Environmental Sustainability Reporting and the Performance of Listed Consumer Goods Firms in Nigeria: The Moderating Effect of Firm Size

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.90400211

Received: 28 March 2025; Accepted: 02 April 2025; Published: 06 May 2025

ABSTRACT

This study examines the effect of environmental sustainability reporting (EVSR) on the financial performance of Nigerian consumer goods firms, with firm size as a moderating variable. Using an ex-post facto research design, secondary data from the annual and sustainability reports of 16 listed consumer goods firms on the Nigerian Exchange Group (2014–2023) were analyzed. The study employs panel data regression using STATA 17.0, with sales turnover as the dependent variable, environmental sustainability disclosure as the independent variable, and firm size as the moderating variable. Findings reveal a significant negative relationship between EVSR and sales turnover, indicating that firms engaging in sustainability reporting may experience short-term financial strain due to compliance costs and operational adjustments. However, firm size moderates this relationship positively, as larger firms leverage sustainability reporting to enhance stakeholder trust and market competitiveness. These results underscore the need for strategic sustainability adoption, particularly among smaller firms facing financial constraints. The study recommends government incentives, standardized reporting frameworks, and cost-effective sustainability strategies to support firms in balancing environmental responsibility with financial performance.

Keywords: Sustainability reporting, Environmental sustainability disclosure, Firm size, Financial Performance, Sales turnover

INTRODUCTION

Environmental sustainability reporting (EVSR) has become an integral aspect of corporate governance, driven by escalating concerns over climate change, resource depletion, and environmental degradation. As global stakeholders, including investors, regulators, and consumers, increasingly demand transparency and accountability in corporate environmental practices, firms are compelled to disclose their sustainability efforts. Beyond regulatory compliance, EVSR is often linked to enhanced corporate reputation, risk mitigation, and long-term financial resilience (Nkwoji, 2021). However, in emerging economies such as Nigeria, where regulatory oversight is weak and sustainability awareness remains inconsistent, the extent to which EVSR influences firm performance remains a contentious issue (Okafor, 2018).

The consumer goods sector presents a unique context for examining EVSR due to its substantial environmental footprint, stemming from production, packaging, and distribution processes. While developed economies have adopted well-structured sustainability reporting frameworks, such as the Global Reporting Initiative (GRI) Standards, the Carbon Disclosure Project (CDP), and the Task Force on Climate-related Financial Disclosures (TCFD), the adoption of such frameworks in Nigeria remains inconsistent. Weak enforcement mechanisms, financial constraints, and fragmented stakeholder engagement have limited the effective implementation of EVSR, resulting in a lack of standardized reporting practices (Okafor, 2018). Consequently, many firms in the sector prioritize short-term financial performance over long-term environmental responsibility, leading to

unsustainable practices such as excessive plastic waste, unchecked resource consumption, and high carbon emissions (Eze et al., 2016).

The relationship between EVSR and firm performance remains inconclusive in scholarly discourse. Some studies suggest that EVSR fosters financial performance by enhancing operational efficiency, improving regulatory compliance, and attracting socially responsible investors who prioritize firms with strong environmental stewardship (Bridget, 2023; Akinadewo et al., 2023). Firms that proactively disclose their environmental impact may benefit from improved market valuation, reduced environmental liabilities, and competitive advantages through sustainability-driven innovation. However, other studies highlight the financial burdens associated with EVSR, arguing that compliance with environmental disclosure standards imposes substantial costs, including investments in cleaner technologies, regulatory compliance, and process reengineering, which could negatively impact short-term profitability (Aliyu & Apedzan, 2022; Ogunode & Adegbie, 2022). These divergent perspectives underscore the need for empirical investigation, particularly within Nigeria's consumer goods sector, where firms face significant sustainability challenges yet operate in a regulatory environment that lacks uniform enforcement.

A critical but often overlooked factor in this relationship is firm size, which may shape the extent to which firms can integrate sustainability initiatives without jeopardizing financial performance. Larger firms, endowed with greater financial and operational capacity, may be better positioned to absorb sustainability-related costs and leverage EVSR as a strategic advantage (Ioannou & Serafeim, 2017). In contrast, smaller firms may struggle with sustainability implementation due to resource constraints, limited economies of scale, and competing financial priorities. Despite its potential significance, the moderating effect of firm size on the EVSR-performance nexus remains underexplored, particularly in the Nigerian context.

Given these gaps, this study seeks to examine the impact of EVSR on the financial performance of Nigerian consumer goods firms, while assessing the extent to which firm size moderates this relationship. By providing empirical insights tailored to the Nigerian business environment, this research contributes to the growing body of knowledge on sustainability disclosure and corporate performance. The findings will offer valuable guidance to business leaders, policymakers, and regulatory institutions seeking to foster sustainable business practices without compromising financial viability.

Research Objective

The main objective of this study is to examine the effect of environmental sustainability reporting on performance, with a focus on the moderating role of firm size in listed Nigerian consumer goods firms. The specific objectives are:

i. To examine the effect of environmental sustainability reporting on the sales turnover of consumer goods firms in Nigeria.

ii. To determine the moderating role of firm size on the relationship between environmental sustainability reporting and sales turnover in consumer goods firms in Nigeria.

Research Hypotheses

To achieve the stated objective of the study, the following hypotheses, stated in null form, were tested:

i. H_{o1}: Environmental sustainability reporting has no significant effect on the sales turnover of consumer goods firms in Nigeria.

ii. H_{o2}: Firm size does not significantly moderate the relationship between environmental sustainability reporting and sales turnover in consumer goods firms in Nigeria.

CONCEPTUAL REVIEW

Environmental Sustainability Reporting

Environmental sustainability reporting has become an essential component of corporate transparency and accountability, particularly in response to the increasing global emphasis on sustainable development and environmental responsibility. It involves the systematic disclosure of an organization's environmental impact, policies, and initiatives, ensuring that stakeholders, including investors, regulators, and the public, are informed about its sustainability performance. Scholars have conceptualized environmental sustainability reporting from various perspectives, highlighting its role in corporate governance, risk management, and long-term value creation. A synthesis of key definitions from established literature provides a robust foundation for understanding the concept within the broader discourse on corporate sustainability.

Gray et al. (1996) define environmental sustainability reporting as the process through which companies disclose information about their environmental performance, including policies, actions, and outcomes, to stakeholders in a structured and verifiable manner. This definition underscores the structured nature of sustainability disclosures and the necessity for verifiability to enhance credibility and accountability.

Elkington (1997), in his Triple Bottom Line (TBL) framework, defines environmental sustainability reporting as the disclosure of an entity's environmental footprint and sustainability initiatives aimed at balancing economic growth, social well-being, and ecological preservation. This perspective integrates the environmental dimension into the broader sustainability agenda, linking financial performance with corporate responsibility for social and ecological well-being.

Klynveld Peat Marwick Goerdeler (KPMG) (2017) describes environmental sustainability reporting as a structured means of communicating an organization's environmental risks, performance, and management approaches to investors, regulators, and the general public. This definition emphasizes risk management as a core function of sustainability reporting, recognizing that environmental disclosures are not only retrospective but also forward-looking, helping organizations anticipate and mitigate sustainability-related risks.

The Global Reporting Initiative (GRI, 2021) characterizes environmental sustainability reporting as the practice of measuring, disclosing, and being accountable for organizational environmental impacts, including energy use, waste management, emissions, biodiversity conservation, and resource consumption. This definition provides a comprehensive framework that outlines key environmental factors to be reported, ensuring comparability and standardization in sustainability disclosures.

Building on these conceptualizations, environmental sustainability reporting is defined in this study as a systematic and verifiable process through which organizations disclose their environmental impact, resource utilization, and sustainability initiatives in a structured manner. It serves as a transparency mechanism that enhances corporate accountability, regulatory compliance, and stakeholder engagement while providing measurable insights into environmental performance. Furthermore, environmental sustainability reporting is examined in relation to corporate performance, with firm size acting as a moderating factor that influences the scope, depth, and effectiveness of sustainability disclosures. This definition integrates key elements from existing scholarly perspectives while ensuring universal applicability across industries and corporate structures, making it relevant for assessing the interplay between sustainability reporting and firm performance in different economic contexts.

Firm Size

Firm size is a fundamental determinant of corporate strategy, financial performance, and market influence. It reflects a company's economic scale, resource capacity, and operational complexity, influencing its ability to compete, comply with regulations, and engage in strategic initiatives such as sustainability reporting. Scholars have conceptualized firm size using various financial and non-financial indicators, with total assets, revenue, market capitalization, and workforce size being the most commonly used measures.

Becker, Gray, and Marriot (1990) conceptualize firm size as a function of organizational scale, measured in terms of total assets, annual turnover, and workforce size, which collectively determine its economic footprint and operational complexity. This definition underscores the multidimensional nature of firm size and its implications for corporate operations.

Cheng, Ioannou, and Serafeim (2014) argue that firm size influences corporate sustainability practices, with larger firms having greater access to resources, stronger stakeholder influence, and a higher propensity to adopt sustainability reporting frameworks. This definition aligns firm size with corporate social responsibility (CSR) and sustainability reporting, highlighting its moderating role in environmental and governance outcomes.

Dang, Li, and Yang (2018) define firm size as a multi-dimensional construct encompassing a company's financial strength, operational scope, and resource base, commonly measured using total assets, sales revenue, and employee count. This perspective reinforces the importance of using quantifiable indicators to assess firm scale.

The Organization for Economic Co-operation and Development (OECD, 2020) defines firm size as a classification of businesses based on quantitative criteria such as employee count, annual revenue, and total assets, distinguishing micro, small, medium, and large enterprises for policy and regulatory purposes. This regulatory perspective is widely used in economic and policy frameworks.

From these definitions, firm size in this study is defined as the financial scale of a company's operations, measured by the natural logarithm of total assets. This approach provides a normalized and comparable indicator of firm size, mitigating the impact of extreme values while capturing variations in corporate scale. In this study, firm size is examined as a moderating variable in the relationship between environmental sustainability reporting and financial performance, with larger firms expected to have greater resources for sustainability initiatives and disclosures, while smaller firms may face financial and operational constraints. This definition integrates established scholarly perspectives while ensuring empirical relevance within the study's research framework.

Firm Performance

Firm performance is a fundamental measure of a company's efficiency and success in achieving its objectives. While financial performance is traditionally assessed using metrics such as return on assets (ROA), return on equity (ROE), and earnings per share (EPS), this study focuses on sales turnover as a primary performance indicator.

Sales turnover, also referred to as revenue, represents the total monetary value of goods sold or services rendered by a firm within a specific period. It is a critical financial metric that reflects a company's market performance, operational efficiency, and overall financial health. Scholars and financial analysts have conceptualized sales turnover from various perspectives, emphasizing its role in profitability, liquidity, and business sustainability.

Needles, Powers, and Crosson (2013) define sales turnover as the sum of all sales transactions completed within a given period, measured in monetary terms and directly linked to a company's ability to cover costs and generate profits. This perspective connects sales turnover to cost management and profitability, reinforcing its role in financial decision-making.

Atrill and McLaney (2019) describe sales turnover as the monetary value of goods sold or services provided during an accounting period, serving as a key determinant of business success and financial stability. This definition emphasizes its relevance in financial reporting and corporate performance assessment.

Weetman (2019) further defines sales turnover as the primary source of revenue for a business, indicating the scale and efficiency of its operations and providing insights into market position and competitive strength. This perspective integrates both operational and market-based considerations, recognizing sales turnover as a measure of business competitiveness.

The International Financial Reporting Standards (IFRS, 2021) describe sales turnover as the gross inflow of economic benefits arising from an entity's ordinary activities, excluding amounts collected on behalf of third

parties. This regulatory definition ensures consistency in financial reporting and differentiates core revenue from other financial inflows.

Drawing from these perspectives, this study defines sales turnover as the total revenue a firm derives from its core business operations within a given period, serving as a measure of market strength, operational efficiency, and financial viability. Within this research, sales turnover is examined as a key financial performance indicator in relation to environmental sustainability reporting (EVSR), with firm size acting as a moderating factor that may influence the extent to which sustainability practices affect revenue generation. This definition integrates established scholarly insights while maintaining empirical relevance to the study's framework.

Theoretical Framework

The Stakeholder Theory was introduced by Robert Edward Freeman in his 1984 book, Strategic Management: A Stakeholder Approach. The theory emerged as a response to the limitations of Shareholder Theory, which had long dominated corporate governance by asserting that businesses exist primarily to maximize profits for shareholders (Freeman, 1984). Freeman argued that organizations do not operate in isolation; instead, they interact with various stakeholders, including investors, employees, customers, suppliers, regulators, and the broader community, whose interests must also be considered in corporate decision-making.

The main thrust of Stakeholder Theory is that businesses should create value for all stakeholders, not just shareholders. This approach shifts corporate responsibility from pure profit maximization toward a broader focus on ethical management, transparency, and long-term sustainability (Freeman et al., 2020). The theory suggests that firms that integrate environmental, social, and governance (ESG) concerns into their strategic objectives can enhance their legitimacy, strengthen stakeholder trust, and ultimately improve long-term financial performance.

In the context of environmental sustainability reporting (EVSR), Stakeholder Theory explains why firms engage in sustainability disclosures. As stakeholders increasingly demand transparency regarding corporate environmental practices, firms must respond by integrating sustainability into their operations. Regulators impose compliance requirements, investors seek environmentally responsible firms for sustainable investment portfolios, and consumers prefer eco-friendly products. By addressing these stakeholder concerns, companies can enhance their corporate reputation, mitigate regulatory risks, and gain a competitive market advantage (Nguyen & Tran, 2021).

Empirical evidence supports the theory's premise that firms engaging in sustainability reporting experience higher investor confidence, greater customer loyalty, and improved regulatory relationships, all of which contribute to better financial outcomes (Phillips et al., 2003). However, the extent to which firms can successfully implement sustainability initiatives is often influenced by firm size. Larger firms, with their greater financial and operational resources, are better positioned to absorb sustainability-related costs and leverage their environmental commitments for competitive advantage (Ioannou & Serafeim, 2017). Smaller firms, in contrast, may lack the necessary resources and view sustainability reporting as an additional financial burden, thereby limiting their engagement in such disclosures.

Despite its advantages, Stakeholder Theory has faced criticism for its lack of clear stakeholder prioritization. In cases where stakeholder interests' conflict, such as when investors demand cost-cutting measures while environmental activists push for stricter sustainability initiatives, firms may struggle to balance competing expectations (Jensen, 2002). Additionally, some firms engage in greenwashing, where they superficially adopt sustainability initiatives to appear responsible without making substantive operational changes, thereby misleading stakeholders (Lyon & Maxwell, 2011).

Nevertheless, Stakeholder Theory remains a valuable framework for understanding corporate sustainability practices. It provides insight into how firms navigate sustainability pressures while maintaining financial performance, emphasizing the role of firm size in determining a company's ability to balance stakeholder expectations effectively. By applying Stakeholder Theory, this study aims to assess how Nigerian consumer goods firms integrate environmental sustainability reporting into their business strategies and how firm size influences the financial impact of these disclosures.

Empirical Review

Okutu and Adegbie (2024) examined the relationship between sustainability reporting and financial performance in the Nigerian oil and gas sector. Their study aimed to analyze the extent to which environmental disclosures impact key financial performance indicators, specifically return on equity (ROE) and return on investment (ROI). The population consisted of 50 oil and gas firms operating in Nigeria, while a sample of 30 firms was selected based on those that actively engage in sustainability reporting. The study covered the period from 2015 to 2023. The research design adopted was a correlational approach, utilizing regression analysis to determine the effect of sustainability reporting on financial performance. Findings indicated a marginally positive impact of environmental disclosures on performance, with ROE positively correlated while ROI showed an insignificant effect. This suggests that while sustainability reporting may enhance investor confidence, its financial benefits remain limited due to the sector's inherent environmental risks. A critique of the study is that it does not adequately account for firm-specific factors that could influence financial performance beyond sustainability disclosures.

Bridget (2023) investigated the link between environmental sustainability reporting and financial performance among Nigerian consumer goods firms. The study sought to determine whether sustainability disclosures positively influence firm profitability, using ROE and net assets per share as performance proxies. The population comprised 80 consumer goods firms listed on the Nigerian Stock Exchange, with a sample of 45 firms selected based on the availability of sustainability reports. The study covered the period from 2014 to 2022. Employing a quantitative research design, the study utilized multiple regression analysis to assess the relationship between sustainability reporting and financial performance. The findings revealed a significant positive association, suggesting that firms engaging in transparent environmental reporting tend to attract environmentally conscious investors and build stronger customer loyalty. Additionally, the study underscored the role of sustainability initiatives in minimizing operational risks. However, a key limitation is that it focuses primarily on financial performance, without considering non-financial benefits such as brand reputation and regulatory compliance.

Akinadewo et al. (2023) explored sustainability reporting practices within Nigeria's industrial goods sector, aiming to assess the influence of environmental disclosures on firm performance. The study targeted industrial firms with publicly available sustainability reports, with a total population of 60 firms and a sample size of 35 firms selected using a stratified sampling technique. The study covered the period from 2013 to 2021. The research design was cross-sectional, with data analyzed through structural equation modeling (SEM) to evaluate relationships among variables. The results indicated that firms with robust sustainability reporting practices experience enhanced stakeholder trust, regulatory compliance, and improved financial performance. The study highlighted that firms integrating environmental sustainability into their corporate strategies mitigate regulatory risks and boost operational efficiency. However, a notable shortcoming is that the study does not differentiate between mandatory and voluntary sustainability reporting, which could affect the generalizability of its findings.

Ighoroje (2023) focused on environmental performance disclosures in the Nigerian oil and gas industry, assessing their impact on firm profitability. The study aimed to quantify the contribution of environmental disclosures to financial outcomes, particularly profitability measures. The population consisted of 40 oil and gas firms in Nigeria, with a purposive sample of 25 companies known for active environmental reporting. The study covered the period from 2012 to 2022. The study utilized a longitudinal research design, employing panel data regression analysis to track variations over time. Findings showed that environmental reporting accounted for 18% of profitability variations, with environmental prevention and evaluation costs exerting negative effects. These results suggest that while transparency in environmental disclosures may enhance compliance and legitimacy, they impose financial burdens on firms. A critique of this study is its limited consideration of external factors such as government subsidies or regulatory incentives that could offset sustainability-related costs.

Anisah and Silfia (2023) examined sustainability disclosures and financial performance among Indonesian firms listed on the IDX30 Index. Their objective was to evaluate how economic and environmental disclosures influence return on assets (ROA). The study's population consisted of 30 firms listed on the IDX30 Index, with a sample of 20 firms selected through a purposive sampling technique. The study covered the period from 2011 to 2021. A panel data regression model was employed to analyze the dataset. The findings revealed that economic

disclosures had a significant positive effect on ROA, whereas environmental disclosures showed no notable impact. This suggests that firms prioritize economic sustainability over environmental initiatives, possibly due to limited regulatory pressure. A critique of the study is that it does not account for sectoral variations, as different industries may exhibit varying levels of sensitivity to sustainability disclosures.

Asha and Amiya (2023) conducted a study on sustainability practices in Indian listed firms, aiming to determine the influence of governance, social, and environmental sustainability efforts on firm performance. The study's population included 75 listed Indian firms across various sectors, with a sample of 50 firms selected based on established sustainability reporting practices. The study covered the period from 2010 to 2020. The research design employed a mixed-methods approach, integrating quantitative regression analysis with qualitative case studies. Findings indicated that governance and social sustainability practices had a significant positive effect on firm performance, whereas environmental sustainability efforts showed a negative and insignificant association. The study attributed this outcome to the high costs and long-term nature of environmental investments. However, the study fails to consider potential long-term benefits of environmental initiatives, such as risk reduction and regulatory advantages.

Aliyu and Apedzan (2022) explored the effect of sustainability reporting on the financial performance of Nigerian non-financial companies. The study's objective was to determine whether sustainability disclosures enhance or hinder financial outcomes. The population comprised 100 non-financial firms listed on the Nigerian Stock Exchange, with a sample of 60 firms selected based on sustainability reporting history. The study covered the period from 2010 to 2020. A panel regression model was used for analysis. Findings showed a significant negative relationship, particularly for environmental disclosures, which were linked to high costs without immediate financial returns. The study emphasized the challenges of sustainability adoption in weak regulatory environments. However, its limitation lies in not considering variations in firm strategies, as some companies may integrate sustainability into their competitive advantage despite the costs.

Ogunode and Adegbie (2022) analyzed environmental reporting practices among Nigerian manufacturing firms, seeking to determine their financial implications. The study targeted 90 manufacturing firms with sustainability disclosures, selecting a sample of 55 firms based on industry representation. The study covered the period from 2009 to 2019. A quantitative research approach was adopted, with regression analysis employed to measure financial outcomes. Results indicated a negative impact of environmental disclosures on key financial metrics such as ROA and market price per share (MPS). The study suggested that voluntary compliance and weak enforcement mechanisms contribute to these adverse effects. However, a key limitation is that the study does not consider long-term financial benefits that could arise from enhanced corporate reputation and investor confidence.

Nguyen and Tran (2021) investigated the moderating role of firm size in the relationship between environmental sustainability reporting and corporate performance. The study aimed to establish whether larger firms derive more financial benefits from sustainability disclosures compared to smaller firms. The population consisted of 70 publicly traded firms in Vietnam, with a sample of 40 firms stratified by firm size. The study covered the period from 2008 to 2018. The research employed a hierarchical regression model to analyze data. Findings demonstrated that larger firms benefit significantly due to their greater resources, visibility, and stakeholder engagement, whereas smaller firms struggle due to resource constraints. However, the study does not account for the role of industry type, as certain sectors may inherently derive greater sustainability benefits regardless of firm size.

Fasua and Osifo (2020) examined the effect of corporate performance on environmental accounting disclosures among Nigerian firms. The objective was to determine whether financial performance influences the extent of environmental disclosures. The study's population comprised 85 Nigerian firms engaged in sustainability reporting, with a sample of 50 firms drawn from the Nigerian Stock Exchange. The study covered the period from 2005 to 2017. A panel data approach was used, with regression analysis conducted to assess relationships. Findings revealed a significant positive relationship between environmental accounting and ROA, while earnings per share (EPS) showed a negative correlation. The study recommended mandatory reporting standards to enhance consistency. However, a key limitation is that it does not explore how firm-specific characteristics, such as governance structure, influence environmental disclosures.

Collectively, these studies underscore the complex relationship between environmental sustainability reporting and corporate performance. While many studies highlight the positive impacts of transparency and accountability, others emphasize the costs and challenges associated with sustainability initiatives, particularly in regions with weak regulatory frameworks. Contextual factors such as industry, firm size, and stakeholder expectations play critical roles in shaping these outcomes, suggesting that a one-size-fits-all approach may not be appropriate for understanding the dynamics of sustainability reporting.

METHODOLOGY

This study adopts an ex-post facto research design, which is suitable for analyzing the effect of environmental sustainability reporting (EVSR) on financial performance using historical data. The design is appropriate because the study examines relationships between variables without manipulating them. Secondary data was collected from the annual and sustainability reports of 16 consumer goods firms listed on the Nigerian Exchange Group from 2014 to 2023. The population of the study consists of 21 listed consumer goods firms, and the sample was selected using a purposive sampling technique. Firms included in the study were required to have been listed for at least ten years and to have published sustainability disclosures, either within their annual reports or as standalone sustainability reports. This approach ensures that the data is comprehensive and relevant for evaluating the research hypotheses.

The dependent variable in this study is firm performance, which is measured using sales turnover. Sales turnover is an appropriate financial metric as it reflects a company's ability to generate revenue, respond to market demand, and sustain business operations. Unlike profit-based measures such as return on assets (ROA) or return on equity (ROE), which may be influenced by accounting policies, sales turnover provides a more direct assessment of operational success. The independent variable is environmental sustainability reporting (EVSR), which captures the extent of sustainability disclosures made by firms in their annual financial reports. The moderating variable, firm size, is included to assess how larger or smaller firms experience the financial impact of sustainability reporting differently. Firm size is measured using the natural logarithm of total assets, a standard metric in corporate finance research.

To analyze the relationship among these variables, the study employs panel data regression analysis using STATA 17.0. Panel regression is preferred as it accounts for both cross-sectional (differences between firms) and time-series (changes over time) variations, providing more robust and generalizable findings. The model is adapted from Umar and Mustapha (2021) to examine the effect of sustainability reporting on sales turnover with firm size as a moderating factor. The base model is specified as follows:

Base Model:

$ROE_{it} = \beta_0 + \beta_1 SOC_{it} + \beta_2 ECO_{it} + \beta_3 ENV_{it} + \epsilon_{it}$

Where:

ROE = Return on Equity

SOC= Social performance disclosure

ECO= Economic performance disclosure

ENV= Environmental performance disclosure

Adapted Model:

$ST_{it} = \beta_0 it + \beta_1 EVSRit + \beta_2 FMZit + \varepsilon it$

Moderated Model:

$ST_{it} = \beta_{0it} + \beta_1 EVSR_{it} + \beta_2 FMZ_{it} + \beta_3 EVSR\_FMZ_{it} + \varepsilon_{it}$

Where:

ST = Sales Turnover

EVSR = Environmental Sustainability Reporting

FMZ= Firm Size

EVSR_FMZ = Environmental Sustainability Reporting Moderated

$\beta 0$ = Regression intercept (constant)

β_1 = Coefficient of the main effects of environmental disclosures

β_2 = Coefficient of the main effect of firm size

β_3 = Coefficient of the interaction effects between the environmental disclosures and firm size

ε_{it} = Error Term

"i" and "t" represent the company and years respectively.

Table 1: Variables, Definition, Measurement and Sources

Type of Variable	**Variables**	**Definition**	**Measurement**	**Source**
Dependent variable	Sales Turnover	Sales turnover is the total revenue generated by a firm from its sales activities over a specific period.	Reported sales figures from financial statements of firms.	(Tran & Pham, 2022)
Independent Variable	Environmental Sustainability Reporting	It is an analysis of how a system interacts with the economy as a whole and whether, for financial purposes, the actions being done can be continued indefinitely or will have to be stopped at some stage in the future	(a) "when all information is disclosed, a score of 1 will be given" (b) "when almost all information (that is, above average) is reported, 0.75 will be given" (c) "when the information is partially (that is average) reported, 0.5 will be given" (d) "when the information is briefly disclosed (that is less than average), 0.25 will be given; and" (e) "when no information is disclosed, 0 will be scored."	Festus et al (2020)

Moderating Variable	Firm Size	This is measured as natural logarithm of total assets	Logarithm of Assets	Dioha, Mohammed and Okpanachi (2018)

Source: Researchers' Compilation (2024)

DATA ANALYSIS AND DISCUSSION

Descriptive Statistics

The descriptive statistics provide insights into the characteristics of the variables used in the study: sales turnover (ST), environmental sustainability reporting (EVSR), and firm size (FMZ). Sales turnover has a mean value of ₦188 million, with a standard deviation of ₦282 million, indicating substantial variation in revenue generation across firms. The minimum and maximum values range from ₦227,301 to ₦1.62 billion, showing a significant disparity in sales performance among firms, which could be influenced by differences in market share, operational efficiency, and strategic positioning.

For environmental sustainability reporting (EVSR), the mean disclosure level is 0.1445 (14.45%), with a standard deviation of 0.1809, implying that, on average, firms disclose a small proportion of their environmental activities. The minimum and maximum values of 0 and 0.625, respectively, highlight the variability in reporting practices across the sampled firms. This suggests that while some firms have embraced sustainability disclosure, others provide little to no information on their environmental impact.

Firm size, measured as the natural logarithm of total assets, has a mean value of 18.10, with a standard deviation of 1.61. The minimum firm size is 13.40, while the largest firm in the sample has a size of 20.82, indicating notable differences in firm scale and resource capacity. Between-firm variation is higher than within-firm variation over time, suggesting that firm size remains relatively stable for individual firms but varies considerably across firms in the industry.

Overall, the descriptive statistics indicate substantial variability in sales turnover and sustainability reporting practices, while firm size remains more stable. This variability reinforces the need to examine how these factors interact and influence financial performance.

Table 2: Descriptive Statistics Results

Variable		**Mean**	**Std. Dev.**	**Min**	**Max**	**Observations**
ST	overall	1.88000000	2.82000000	2.27301	1.620000000	N = 160
	between		2.50000000	1.427048	8.57000000	n = 16
	within		1.43000000	-5.59000000	1.070000000	T = 10
EVSR	overall	0.1445331	0.1808614	0	0.625	N = 160
	between		0.1467569	0	0.5	n = 16
	within		0.1113211	-0.1304869	0.4736731	T = 10
FMZ	overall	18.10259	1.612004	13.398	20.8162	N = 160
	between		1.545811	15.30718	20.06603	n = 16
	within		0.5867544	16.06132	19.76802	T = 10

Source: Researchers' Computation (2024) using STATA 17.0

Unit Root Test

To ensure the reliability of the panel regression analysis, a Levin-Lin-Chu unit root test was conducted to check for stationarity in the dataset. The results reveal that the null hypothesis of a common unit root is rejected for all variables, as the p-values are below 0.05. This confirms that the data is stationary at levels (I(0)), meaning that the variables do not exhibit trends over time, thus preventing the risk of spurious regression results. The stationarity of the variables strengthens the robustness of the regression analysis, ensuring that the estimated relationships are valid and interpretable.

Table 3: Levin-Lin-Chu Test

Variables	**Statistics**	**Probability**	**Order of Integration**	**Remarks**
ST	-6.0227	0.000	1(0)	Reject H0
EVSR	-3.0985	0.0010	1(0)	Reject H0
FMZ	-15.446	0.0000	1(0)	Reject H0

Source: Researchers' Computation (2024) using STATA 17.0

Correlation Analysis

The correlation matrix presents the strength and direction of relationships between the study variables. The correlation between sales turnover (ST) and environmental sustainability reporting (EVSR) is weakly positive (0.1185), suggesting that while firms with higher sustainability disclosures may experience increased sales, the effect is minimal. This implies that other factors, such as market competition, pricing strategies, and brand reputation, might have a more significant influence on sales performance than sustainability reporting alone.

Firm size (FMZ) has a strong positive correlation (0.6778) with sales turnover, indicating that larger firms tend to generate higher sales revenue. This aligns with the expectation that larger firms benefit from economies of scale, stronger brand equity, and greater market reach, which contribute to superior financial performance. Additionally, firm size and environmental sustainability reporting exhibit a moderate positive correlation (0.4090), implying that larger firms are more likely to engage in sustainability disclosures due to regulatory scrutiny, stakeholder pressure, or strategic corporate responsibility initiatives.

These findings suggest that firm size could play a critical role in shaping the impact of environmental sustainability reporting on financial performance, reinforcing the rationale for including firm size as a moderating variable in the study.

Table 4: Correlation Matrix

(obs=160)			
	ST	**EVSR**	**FMZ**
ST	1		
EVSR	0.1185	1	
FMZ	0.6778	0.409	1

Source: Researchers' Computation (2024) using STATA 17.0

Heteroskedasticity Test

To ensure the validity and reliability of the regression estimates, a Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was conducted. This test examines whether the variance of residuals remains constant or varies systematically with the independent variables. The test produced a chi-square (x^2) statistic of 82.77 with a corresponding p-value of 0.0700.

As the p-value exceeds the conventional significance level of 0.05, we accept the null hypothesis, indicating no strong evidence of heteroskedasticity. This implies that the regression model satisfies the homoskedasticity assumption, and the estimated coefficients remain efficient and unbiased. The results are summarized as follows:

Table 5: Breusch-Pagan / Cook-Weisberg Test

Test	**Chi-Square (x^2) Statistic**	**p-value**	**Decision**	**Conclusion**
Breusch-Pagan / Cook-Weisberg Test	82.77	0.07	Accept H_0	No heteroskedasticity

Source: Researchers' Computation (2024) using STATA 17.0

Regression Analysis

The panel regression analysis examines the effect of environmental sustainability reporting (EVSR) on sales turnover (ST) and the moderating role of firm size (FMZ). In the initial model (without moderation), the F-statistic (75.33, $p < 0.001$) confirms that the model is statistically significant. The R-squared value (0.4897) suggests that approximately 49% of the variation in sales turnover is explained by EVSR and firm size. The coefficient for EVSR (-2.9700, $p = 0.003$) indicates a significant negative relationship between sustainability reporting and sales turnover. This suggests that firms engaging in sustainability disclosures may experience short-term financial strain due to the costs associated with compliance, operational restructuring, and changes in stakeholder expectations. Conversely, firm size (FMZ) has a significant positive effect (1.3200, $p < 0.001$), confirming that larger firms achieve higher sales turnover.

When the interaction term (EVSR_FMZ) is introduced in the moderated model, the R-squared value increases to 0.5200, indicating that 52% of the variation in sales turnover is now explained by the model, suggesting an improved model fit. The interaction term is significant and positive (2.3900, $p = 0.002$), confirming that firm size moderates the relationship between EVSR and sales turnover. This means that larger firms are better positioned to absorb the financial burden of sustainability initiatives and leverage them as a competitive advantage.

Table 6: Regression Analysis

Source	**SS**	**DF**	**MS**	**Number of obs =**	160	
Model	6.1761	2	3.088	**F(2, 157) =**	75.33	
Residual	6.4363	157	4.0996	**Prob > F =**	0.000	
Total	1.2612	159	7.9323	**R-Squared =**	0.4897	
				Adj R-Squared =	0.4832	
				Root MSE =	2	

ST	**Coef.**	**Std. Err.**	**t**	**Prob > [t]**	**95% Conf.**	**Interval**
EVSR	-2.9700	9.7300	-3.05	0.003	-4.8900	-1.05000
FMZ	-1.3200	1.0900	12.1	0.000	1.1000	1.54000
_cons	-2.1600	1.9300	-11.99	0.000	-2.5400	-1.78000
Source	**SS**	**DF**	**MS**	**Number of obs =**	160	
Model	6.5589	3	2.1863	**F(3, 156) =**	56.34	
Residual	6.0535	156	3.8804	**Prob > F =**	0.00000	
Total	1.2612	159	7.9323	**R-Squared =**	0.52000	
				Adj R-Squared =	0.51080	
				Root MSE =	2	
ST	**Coef.**	**Std. Err.**	**t**	**Prob > [t]**	**[95% Conf.**	**Interval**
EVSR	-4.8400	1.4500	-3.34	0.001	-7.7000	-1.9800
FMZ	1.2000	1.1300	10.66	0.000	9.7900	1.4200
EVSR_FMZ	2.3900	7.5900	3.14	0.002	8.8500	3.8900
_cons	-1.9400	2.0000	-9.70	0.000	-2.3400	-1.5500

Source: Researchers' Computation (2024) using STATA 17.0

DISCUSSION

The regression analysis provides strong empirical evidence on the relationship between environmental sustainability reporting (EVSR), firm size, and financial performance. The findings align with Stakeholder Theory, which emphasizes balancing the expectations of investors, consumers, and regulators to achieve long-term sustainability (Freeman, 1984).

The study rejects the first null hypothesis (H_{01}), confirming that EVSR has a significant negative effect on sales turnover in Nigerian consumer goods firms. The EVSR coefficient (-2.97, p = 0.003) suggests that while sustainability disclosures enhance transparency and reputation, they can also impose short-term financial strain due to compliance costs and shifting stakeholder expectations. This finding is consistent with Aliyu and Apedzan (2022) and Ogunode and Adegbie (2022), who noted that sustainability initiatives often increase operational costs, especially in weak regulatory environments. Similarly, Ighoroje (2023) found that environmental reporting influences profitability but tends to exert downward pressure due to the costs of environmental compliance and assessment. López, Garcia, and Rodriguez (2007) also reported that firms frequently face initial resistance from investors and customers when shifting to sustainability-driven business models.

However, some studies challenge the claim that sustainability reporting negatively affects financial performance. Frias-Aceituno et al. (2013) and Michelon et al. (2013) argue that sustainability disclosures enhance firm value by improving investor confidence and reducing information asymmetry. Setó-Pamies and Papaoikonomou (2021) suggest that proactive environmental reporting increases brand loyalty and long-term revenue growth. Byun et al. (2021) further assert that the initial cost burden of sustainability initiatives is often outweighed by competitive advantages, such as access to green financing and improved risk management. The divergence in

findings may stem from differences in industry structure, regulatory frameworks, and firm characteristics, underscoring the need for context-specific assessments.

The study also rejects the second null hypothesis (H_{02}), demonstrating that firm size significantly moderates the relationship between EVSR and sales turnover. The interaction term (EVSR_FMZ) is positive and significant (2.39, $p = 0.002$), indicating that larger firms are better positioned to absorb the financial burden of sustainability initiatives. This supports Ioannou and Serafeim's (2017) argument that firm size is a key determinant of the financial benefits of sustainability reporting. Consistent with Nguyen and Tran (2021), the results suggest that larger firms, due to their resource advantage, visibility, and stakeholder scrutiny, derive greater benefits from sustainability disclosures. Akinadewo et al. (2023) further highlight that firms with robust sustainability practices not only gain stakeholder trust but also improve regulatory compliance, reducing long-term risks and enhancing competitiveness.

Despite these advantages, some perspectives question the assumption that firm size guarantees positive financial outcomes from sustainability reporting. Ebaid (2023) cautions that larger firms face heightened regulatory expectations, increasing pressure to invest in costly environmental initiatives with uncertain returns. Thayaraj and Karunarathne (2021) argue that the financial impact depends on strategic alignment. If sustainability efforts are perceived as superficial or compliance-driven, firms may fail to realize the expected reputational and financial benefits.

CONCLUSION

This study finds that environmental sustainability reporting (EVSR) negatively impacts sales turnover in Nigerian consumer goods firms. The rejection of the first null hypothesis (H_{01}) confirms that while EVSR enhances transparency and reputation, it imposes financial burdens due to compliance costs and shifting stakeholder expectations. This effect is particularly pronounced in weak regulatory environments where voluntary reporting lacks standardization.

The rejection of the second null hypothesis (H_{02}) establishes that firm size (FMZ) positively moderates this relationship. Larger firms are better positioned to absorb the financial burden of sustainability initiatives and leverage disclosures for competitive advantage. In contrast, smaller firms experience greater financial strain, limiting their ability to benefit from sustainability efforts.

The findings validate Stakeholder Theory (Freeman, 1984), reinforcing the need for firms to balance the interests of investors, consumers, and regulators. While this study highlights short-term negative financial effects, prior research suggests that sustainability reporting can enhance firm value by improving investor confidence and brand loyalty over time. These mixed results indicate that strategic sustainability practices are essential to balancing regulatory compliance with financial performance.

RECOMMENDATIONS

To mitigate the negative financial impact of environmental sustainability reporting (EVSR) on sales turnover, particularly for smaller firms, both businesses and regulators must adopt targeted strategies. While firms can take steps to optimize sustainability investments, government intervention is essential in creating an enabling environment for effective implementation.

The government should introduce financial incentives, such as tax breaks, grants, and low-interest loans, to help firms offset the costs of sustainability initiatives. These incentives will encourage businesses, especially small and medium-sized enterprises (SMEs), to adopt sustainable practices without experiencing significant financial strain. Additionally, regulatory authorities should establish minimum reporting standards to ensure transparency, comparability, and credibility in sustainability disclosures. A standardized reporting framework will reduce inconsistencies, simplify compliance, and encourage more firms to engage in sustainability reporting. Furthermore, policymakers should provide training programs, advisory services, and subsidized access to green technologies to support SMEs in transitioning to environmentally responsible business models.

At the firm level, businesses should adopt tailored strategies based on their size and resource capacity. Smaller firms should prioritize cost-effective sustainability measures, such as energy-efficient processes, waste reduction, and supply chain optimization, to minimize operational costs while maintaining regulatory compliance. A phased approach, where companies begin with low-cost, high-impact initiatives before expanding to resource-intensive projects, will help mitigate financial risks.

For larger firms, sustainability should be integrated into branding, compliance, and investment strategies to maximize long-term benefits. Establishing dedicated sustainability units can enhance regulatory adherence, improve stakeholder trust, and strengthen competitive positioning. Additionally, large firms should promote sustainable supply chain practices, encouraging their smaller suppliers to adopt environmentally responsible strategies.

Collaboration across industries can further ease the financial burden of sustainability reporting. Large firms can support smaller businesses by sharing sustainability reporting platforms, co-investing in green technologies, and facilitating knowledge transfer. These partnerships will help SMEs transition smoothly while maintaining financial stability.

By implementing these government-led initiatives and firm-level strategies, Nigeria can foster a business environment where sustainability reporting enhances both financial performance and long-term competitiveness. A balanced approach, combining regulatory support and strategic business decisions, will ensure that sustainability efforts drive economic growth while meeting environmental and social responsibilities.

SUGGESTIONS FOR FURTHER STUDIES

Comparative studies across industries and regulatory environments could provide deeper insights into how firm-specific and institutional factors influence the financial outcomes of environmental sustainability reporting (EVSR). Investigating the role of corporate governance and stakeholder engagement in moderating the relationship between EVSR and financial performance would offer valuable perspectives. Further research could also examine the effectiveness of standardized reporting frameworks and financial incentives in mitigating the costs of sustainability compliance for firms of different sizes.

REFERENCES

1. Akinadewo, I., Ojo, T., & Egbetokun, A. (2023). Environmental sustainability practices and financial performance: Evidence from the industrial goods sector in Nigeria. Journal of Business and Sustainability Studies, 15(2), 78–95.
2. Akinadewo, S., Eze, P., & Olumide, F. (2023). Sustainability reporting practices in the Nigerian industrial goods sector: Implications for performance. Journal of Accounting and Finance, 8(1), 45–62.
3. Aliyu, M. A., & Apedzan, M. (2022). The financial implications of environmental reporting: Evidence from Nigerian non-financial companies. African Journal of Accounting and Finance, 10(1), 45–62.
4. Aliyu, M. A., & Apedzan, N. (2022). The financial burden of sustainability reporting in Nigerian firms: A cost-benefit analysis. African Journal of Business and Economic Research, 10(3), 22–38.
5. Anisah, M., & Silfia, R. (2023). Sustainability disclosures and financial performance: Evidence from Indonesian listed firms. Asian Journal of Corporate Finance, 17(2), 112–134.
6. Asha, R., & Amiya, S. (2023). The influence of sustainability practices on financial outcomes: An Indian perspective. Indian Journal of Business Ethics, 19(1), 55–73.
7. Atrill, P., & McLaney, E. (2019). Accounting and finance for non-specialists (11th ed.). Pearson Education.
8. Becker, B., Gray, C., & Marriott, R. (1990). Small business and its management. Open University Press.
9. Bridget, O. (2023). Environmental sustainability reporting and financial performance of consumer goods firms in Nigeria. International Journal of Accounting and Finance, 12(3), 112–130.
10. Bridget, T. (2023). Environmental sustainability reporting and financial performance: A case study of Nigerian consumer goods firms. International Journal of Finance and Sustainability, 12(1), 20–35.

11. Byun, S., Lee, D., & Kim, J. (2021). The financial consequences of sustainability reporting: Evidence from global consumer markets. Sustainability Accounting, Management and Policy Journal, 12(4), 678–701.
12. Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. Strategic Management Journal, 35(1), 1–23.
13. Carbon Disclosure Project. (2021). CDP climate change report. https://www.cdp.net
14. Dang, C., Li, Z., & Yang, C. (2018). Measuring firm size in empirical corporate finance. Journal of Banking & Finance, 86, 159–176.
15. Dioha, C., Mohammed, N. A., & Okpanachi, J. (2018). Effect of firm characteristics on profitability of listed consumer goods companies in Nigeria. Journal of Accounting, Finance and Auditing Studies, 4(2), 14–31.
16. Ebaid, I. (2023). Corporate sustainability reporting and firm value: The moderating role of firm size. Journal of Business and Economic Research, 21(1), 88–104.
17. Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st-century business. Capstone Publishing.
18. Eze, R., Nweze, A., & Enekwe, C. (2016). Environmental sustainability and corporate performance: A study of selected manufacturing firms in Nigeria. Journal of Economics and Sustainable Development, 7(8), 93–103.
19. Fasua, H. K., & Osifo, O. I. (2020). Environmental accounting and corporate performance. International Journal of Academic Research in Business and Social Sciences, 10(9), 244–261.
20. Festus, A. F., Rufus, A. I., & Janet, T. O. (2020). Sustainability reporting: Imperative for turnover growth. Asian Journal of Economics, Business and Accounting, 7(2), 8–18.
21. Freeman, R. E. (1984). Strategic management: A stakeholder approach. Pitman.
22. Freeman, R. E., Harrison, J. S., & Zyglidopoulos, S. (2020). Stakeholder theory: Concepts and strategies. Cambridge University Press.
23. Frias-Aceituno, J. V., Rodríguez-Ariza, L., & Garcia-Sánchez, I. M. (2013). The role of the board in the dissemination of integrated corporate social reporting. Corporate Social Responsibility and Environmental Management, 20(4), 219–233.
24. Global Reporting Initiative. (2021). GRI standards: Sustainability reporting framework. https://www.globalreporting.org
25. Gray, R., Owen, D., & Adams, C. (1996). Accounting and accountability: Changes and challenges in corporate social and environmental reporting. Prentice Hall.
26. Ighoroje, A. (2023). Sustainability reporting and financial performance: Evaluating cost implications in Nigerian firms. African Journal of Business and Finance, 9(1), 75–93.
27. International Financial Reporting Standards (IFRS). (2021). IFRS standards and interpretations. IFRS Foundation. https://www.ifrs.org
28. Ioannou, I., & Serafeim, G. (2017). The consequences of mandatory corporate sustainability reporting. Harvard Business School Working Paper.
29. Jensen, M. C. (2002). Value maximization, stakeholder theory, and the corporate objective function. Business Ethics Quarterly, 12(2), 235–256.
30. Klynveld Peat Marwick Goerdeler (KPMG). (2017). The KPMG survey of corporate responsibility reporting 2017. https://home.kpmg/
31. López, M. V., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones Sustainability Index. Journal of Business Ethics, 75(3), 285–300.
32. Lyon, T. P., & Maxwell, J. W. (2011). Greenwash: Corporate environmental disclosure under threat of audit. Journal of Economics & Management Strategy, 20(1), 3–41.
33. Michelon, G., Pilonato, S., & Ricceri, F. (2013). CSR reporting practices and the quality of disclosure: An empirical analysis. Critical Perspectives on Accounting, 24(1), 1–20.
34. Nguyen, T., & Tran, B. (2021). The impact of sustainability initiatives on sales turnover growth: A consumer perception study. Journal of Business Sustainability, 14(1), 34–50.
35. Nkwoji, C. (2021). Corporate environmental responsibility and sustainable development: The Nigerian perspective. African Journal of Business Ethics, 16(1), 33–51.
36. Ogunode, A., & Adegbie, F. (2022). Environmental disclosures and financial performance in Nigerian manufacturing firms: An empirical assessment. West African Journal of Accounting, 20(3), 120–137.

37. Okafor, B. (2018). Challenges of environmental sustainability reporting in Nigeria: A regulatory perspective. Journal of Corporate Governance and Sustainability, 9(2), 54–71.
38. Okutu, P., & Adegbie, F. (2024). Sustainability reporting and financial performance: A case study of Nigeria's oil and gas sector. Journal of Energy Economics and Environmental Accounting, 19(1), 98–115.
39. Organization for Economic Co-operation and Development (OECD). (2020). OECD SME and entrepreneurship outlook 2020.
40. Phillips, R., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. Business Ethics Quarterly, 13(4), 479–502.
41. Setó-Pamies, D., & Papaoikonomou, E. (2021). Sustainable development in business: A meta-analysis of the impact of environmental, social, and governance (ESG) practices on financial performance. Journal of Business Research, 123, 180–191.
42. Thayaraj, M., & Karunarathne, W. (2021). Corporate environmental responsibility and profitability: The mediating role of strategic sustainability initiatives. International Journal of Corporate Governance, 8(2), 58–77.
43. Tran, H. T., & Pham, H. S. T. (2022). How environmental, social, and governance disclosure promotes sales? Empirical evidence from global firms. Journal of Strategic Marketing, 1–19.
44. Umar, M., & Mustapha, R. (2021). Sustainability disclosure and firm performance: Evidence from panel data analysis. Journal of Corporate Finance and Sustainability, 15(2), 87–102.
45. Weetman, P. (2019). Financial accounting: An introduction (8th ed.). Pearson Education.