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RESEARCH ARTICLE

ENVIRONMENTAL SUSTAINABILITY REPORTING AND FINANCIAL PERFORMANCE OF LISTED CONSUMER GOODS FIRMS IN NIGERIA

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ABSTRACT

This study examined the effect of environmental sustainability reporting on the performance of listed consumer goods firms in Nigeria. Environmental sustainability reporting was proxied by energy disclosure, emissions disclosure, and effluent and waste disclosure, while financial performance was measured using return on equity (ROE). To guide the study, three research objectives were formulated in line with the selected proxies of environmental sustainability reporting, which also led to the development of corresponding research questions and hypotheses. The study adopted an ex-post facto research design and utilized secondary data obtained from the published annual reports of the sampled firms for the period under review. A sample of eight consumer goods firms listed on the Nigerian Exchange Group was selected using the judgmental sampling technique. Content analysis was employed in extracting relevant data from the reports. The Hausman test was used to determine the appropriate model between fixed and random effects, and the panel least squares regression using the random effects model was adopted to test the hypotheses. The results revealed that effluent and waste disclosure and emissions disclosure have a positive and significant effect on the return on equity of consumer goods firms in Nigeria, while energy disclosure was found to have no significant effect on return on equity. The study therefore concluded that environmental sustainability reporting significantly influences the performance of consumer goods firms in Nigeria. Based on the findings, the study recommends that consumer goods firms should prioritize comprehensive disclosure of emissions-related activities, including greenhouse gas emissions and mitigation strategies, as this enhances financial performance and improves stakeholders' confidence among others.

Keywords: Environmental sustainability reporting, effluent and waste disclosure, emissions disclosure, energy disclosure, financial performance

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1.0. INTRODUCTION

Nigeria's pursuit of sustainable development depends largely on its ability to balance economic growth, environmental protection, and social responsibility. Consumer goods firms play a significant role in the nation's economy; consequently, their environmental sustainability reporting and financial performance are important indicators of progress toward sustainable development. Growing environmental concerns have prompted organizations worldwide to recognize the importance of disclosing their environmental performance, with many firms adopting the Global Reporting Initiative (GRI) framework to improve transparency and strengthen stakeholder relationships.

Manufacturing firms, particularly those in the consumer goods sector, have continued to experience performance challenges, raising concerns about the contribution of environmental sustainability disclosure to firm performance (Dagunduro et al., 2024). At the same time, stakeholders increasingly acknowledge that environmental, social, and governance (ESG) issues present both risks and opportunities capable of influencing a firm's reputation, competitiveness, and long-term value (Sembiring et al., 2026). Due to the increasing demand for transparency, organizations are expected to disclose environmental information alongside financial data to provide a more comprehensive assessment of corporate performance. Since corporate activities affect a wide range of stakeholders, firms are under growing pressure to remain profitable while demonstrating environmental responsibility as part of their social contract (Iatridis & Alexakis, 2012). Environmental disclosure therefore serves as an important mechanism for accountability and corporate legitimacy (Trireksani & Djajadikerta, 2016).

Environmental sustainability reporting constitutes one of the three pillars of sustainability reporting under the Global Reporting Initiative (GRI). Although the framework has evolved over time, its environmental indicators including; energy, emissions, and effluents and waste remain widely used in evaluating corporate environmental performance. This study focuses on these three indicators because they are among the most commonly disclosed environmental measures and are relevant for assessing their relationship with the financial performance of Nigerian consumer goods firms.

Furthermore, organizations worldwide are increasingly expected, and in many jurisdictions required, to disclose environmental and sustainability-related information to improve transparency, accountability, and stakeholder confidence. This shift has been reinforced by the International Sustainability Standards Board (ISSB) disclosure framework and growing demand for high-quality ESG reporting. Despite these developments, environmental reporting in Nigeria is still evolving from voluntary to more structured reporting practices. Although Nigeria has made progress through the adoption of IFRS Sustainability Disclosure Standards and implementation guidelines, disclosure practices continue to differ across firms because of variations in governance structures, organizational characteristics, and reporting capabilities (Monye-Emina & Umanah, 2026).

Despite growing environmental awareness, many consumer goods firms in Nigeria continue to face challenges in balancing financial objectives with environmental responsibility. Environmental sustainability reporting remains largely voluntary, and many firms provide environmental disclosures only when they perceive clear economic benefits. Although environmental regulations such as the National Environmental Standards and Regulations Enforcement Agency (NESREA) Act of 2007

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were introduced to regulate environmental practices, the level of environmental sustainability reporting among Nigerian firms remains relatively low compared with other developing economies.

Previous empirical studies have reported mixed findings regarding the relationship between environmental sustainability reporting and financial performance. While some studies report that environmental disclosure improves corporate reputation and financial performance (Teixeira, Carvalho, & Carmo, 2026; Onyebuenyi & Ofoegbu, 2022; Obiora & Omaliko, 2022), others found no significant relationship (Sembiring et al., 2026; Munir & Pratama, 2025). These inconsistent findings underscore the need for further empirical evidence on listed consumer goods firms in Nigeria. The inconsistent empirical evidence and evolving sustainability reporting practices in Nigeria underscore the need for further investigation into the effect of environmental sustainability reporting on the financial performance of listed consumer goods firms in Nigeria.

1.1. Purpose of the Study

The main purpose of the study is to examine the effect of environmental sustainability reporting on the financial performance of listed consumer firms in Nigerian. Specifically, the study intended to:

1. Examine the effect of effluent and waste environmental sustainability reporting on return on equity of listed consumer firms in Nigeria
2. Assess the effect of energy environmental sustainability reporting on return on equity of listed consumer goods firms in Nigeria.
3. Determine the effect of emissions environmental sustainability reporting on return on equity of listed consumer firms in Nigeria,
4. Assess the effect of energy environmental sustainability reporting on return on equity of listed consumer goods firms in Nigeria.

1.2. Research Hypotheses

To achieve the objective of the study, the following null hypotheses were formulated and tested at the 5% level of significance:

Ho_1: There is no significant relationship between effluent and waste environmental sustainability reporting and return on equity of listed consumer firms in Nigeria.

Ho_2: There is no significant relationship between emissions environmental sustainability reporting and return on equity of listed consumer firms in Nigeria.

Ho_3: There is no significant relationship between energy environmental sustainability reporting and return on equity of listed consumer firms in Nigeria.

2.0. CONCEPTS, THEORY AND EMPIRICAL REVIEW

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2.1. Conceptual Framework

Environmental Sustainability Reporting and Financial Performance

Environmental disclosure, also known as environmental sustainability reporting, refers to the disclosure of financial and non-financial, qualitative and quantitative information relating to an organization's management of environmental issues (Iheduru, 2021). Such information is commonly presented in annual reports or separate Corporate Social Responsibility (CSR) reports (Nyuur, Ofori, Amankwah, & Baffoe, 2022). The concept gained global recognition following the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, which emphasized sustainable development and environmental accountability. According to Kuasirikun and Sherer (2004), environmental sustainability reporting enables organizations to demonstrate environmental responsibility to stakeholders, while Dibia and Onwuchekwa (2015) argue that it provides a more comprehensive assessment of corporate performance.

Environmental sustainability reporting also enhances transparency and supports investment decisions. Welford (2005) notes that it improves a firm's environmental reputation, while Sarivudeen and Sheham (2013) regard it as a useful source of information for investors and financial institutions. Likewise, shareholders are increasingly concerned with firms' environmental costs and financial performance because they influence dividends, employment, tax payments, and corporate social responsibility (Williams, 2020). Consequently, inefficient resource utilization may weaken firm performance and reduce investor confidence (Nnamani, Onyekwelu, & Ugwu, 2017).

Environmental sustainability reporting covers several environmental aspects, including materials, energy, water, biodiversity, emissions, effluents and waste, and compliance with environmental regulations under the Global Reporting Initiative (GRI). However, this study focuses on energy**,** emissions**,** and effluents and waste disclosures.

Financial performance refers to the extent to which an organization achieves its financial objectives and is commonly measured using indicators such as return on assets (ROA), return on equity (ROE), profit margin, revenue growth, and market share. This study adopts Return on Equity (ROE**)** as the measure of financial performance because it reflects a firm's ability to generate returns from shareholders' investments. Although firms increasingly recognize their environmental responsibilities, the financial implications of environmental sustainability reporting remain inconclusive (Mugambi & Fatoki, 2019).

Effluent and Waste Environmental Sustainability Reporting and Return on Equity

Effluents are liquid wastes generated during industrial processes, while waste refers to substances or materials that are discarded after primary use (Okereke, Ogidi&Obasi, 2016; Bai & Sutanto, 2002). According to the United Nations Statistics Division glossary of environmental statistics, waste includes substances or objects that are disposed of or intended to be disposed of under national laws. Improper disposal of industrial waste and effluents has become a major environmental challenge globally. Industrial wastes often contain hazardous materials capable of contaminating soil, water bodies, and ecosystems, thereby posing risks to biodiversity and human health (Zainu & Songip, 2017). Effective waste management is therefore essential for achieving sustainable development.

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Proper waste management also has economic implications. Waste collection and transportation can account for up to 70% of waste management costs, making efficient waste management systems essential for cost effectiveness (Dijkgraaf & Gradus, 2017). Firms are therefore increasingly pressured by environmental, economic, and social factors to reduce environmental impacts arising from their operations. Disclosing information on waste management practices can influence investors' perceptions and investment decisions, as stakeholders respond to both positive and negative environmental disclosures (De Villiers & Van Staden, 2010). Consequently, firms are increasingly adopting strategies that integrate environmental considerations into their long-term business objectives.

Emissions Environmental Sustainability Reporting and Return on Equity

According to the Global Reporting Initiative standard GRI 305, emissions refer to the release of substances into the atmosphere, including greenhouse gases (GHG), ozone-depleting substances, nitrogen oxides, and sulfur oxides. Monitoring and reporting emissions is an important strategy for addressing climate change and improving environmental accountability.

The Organisation for Economic Co-operation and Development guidelines for multinational enterprises encourage companies to disclose environmental information, particularly greenhouse gas emissions, in response to increasing stakeholder demand for transparency. Reporting emissions enables firms to identify opportunities for reducing energy consumption, lowering operational risks, and improving environmental performance. Governments also use emissions data to support climate policies and environmental regulations. Investors, on the other hand, use this information when evaluating companies for investment purposes. Although companies recognize investor interest in environmental disclosures, some firms remain uncertain about whether such disclosures significantly influence investment decisions or financial performance.

Energy Environmental Sustainability Reporting and Return on Equity

Energy management is a critical issue for businesses seeking to balance operational efficiency with sustainable development. Rising energy costs and increasing resource scarcity have encouraged firms to adopt energy-efficient technologies and practices. According to the Global Reporting Initiative guidelines, improving energy efficiency can help firms reduce operational costs, enhance productivity, and minimize environmental impacts. Efficient energy management also demonstrates corporate commitment to sustainability and social responsibility. However, many manufacturing firms in developing countries still rely on traditional production methods and have been slow to adopt energy-efficient technologies. Improving energy reporting and efficiency practices can therefore contribute to better environmental performance and improved financial outcomes.

2.2. Theoretical Framework

Signal Theory

Signaling Theory was developed by Michael Spence in 1973 to explain how organizations address the problem of information asymmetry between management and stakeholders. The theory suggests that one party can communicate important information to another by sending signals that reveal relevant characteristics about the organization. In a competitive business environment, firms disclose information to reduce uncertainty and improve stakeholders' understanding of their activities.

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Information asymmetry occurs when management possesses more information about the firm than external stakeholders such as investors and creditors. To reduce this gap, companies disclose relevant information that signals their true performance and prospects. According to Connelly, Certo, Ireland and Reutzel (2011), signaling theory involves four main components: the signaler (management), the signal (information disclosed), the receiver (stakeholders), and feedback (stakeholders' reactions).

Environmental sustainability reporting can therefore serve as a positive signal to stakeholders about a firm's commitment to environmental responsibility and transparency. By disclosing environmental activities, firms can enhance their reputation, build investor confidence, and potentially improve their financial performance. Consequently, this study adopts signaling theory to explain how environmental sustainability reporting may influence firm performance by reducing information asymmetry and strengthening stakeholder trust

2.3. Empirical Review

Several empirical studies have examined the relationship between environmental sustainability reporting and firm performance both locally and internationally. However, many of these studies differ in terms of methodology, time frame, and variables used. Oche (2026) investigated the effect of sustainability disclosure on the financial performance of listed manufacturing firms in Nigeria using an ex-post facto research design and panel regression analysis. The study found that sustainability disclosure generally improved financial performance, although environmental disclosure had a positive but insignificant effect on return on assets.

Sembiring et al. (2026) examined the impact of sustainability performance disclosure on the cost of capital using panel data from 56 Indonesian manufacturing firms covering 2021–2024. Their findings revealed that sustainability disclosures, including environmental performance reporting, did not significantly reduce the cost of capital in the sample firms, indicating that sustainability reporting has not yet fully influenced investor pricing decisions in that context.

Teixeira, Carvalho, and Carmo (2026) examined how environmental, social, and governance (ESG) reporting quality interacts with earnings management to influence financial performance. Their results highlight that high-quality sustainability reporting combined with strong governance practices is positively associated with financial outcomes, suggesting that the credibility and integrity of sustainability information matter in driving firm performance. This study supports the idea that not just the presence of reporting, but its quality, influences financial results.

Ningrum, Hendarmin, and Pebriani (2026) analyzed Indonesian firms and found that sustainability disclosure alone did not significantly affect firm performance, while stakeholder engagement showed a stronger influence. Their findings suggest that environmental reporting must be paired with stakeholder involvement to produce measurable performance outcomes, indicating that the effectiveness of sustainability disclosure can depend on broader organizational practices.

Munir and Pratama (2025) investigated 206 publicly listed firms across Indonesia, Malaysia, Singapore, and Thailand to assess how emission performance and environmental disclosure relate to firm value. They found that strong emission performance motivates greater environmental disclosure. However, environmental disclosure itself did not have a direct effect on firm value, suggesting that

markets may still prioritize actual environmental performance outcomes over disclosure alone. This finding underscores the complexity of linking environmental reporting to financial market valuation

Olaniyan et al. (2025) examined the effect of environmental disclosure on the financial performance of selected manufacturing companies in Nigeria using panel data analysis. The findings revealed that energy conservation, emission reduction, and pollution control disclosures significantly improved financial performance, while waste management disclosure had a negative effect.

Chijioke and Nestor (2023) examined the effect of environmental accounting on the profitability of oil and gas firms listed on the Nigerian Exchange Group between 2011 and 2021. Using purposive sampling, eleven firms were selected, and Panel Least Squares regression was applied. The study found that waste management cost, community development cost, employee health and safety cost, and environmental remediation cost had a significant positive effect on net profit margin. Onyebuenyi and Ofoegbu (2022) examined the effect of environmental sustainability disclosure on financial performance of oil and gas firms in Nigeria, Namibia, and Kenya between 2011 and 2019. Using data from fifteen firms and robust least squares regression, the study revealed that emission and energy disclosure significantly influenced return on equity and gross profit margin, while effluent and waste disclosure significantly affected earnings per share.

Obiora and Omaliko (2022) studied the impact of community development and waste management disclosure on corporate liquidity in Nigeria using data from 41 firms listed on the Nigerian Exchange Group from 2015 to 2021. Panel regression analysis showed that both community development and waste management disclosures significantly improved firm liquidity.

Okeke, Iffurueze and Nwadiaro (2021) examined the effect of carbon emission disclosure on economic value added of oil and gas firms in Nigeria between 2018 and 2019. Using panel least squares regression, the study found that effluent and waste treatment cost disclosure had a significant effect on economic value added. Siti and Ria (2021) analyzed the effect of carbon emission disclosure and social performance on financial performance of manufacturing firms listed on the Indonesia Stock Exchange between 2017 and 2019. The results indicated that carbon emission disclosure and social performance significantly influenced firm financial performance.

Miah, Hasan and Usman (2021) investigated the effects of carbon emissions on accounting and market-based performance of firms across 22 emerging economies using data from 2011 to 2020. The results showed that carbon emissions negatively affect firm performance indicators such as return on equity and Tobin's Q. Similarly, Liliana et al. (2020) examined the effect of water, waste, and energy consumption on firm performance among companies in the S&P 500 Index information technology sector from 2009 to 2020. Using multivariate panel regression analysis, the study found that environmental resource management significantly influences both accounting-based and market-based performance measures.Despite the growing number of studies on environmental sustainability reporting and firm performance, existing studies show mixed results and are mostly concentrated in sectors such as oil and gas or in developed economies. In addition, differences in variables, methodologies, and study periods create gaps that justify further investigation, particularly within the consumer goods sector in Nigeria.

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3.0. METHODOLOGY

3.1. Research Design and Population

This study used a non-experimental design with secondary data to examine the impact of environmental sustainability reporting on the performance of listed consumer goods firms in Nigeria. The population comprised 21 firms listed on the Nigerian Exchange Group (NGX) as of 31st December 2024. A judgmental sample of eight firms was selected based on consistent annual reporting from 2012 to 2024: Guinness Nigeria Plc, International Brewery, Nigerian Brewery Plc, Champion Breweries, Unilever Nigeria Plc, Nestle Nigeria Plc, Cadbury Nigeria Plc, and Dangote Sugar Plc. The period covers 13 years (2012–2024), aligning with the adoption of International Financial Reporting Standards (IFRS) in Nigeria.

3.2. Data Analysis

Content analysis of annual reports was conducted using GRI-G4 sustainability reporting guidelines, evaluating three dimensions: Effluent and Waste (EWESR), Emissions (EMESR), and Energy (ENESR). Reporting was rated as: 0: Not included; 1: Included generally; 2: Included specifically. The descriptive statistic was used to check if the variables of the study are normally distributed. Hausman testwas used to determine whether a fixed or random effect panel model was appropriate .Panel least square regression was used to test the hypothesis formulated.

3.3. Variables and Model

Independent Variables: EWESR: Effluent and Waste Environmental Sustainability Reporting; EMESR: Emission Environmental Sustainability Reporting; ENESR: Energy Environmental Sustainability Reporting Dependent Variable: Return on Equity (ROE). The study adopts the model of Enyeribe et al. (2025) with slight modifications to suit the objectives of this research. To empirically test this relationship, the model is specified in its econometric form as:

$ROE = \beta_0 + \beta_1 EFW + \beta_2 EMI + \beta_3 ENE + \varepsilon$ Where:

ROE = Return on Equity (proxy for firm performance); β_0 = Constant term (intercept of the model) β_1–β_3 = Coefficients of the explanatory variables; EFW = Effluents and waste disclosure index EMS = Emissions disclosure index; ENE = Energy disclosure index ε = Error term capturing other factors affecting firm performance not included in the model

4.0. PRESENTATION PF RESULTD AND DISCUSSION

HAUSMAN TEST

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.348991	3	0.9506

Source: Authors' Analysis (2026).

The result of the hausman test with the probability value of 0.9506 which is higher than 0.05 level of significance is an indication that random effect model is suitable for the study

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Panel Least Square-Random Effect; Dependent
Variable: LOGROE
Method: Panel EGLS (Cross-section random effects)
Date: 03/10/26 Time: 12:18
Sample: 1 104
Periods included: 8
Cross-sections included: 13
Total panel (balanced) observations: 104
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.932270	0.216339	-4.309311	0.0000
LOGEWESR	-1.004260	0.462889	-2.169548	0.0324
LOGEMESR	1.164371	0.554301	2.100610	0.0382
LOGENESR	0.437840	0.445677	0.982417	0.3283
	Effects Specification			
			S.D.	Rho
Cross-section random			0.047187	0.0060
Idiosyncratic random			0.606803	0.9940
	Weighted Statistics			
R-squared	0.788664	Mean dependent var		-0.553145
Adjusted R-squared	0.721324	S.D. dependent var		0.628185
S.E. of regression	0.608619	Sum squared resid		37.04171
F-statistic	3.242993	Durbin-Watson stat		1.761154
Prob(F-statistic)	0.025208			
	Unweighted Statistics			
R-squared	0.088910	Mean dependent var		-0.566367
Sum squared resid	37.25667	Durbin-Watson stat		1.750993

Return on equity= β_0 -0.932270 - β_1 1.004260 (EWESR) + β_2 1.164371(EMESR) + β_3 0.437840 (ENESR) +ε

The panel result revealed that there is a negative relationship between effluent and waste environmental sustainability reporting (EWESR) and return on equitywith the coefficient of -1.004260. The implication of this coefficient value is that a unit increase in EWESR will cause a decrease in return on equity with the tone of -1.004260. The result further indicate a positive relationship between emission environmental sustainability reporting (EMESR) and return on equity with the coefficient of 1.164371, also energy environmental sustainability reporting was seen to have a positive coefficient value 0.437840.

Therefore a unit increase in EMESR and ENESR,will cause return on equity to increase to the tune of 1.164371and0.437840respectively. The test for measuring the goodness of fit using the adjusted R square, indicated that the explanatory variable accounted for 72% change or variation in the dependent variable and the remaining 28% is taken care of by the error term. The Durbin-Watson statistics of 1.761154 tends to two than one also shows the fitness of the model.

The panel regression result testing for individual significance using the t-test indicated probability value of 0.0324 that is lesser than 0.05 significant levels. This moves the researcher to reject the null

hypothesis and conclude that effluent and waste environmental sustainability reporting has a significant relationship on return on equity of listed consumer goods firms in Nigeria.

The regression result further displayed a t-test probability value is 0.0382lesser than the significant level of 0.05. This is a strong indication that null hypothesis is also rejected to conclude that emission environmental sustainability reporting has a significant effect on return on equity of listed consumer goods firms in Nigeria.

In testing the above hypothesis, the regression result revealed that the t-test probability value is 0.3283. This probability value is higher than 0.05 which is an indication that the null hypothesis is accepted to conclude that energy environmental sustainability reporting has no significant effect on return on equity of listed consumer goods firms in Nigeria

5.0. CONCLUSION AND RECOMMENDATIONS

From the summary of findings the study therefore concludes that EMESR and EWESR have a significant effect on return on equity of listed consumer goods firms while ENESR was seen to have an insignificant effect on return on equity of listed consumer goods firms. This led to the conclusion that securing the environment through environmental sustainability reporting has a significant effect on financial performance of listed consumer goods firms in Nigeria since two out of the three explanatory variables included in the study shows a significant effect on return on equity.

Based on the conclusion, the study recommended the following

1. Consumer goods firms should prioritize detailed disclosure of emissions activities, including greenhouse gases and mitigation strategies, as emissions reporting positively impacts return on equity.
2. Firms should continue reporting on effluent and waste while adopting best practices to minimize environmental harm, such as recycling and efficient treatment, to reduce negative financial impacts.
3. Although energy reporting did not show a significant effect on return on equity, firms should enhance energy efficiency and adopt renewable energy, positioning themselves for long-term operational and regulatory sustainability.

Conflict f Interest

The authors declare that no conflict of interest exist in this manuscript

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