) either strongly agreed or agreed with the statement (Mean = 4.43; SD = 0.611). This high level of agreement underscores the perceived importance of strong supplier relationships for financial sustainability within listed consumer goods firms. It suggests that companies recognize the strategic significance of maintaining robust partnerships with suppliers to ensure long-term viability and success.

4.3.2 Sustainable practices significantly influence our company's selection of suppliers

Approximately more than three-quarters of respondents (97.7%) either strongly agreed or agreed with the statement (Mean = 4.60; SD = 0.614). This indicates that sustainable practices play a significant role in guiding supplier selection processes within listed consumer goods firms in Nigeria. Companies are increasingly considering environmental and social sustainability factors when choosing suppliers, reflecting a broader commitment to corporate social responsibility and ethical sourcing practices.

Table 6. Determine the effect of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria

Statements	SA	A	U	D	SD	Mean	S Dev
The importance of maintaining strong relationships with suppliers is crucial for the financial sustainability of your company.	104 (47.3%)	110 (50%)	2 (0.9%)	4 (1.8%)	0 (0%)	**4.43**	**0.611**
Sustainable practices significantly influence your company's selection of suppliers.	142 (64.5%)	73 (33.2%)	3 (3%)	0 (0%)	2 (0.9%)	**4.60**	**0.614**
Effective supplier relationships play a significant role in contributing to the financial sustainability of your company.	137 (62.3%)	71 (32.3%)	7 (3.2%)	3 (1.4%)	2 (0.9%)	**4.54**	**0.711**

Source: Computerized Results from this study.
Keys: Strongly Agree (SA = 5); Agree (A = 4); Undecided (U = 3); Disagree (D = 2); Strongly Disagree (SD =1). The Decision Rule: 1-1.99 = SD; 2.00- 2.99 = D; 3.00 – 3.99 = U; 4.00 – 4.99 = A; and 5.00 – Above = SA. The neutral stands = 3, i.e. 5+4+3+2+1 = 15/5 =3. This implies score 3.0 is the criterion mean.

4.3.3 Effective supplier relationships play a significant role in contributing to the financial sustainability of our company

The majority of respondents (94.6%) either strongly agreed or agreed with the statement (Mean = 4.54; SD = 0.711). This highlights the perceived impact of effective supplier relationships on financial sustainability. Companies recognize that cultivating positive and collaborative partnerships with suppliers can yield tangible benefits in terms of cost efficiency, product quality, and innovation. It underscores the importance of fostering mutually beneficial relationships throughout the supply chain to enhance overall business performance. In summary, the findings suggest a strong consensus among respondents regarding the importance of supplier relationship management for the financial sustainability of listed consumer goods firms in Nigeria. Recognizing the strategic value of strong supplier relationships and the influence of sustainable practices on supplier selection processes can inform strategic decision-making and foster long-term competitiveness in the marketplace.

4.4 Objective Two

To evaluate the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria

Table 7 above presents the findings related to the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms. The table includes three statements and the corresponding responses on a 5 Likert scale ranging from Strongly Disagree (SD) to Strongly Agree (SA).

4.4.1 Prioritizing lean supply chain practices is crucial for improving efficiency and reducing waste in your company

A significant majority of respondents (96.3%) either strongly agreed or agreed with the statement (Mean = 4.66; SD = 0.547).The overwhelming agreement underscores the perceived importance of prioritizing lean supply chain practices for improving efficiency and reducing waste within listed consumer goods firms in Nigeria. Lean practices focus on eliminating non-value-added activities, optimizing processes, and minimizing resource utilization, all of which can lead to cost savings and enhanced operational performance. By prioritizing lean principles, firms can streamline their supply chain operations, enhance productivity, and achieve greater efficiency, ultimately contributing to improved financial sustainability.

4.4.2 Lean supply chain practices have contributed significantly to cost reduction and improved profitability in our company

The majority of respondents (90.9%) either strongly agreed or agreed with the statement (Mean = 4.52; SD = 0.749).This high level of agreement suggests that lean supply chain practices have been effective in delivering tangible benefits in terms of cost reduction and improved profitability within listed consumer goods firms in Nigeria. Lean initiatives such as inventory optimization, process standardization, and waste minimization can lead to lower production costs, shorter lead times, and increased throughput, all of which contribute to enhanced financial performance. By leveraging lean principles, firms can achieve sustainable cost savings and bolster profitability, positioning themselves for long-term success in competitive markets.

4.4.3 Lean supply chain practices positively influence the financial sustainability of our company in the long term

A substantial majority of respondents (94.1%) either strongly agreed or agreed with the statement (Mean = 4.56; SD = 0.634).The strong agreement underscores the perceived long-term benefits of lean supply chain practices for enhancing financial sustainability within listed consumer goods firms in Nigeria. Lean principles promote continuous improvement, adaptability, and resilience, enabling firms to respond effectively to changing market dynamics and customer demands. By embedding lean practices into their organizational culture and operations, firms can build a foundation for sustained growth, profitability, and competitiveness over the long term. This proactive approach to operational excellence fosters agility and innovation, positioning firms to thrive amidst evolving industry challenges and uncertainties.

In summary, the findings from Table 7 highlight the critical role of lean supply chain practices in driving efficiency, cost reduction, and long-term financial sustainability within listed consumer goods firms in Nigeria. The strong consensus among respondents underscores the strategic importance of prioritizing lean principles as a means of achieving operational excellence and competitive advantage in dynamic market environments. By embracing lean practices, firms can enhance their resilience, optimize resource utilization, and unlock opportunities for sustainable growth and profitability.

4.5 Reliability Test

The Table 5 shows Cronbach's Alpha reliability coefficient is 0.747 while the cronbach's alpha based on standardized items is 0.773. This indicates a high level of internal consistency for the scale used in this study.

4.6 Hypothesis Testing

Hypothesis One: H_{01}: Supplier relationship management has no significant effects on the financial sustainability of listed consumer goods firms in Nigeria.

Table 9 shows that the mean of the effect of supplier relationship management on the financial sustainability of listed consumer goods firms was 4.53. The F-statistics stands at 3.478 with a p-value < than 0.05 at 0.033. This implies that the positive effect of supplier relationship management on financial sustainability of listed consumer gods firms in Nigeria is significant. Based on this result the null hypothesis one is rejected. This means that supplier relationship management has a significant positive effect on financial sustainability of listed consumer goods firms in Nigeria.

Hypothesis Two: Lean supply chain practices have no effects on the financial sustainability of listed consumer goods firms in Nigeria.

Table 10 shows that the mean of the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria was 4.60. The F-statistics stands at 3.133 with a p-value < than 0.05 at 0.04. This implies that the positive effect of lean supply chain practices on financial sustainability of listed consumer gods firms in Nigeria is significant. Based on this result the null hypothesis three was rejected. This means that of lean supply chain practices has a significant positive effect on financial sustainability of listed consumer goods firms in Nigeria.

Table 7. Evaluate the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria

Statements	SA	A	U	D	SD	Mean	SD
Prioritizing lean supply chain practices is crucial for improving efficiency and reducing waste in your company.	153 (69.5%)	59 (26.8%)	3 (8%)	0 (0%)	0 (0%)	**4.66**	**0.547**
Lean supply chain practices have contributed significantly to cost reduction and improved profitability in our company.	141 (64.1%)	59 (26.8%)	13 (5.9%)	7 (3.2%)	0 (0%)	**4.52**	**0.749**
Lean supply chain practices positively influence the financial sustainability of our company in the long term	139 (63.2%)	68 (30.9%)	11 (5.0%)	2 (0.9%)	0 (0%)	**4.56**	**0.634**

Source: Computerized Results from this study.
Keys: Strongly Agree (SA = 5); Agree (A = 4); Undecided (U = 3); Disagree (D = 2); Strongly Disagree (SD =1). The Decision Rule: 1-1.99 = SD; 2.00- 2.99 = D; 3.00 – 3.99 = U; 4.00 – 4.99 = A; and 5.00 – Above = SA. The neutral stands = 3, i.e. 5+4+3+2+1 = 15/5 =3. This implies score 3.0 is the criterion mean.

Table 8. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.747	0.773	12

Table 9. Determine the effect of supplier relationship management on the financial sustainability of listed consumer goods firms in Nigeria

		Sum of Squares	df	Mean Square	F	Sig
Between People		68.521	104	.659		
Within People	Between Items	2.006	2	1.003	3.478	.033
	Residual	59.994	208	.288		
	Total	62.000	210	.295		
Total		130.521	314	.416		

Grade Mean 4.53

Table 10. Evaluate the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms in Nigeria.

		Sum of Squares	df	Mean Square	F	Sig
Between People		89.797	104	.863		
Within People	Between Items	1.111	2	.556	3.133	.041
	Residual	36.889	208	.177		
	Total	38.000	210	.181		
Total		127.797	314	.407		

Grade Mean 4.60

4.7 Discussion of Findings

The study investigated the impact of sustainable supply chain management practices on the financial sustainability of listed consumer goods firms in Nigeria. Through a detailed survey analysis, the study aimed to understand the effects of supplier relationship management, and lean supply chain practices on the financial sustainability of these firms. The finding from Table 6 presents the findings related to the effect of supplier relationship management on the financial sustainability of listed consumer goods firms. The majority of respondents strongly agreed or agreed that maintaining strong relationships with suppliers is crucial for financial sustainability, sustainable practices influence supplier selection, and effective supplier relationships contribute significantly to financial sustainability. These results emphasize the strategic importance of robust supplier relationships and sustainable practices in ensuring long-term viability and success for consumer goods firms in Nigeria. This result therefore aligns with the result of Mwenda et al., [33] that there exists a significant positive effect of supplier relationship management practices on the financial sustainability.

Table 7 examines the effect of lean supply chain practices on the financial sustainability of listed consumer goods firms. The results indicate a strong consensus among respondents regarding the importance of prioritizing lean practices for improving efficiency, reducing waste, and enhancing financial sustainability. Respondents recognized the significant contributions of lean practices to cost reduction, improved profitability, and long-term financial sustainability. These findings highlight the strategic value of embracing lean principles as a means of achieving operational excellence, resilience, and sustainable growth in dynamic market environments. This result also commensurate with the result of Mwenda et al. [33] that there exists a significant positive effect of lean supply chain practices on the financial sustainability.

5. CONCLUSION AND RECOMMENDATIONS

The research explores and evaluates the effects of sustainable supply chain management practices on the financial sustainability of listed consumer goods firms in Nigeria using a descriptive survey analysis method. This method allows for a comprehensive examination of the current state of sustainable supply chain practices within the industry, offering valuable insights into their impact on financial performance. Firstly, it aims to contribute to the existing literature by focusing on three aspects of sustainable supply chain management practices: supplier relationship management, and lean supply chain practices. By focusing on these specific aspects, the research seeks to provide a nuanced understanding of how each contributes to the overall financial sustainability of consumer goods firms in Nigeria.

The findings from the study underline the strategic importance of supplier relationship management, and lean supply chain practices in bolstering the financial sustainability of listed consumer goods firms in Nigeria. Through a rigorous analysis of survey responses, the research uncovers a strong consensus among respondents regarding the critical role of these practices in driving efficiency, reducing costs, and fostering long-term competitiveness within the industry. Supplier relationship management emerges as a key determinant of supply chain efficiency and resilience, enabling firms to establish collaborative partnerships with suppliers, optimize procurement processes, and mitigate risks associated with supply chain disruptions. Moreover, lean supply chain practices are identified as pivotal in eliminating waste, streamlining processes, and enhancing operational agility, leading to significant cost savings and improved overall performance. By delineating the strategic importance of supplier relationship management, and lean supply chain practices, the research offers valuable insights for practitioners, policymakers, and academics seeking to advance sustainability agendas and enhance the resilience and competitiveness of consumer goods firms in Nigeria.

In recommendations, companies should prioritize building and maintaining strong relationships with suppliers to ensure reliability, quality, and cost-effectiveness in the supply chain. This involves establishing open communication channels, fostering trust, and collaborating closely with suppliers to address challenges and seize opportunities. By nurturing robust supplier relationships, companies can enhance supply chain resilience, minimize disruptions, and achieve greater operational efficiency. Moreover, maintaining strong ties with suppliers enables firms to leverage their expertise, innovate together, and drive continuous improvement in product quality and delivery performance. Also, companies should adopt lean principles to streamline operations, minimize waste, and optimize resource utilization throughout the supply chain, thereby improving efficiency and financial sustainability. Embracing lean methodologies involves identifying and eliminating non-value-added activities, standardizing processes, and continuously improving operational performance. By reducing lead times, inventory levels, and production costs, firms can enhance agility, responsiveness, and competitiveness in dynamic market environments. Moreover, lean practices foster a culture of continuous improvement, empower employees to contribute ideas for efficiency gains, and drive operational excellence across the organization.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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