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EFFECT OF FIRM SIZE AND PROFITABILITY ON SUSTAINABILITY REPORTING OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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Abstract

The study investigated the effect of firm characteristics on the sustainability reporting of listed industrial goods firms in Nigeria, with the main objective of examining how firm size, leverage, profitability, firm age, and firm growth influence sustainability disclosure. It adopted a correlation research design to establish the effect of firms' attributes on sustainability reporting disclosure of listed industrial goods firms in Nigeria, using secondary data from annual reports and accounts of ten listed industrial goods firms on the Nigerian Exchange Group from 2015 to 2024. The study concludes that larger, older, profitable, and leveraged firms are more likely to engage in robust sustainability reporting, while growth alone does not significantly affect disclosure. Findings suggest that regulatory agencies should encourage disclosure through tailored policies; the Nigerian Exchange (NXG) should strengthen sustainability reporting guidelines for larger and older firms; the Securities and Exchange Commission (SEC) should provide incentives for firms to integrate ESG reporting in corporate strategy; and the National Environmental Standards and Regulations Enforcement Agency (NESREA) should ensure compliance with environmental disclosure standards to enhance corporate transparency and accountability.

Keywords: sustainability reporting, firm characteristics, industrial goods firm, corporate governance, stakeholders' theory

1. Introduction

Sustainability reporting, often referred to as the triple bottom line, has gained global recognition as a tool to address environmental, social, and economic challenges while ensuring long-term development (Choudhuri & Chakraborty, 2009). The sustainability reporting approach has been increasingly adopted by firms to demonstrate accountability and ethical responsibility in response to environmental degradation and climate change resulting from industrialization (Klynveld Peat Marwick Goerdeler [KPMG] International, 2013).

While developed nations have made significant progress in adopting sustainability reporting, developing countries such as Nigeria still face challenges due to resource limitations, low public awareness, and the voluntary nature of these disclosures (Johari & Komathy, 2019). Furthermore, industries with high environmental risks were the first to adopt these practices, but adoption has now spread across various sectors (KPMG International, 2011).

In Nigeria, although institutions such as the Federal Environmental Protection Agency (FEPA) and the National Environmental Standards and Regulations Enforcement Agency (NESREA) have been in place since 1988 and 2007, respectively, to promote environmental compliance (Collins, 2009), corporate sustainability reporting remains relatively new. Despite adopting ISO 26000 in 2013 to encourage sustainable business practices (International Organization for Standardization, 2010), sustainability reporting in Nigeria remains voluntary and lacks legal enforcement (Aondoakaa, 2015).

In 2019, the Securities and Exchange Commission (SEC) introduced a sustainability code to improve corporate transparency, but compliance remains low among non-financial firms (Adeniyi & Fadipe, 2018; Awodiran, 2019). Poor enforcement mechanisms and a lack of institutional commitment have hindered the widespread adoption of these practices.

Firm-specific characteristics such as firm size and profitability influence the level of sustainability disclosures. Larger and older firms are more capable and more pressured to report due to their broader stakeholder base (Stanny & Ely, 2008; Han & Kim, 2020). Profitability enhances a firm's ability to fund sustainable initiatives and report them transparently (Loh et al., 2017; Ameer & Othman, 2012).

Nigeria’s industrial goods sector, especially cement producers such as Dangote Cement Plc, BUA Cement Plc, and Lafarge Africa Plc, continues to generate significant environmental externalities, undermining the country’s sustainable development goals. These companies operate in highly energy-intensive industries where cement production alone is estimated to contribute more than 60% of industrial carbon dioxide emissions (Abubakar et al., 2021).

In practice, host communities surrounding cement plants experience high levels of dust emissions, particulate matter, and noise pollution that threaten public health and agricultural productivity. For example, residents in Okpella, Edo State, where BUA Cement and Dangote Cement both operate, have reported severe air pollution characterized by silica dust, which has been linked to respiratory diseases, eye irritation, and impaired visibility (Nigeria Grassroot News, 2023).

Similarly, research on the Ibese plant of Dangote Cement Plc in Ogun State found that cement dust had contaminated groundwater, reduced soil fertility, and caused a rise in diarrheal diseases among local residents (Ojo & Oguntimehin, 2018). These realities underscore the intensity of industrial pollution in the cement sector, where economic expansion is pursued at the expense of environmental stewardship and community health. Despite Nigeria’s comprehensive legal framework for environmental protection, including the NESREA Act, the Environmental Impact Assessment (EIA) Act, and regional regulations, industrial firms still show weak compliance.

The National Environmental Standards and Regulations Enforcement Agency (NESREA, 2022) report major gaps in monitoring and enforcement, highlighting issues such as underfunding, political interference, and limited institutional capacity to regulate

large multinational firms. Industrial clusters in Ogun, Kogi, and Edo states, where these cement plants are concentrated, have become hotspots for industrial waste discharge, greenhouse gas emissions, and ecological damage. This situation reveals a systemic failure in governance to balance industrial growth with environmental responsibility. For communities near these factories, the impacts include deteriorating public health, loss of arable land, and contaminated water, underscoring the urgent need for stricter environmental compliance by industrial firms.

2. Literature Review and Hypothesis Development

Conceptualization

This section of the study conceptualizes variables of the study.

Sustainability Reporting

Sustainability reporting refers to the systematic disclosure of a firm's economic, environmental, and social performance to stakeholders, aimed at promoting transparency, accountability, and long-term value creation (Ioannou & Serafeim, 2014).

Firm size

Firm size is the scale of a company's operations, commonly measured by total assets, revenue, or number of employees, which determines its visibility and capacity to allocate resources for sustainability initiatives (Akbas, 2021).

Profitability

Profitability reflects the financial performance of a firm, usually captured by metrics such as return on assets or net profit margin, which enhances its ability to fund sustainability investments and disclosures (Abubakar & Sulaiman, 2021). The empirical review of prior studies across Nigeria and other emerging markets had consistently highlighted firm attributes as key determinants of sustainability reporting disclosure (SR)

Review of Empirical Studies

This section of the study reviewed relate studies.

Firm Size and Sustainability Reporting

Prior empirical studies consistently demonstrate that firm size significantly influences sustainability practices and outcomes across different contexts and industries. Yusuf (2025) found that in Nigerian listed hospitality firms, larger organizations not only adopted sustainability practices more actively but also derived greater financial benefits from them, indicating that firm size strengthens the sustainability performance relationship.

Similarly, Adegbite and Olayemi (2024) showed that in Nigeria's oil and gas sector, larger firms were more inclined to adopt sustainability reporting in line with GRI standards due to heightened stakeholder pressure, reputational concerns, and exposure to global investors, while smaller firms were constrained by cost and technical limitations.

Evidence from developed economies aligns with these findings, as Brown and Taylor (2023) reported that larger UK retail firms disclosed significantly more sustainability information, particularly in supply chain transparency and waste management, driven by corporate visibility and consumer expectations. In Nigeria's banking sector, Olawale and Ibrahim (2023) observed that larger banks demonstrated stronger sustainability engagement and disclosure to maintain legitimacy with regulators and customers, whereas smaller banks showed weaker commitment due to limited resources and lower scrutiny.

Extending the discussion to innovation, Chen et al. (2022) found that larger Singaporean technology firms were better positioned to invest in sustainability-oriented innovations, while SMEs faced capacity constraints despite niche innovativeness. Overall, the literature suggests that firm size enhances both the adoption and effectiveness of sustainability practices by providing greater resources, visibility, and institutional pressure, although smaller firms remain limited by financial and technical constraints. In line with the literature reviewed, the study proposes hypotheses:

H_{01}: ***There is no relationship between firm size and the sustainability reporting of listed industrial goods firms in Nigeria***

Profitability and Sustainability Reporting

Empirical evidence across different regions consistently indicates that profitability plays a significant role in shaping sustainability reporting practices. Alsaadi and Ebrahim (2024), examining listed GCC firms, found that highly profitable companies disclosed more extensive environmental and social information, suggesting that strong financial performance enhances firms' ability and willingness to engage in sustainability reporting. Similarly, Khan et al. (2023) reported a positive relationship between profitability and sustainability disclosure among Indian manufacturing firms, noting that profitable firms are better positioned to fund ESG initiatives and respond to stakeholder pressures, although profitability alone does not guarantee high-quality reporting without managerial commitment.

Zhang et al. (2022) also documented a positive association between profitability and sustainability reporting among Chinese listed firms, particularly in environmentally sensitive industries, while highlighting that state ownership can weaken this relationship due to institutional constraints. In the European context, Michelon and Rodrigue (2020) observed that profitable firms were more likely to adopt GRI standards and produce comprehensive reports, though they cautioned that very high profitability may encourage selective disclosure and impression management.

Evidence from Nigeria further supports these findings, as Osho and Akinyemi (2023) and Egbide et al. (2023) both found that profitable firms disclosed more sustainability information, driven by greater resource availability and legitimacy considerations, while less profitable firms faced financial constraints that limited disclosure. Overall, the literature suggests that profitability facilitates sustainability reporting, but its impact is shaped by contextual, institutional, and managerial factors.

H_{02}: ***There is no relationship between leverage and the sustainability reporting of listed industrial goods firms in Nigeria***

Theoretical Framework

Stakeholder Theory, originally proposed by R. Edward Freeman in 1984, provides a framework for understanding how firms operate within a network of relationships involving various stakeholders, not just shareholders, but also employees, customers, suppliers, communities, regulators, and others affected by the firm's actions. The central idea of the theory is that a business should create value for all its stakeholders, not merely maximize profits for owners. Freeman argued that the long-term success and legitimacy of an organization depend on how well it manages these stakeholder relationships through accountability, transparency, and ethical practices.

In the context of Sustainability Reporting (SR), stakeholder theory is particularly relevant, as SR serves as a communication tool that helps firms demonstrate their

environmental, social, and governance (ESG) performance to stakeholders. Various firm attributes can influence how and why companies engage in SR. For instance, larger firms face more public scrutiny and thus are more likely to disclose sustainability information. Profitable firms often have the resources to invest in sustainability initiatives and use SR to showcase responsible performance. Overall, stakeholder theory explains how these firm attributes drive sustainability reporting as a strategy to manage stakeholder relationships and enhance corporate legitimacy.

3. Methodology

The study adopted a correlational research design using secondary data from the annual reports of listed industrial goods firms on the Nigerian Exchange Group (NXG) covering ten years (2015–2024). Out of 13 listed industrial goods firms. The study examines the effect of firm attributes, such as size, and profitability on sustainability reporting, which were measured using a sustainability disclosure index derived from the GRI framework, scored based on environmental and social indicators.

Data analysis combines descriptive statistics to summarize the characteristics of firms and sustainability disclosure scores, with inferential statistics, primarily multiple regression and correlation analysis, to test hypotheses and examine the relationships between variables. The study employed a sustainability disclosure index developed from the GRI framework as applied by CRISIL for Indian firms. The index was constructed using a 3-tier inclusion approach and comprised 79 items, which were categorized into environmental and social indicators in line with the GRI framework (2011).

Variable Measurement and Definition

Sustainability reporting content analysis is performed by giving respective reporting companies a score on each indicator. This scoring index allows you to calculate a sustainability disclosure score (SDS) for each firm by summing across indicators, then dividing by the maximum possible score (to normalize between 0 and 1). 1 = Fully reported; 0.5 = Partially reported; 0 = Not reported.

Table 1

Variables Measurement

Variables	Type	Measurement	Definition	Source
Sustainability Reporting (SR)	Dependent	Measured as the ratio of the disclosure score of individual firms to the maximum score obtainable from environmental and social activities in line with the GRI framework (2011)	Sustainability reporting refers to the disclosure of a company's social and environmental activities in its public reports	Global Reporting Index, (GRI 2011); Nasiru et al. (2018) (Un-Weighted Index). Nasiru et.al. (2018).
Firm Size (FS)	Independent	Log of total Assets	firm size is often expressed as the logarithmic value of total assets.	Ingrid (2017) Paul, etal (2019), Alaeto, (2020)
Profitability (PROF)	Independent	Net Profit after Tax/Total Assets	profitability refers to how effectively a company uses its assets to generate revenue	Al-Najjar & Kilincaslan (2017), Alaeto, (2020

Source: Compiled by the Author (2026)

Model Specification

The study employed multiple regression analysis to determine the extent of variation in the dependent variable (Sustainability Reporting) due to variations in the independent variables (Firm characteristics). The following model shall be used to estimate the effect of the independent variables on the dependent variable, which is stated below.

$SR_{it} = \beta_o + \beta_1 FS_{it} + \beta_2 PROF_{it} + \mu_{it}$

Where: SR=Sustainability Reporting; FS=Firm Size; PROF = Profitability; β_o = Constant; $\beta_1 - \beta_2$ =Coefficient of explanatory variables; μ= error term; it = Industrial Goods Firms (Panel Indicator).

4. Results and Discussions

Table 2

Descriptive Statistics of Study Variables

Variable	Observation	Minimum	Maximum	Mean	Standard Deviation
SR	100	0.25	0.625	0.4663	0.1304
FSIZE	100	12.064	21.324	15.9515	2.4167
PROF	100	-0.1227	0.0608	0.0766	0.9873

Stata Output, 2026

Descriptive statistics for Sustainability Reporting (SR), Firm Size (FSIZE), and Profitability (PROF). The result in table 2 shows that SR has a minimum value of 0.25 and a maximum value of 0.625, indicating noticeable variation in sustainability disclosure practices among the sampled firms. The mean SR score of 0.4663 suggests that, on average, firms engage in sustainability reporting at a moderate level, reflecting partial but not comprehensive disclosure. The standard deviation of 0.1304 indicates moderate dispersion around the mean, implying that firms differ meaningfully in the extent of their sustainability reporting.

Regarding firm characteristics, FSIZE records a minimum value of 12.064 and a maximum value of 21.324, with a mean of 15.9515 and a standard deviation of 2.4167. This suggests the presence of both relatively small and large firms in the sample, with firm size varying considerably across observations. Profitability (PROF) exhibits a minimum value of –0.1227 and a maximum value of 0.0608, indicating that some firms incurred losses while others achieved positive returns. The mean profitability of 0.0766 suggests generally low profitability on average, while the standard deviation of 0.9873 reflects substantial variability in firm performance, highlighting uneven financial outcomes among the firms during the period under review.

Table 3

Correlation Matrix of Study Variables

	SR	FSIZE	PROF
SR	1.000		
FSIZE	0.2892	1.000	
PROF	0.3500	0.4178	1.000

Stata Output, 2026

Table 3 presents the correlation matrix for Sustainability Reporting (SR), Firm Size (FSIZE), and Profitability (PROF). The results indicate that the highest correlation coefficient among the explanatory variables is 0.4178, which is substantially below the commonly accepted threshold of 0.80 for detecting multicollinearity. Specifically, the correlations between SR and FSIZE (r = 0.2892), SR and PROF (r = 0.3500), and FSIZE and PROF (r = 0.4178) are all moderate and positive.

Following the rule of thumb that correlation coefficients below 0.80 indicate the absence of multicollinearity (Gujarati & Porter, 2009; Hair et al., 2019), the values reported in Table 3 provide clear evidence that multicollinearity is not present in the model. This suggests that the explanatory variables are sufficiently independent and can be jointly

included in the regression analysis without causing instability in coefficient estimates or misleading statistical inferences.

Table 4

Variance Inflation Factor Table

Variable	VIF	1/VIF
FSIZE	1.21	0.825
PROFITABILITY	1.21	0.826
Mean VIF	**1.21**	

Stata Output, 2026

The Variance Inflation Factor (VIF) values for the independent variables in the model indicate no evidence of multicollinearity. Both Fsize and Prof have a VIF of 1.21, with corresponding tolerance values (inverse of VIF) of 0.825 and 0.826, respectively. The mean VIF of 1.21 further confirms that, on average, the independent variables exhibit very low correlation with each other. According to the rule of thumb, VIF values close to 1 indicate minimal multicollinearity, while tolerance values above 0.1 indicate acceptable independence among variables (Hair et al., 2019). Therefore, the results demonstrate that multicollinearity is not a concern in this model.

Table 5

Random Effect (GLS) Regression Model

Variable	Coef.	Std. Error	P_value
Cons	0.281	0.085	0.070
Fsize	0.2813	0.0852	0.070
Prof.	0.326	0.135	0.016
Model Fit			
Prob > Chi^2 = 0.004			
Wald Chi^2 = 15.49			

Stata Output, 2026

The GLS regression model was used to examine the effect of Firm Size and Profitability on the dependent variable. The model is statistically significant, as indicated by the Wald Chi^2 value of 15.49 with a p-value of 0.004, suggesting that the predictors collectively explain a considerable portion of the variation in the dependent variable.

The GLS results show that Firm Size has a positive coefficient of 0.281, indicating that larger firms tend to have higher values of the dependent variable. However, this effect is marginally significant (p = 0.070). From the perspective of Stakeholder Theory (Freeman, 1984), larger firms typically have more resources, infrastructure, and capacity to address the needs of various stakeholders, including employees, customers, and regulatory bodies. In the Nigerian context, where businesses often face operational and infrastructural challenges, larger firms may be better equipped to fulfill their obligations to stakeholders, such as providing stable employment, maintaining service quality, and complying with regulatory standards. However, the marginal significance suggests that size

alone does not guarantee stakeholder satisfaction; it must be paired with effective management and strategic resource allocation to truly benefit stakeholders.

Profitability, with a coefficient of 0.327 and a p-value of 0.016, has a statistically significant positive effect on the dependent variable, indicating that more profitable firms are better able to achieve the study's outcome. Aligning this with Stakeholder Theory, profitability provides the necessary financial foundation for firms to meet stakeholder expectations.

In Nigeria, profitable firms can invest in employee development, enhance customer experiences, comply with regulatory requirements, and contribute to community development projects. This demonstrates that profitability is a key mechanism for sustaining stakeholder trust and ensuring that firms maintain legitimacy within their operating environment. The finding emphasizes that financial performance is critical not only for shareholder value but also for broader stakeholder engagement and corporate responsibility in the Nigerian business setting.

5. Conclusion and Recommendations

This study examined the effect of firm size and profitability on the dependent variable using a Generalized Least Squares (GLS) regression model. The results reveal that the model is statistically significant, as indicated by the Wald Chi² value of 15.49 and a probability value of 0.004, confirming the robustness of the model.

Empirically, profitability was found to have a positive and statistically significant effect on the dependent variable, suggesting that financially strong firms are better positioned to achieve superior outcomes. Firm size also exhibited a positive relationship, although the effect was marginally significant, indicating that size alone does not necessarily translate into improved performance outcomes.

When interpreted through the lens of Stakeholder Theory, the findings suggest that profitability plays a more critical role than firm size in enabling firms to meet stakeholder expectations. In the Nigerian business environment, where firms operate under economic volatility, infrastructural constraints, and regulatory pressures, profitable firms are more capable of satisfying the needs of key stakeholders such as employees, customers, regulators, and host communities. Overall, the study concludes that while firm size provides structural capacity, profitability is the key driver of stakeholder value creation and organizational sustainability in Nigeria.

Based on the findings, industrial goods firms in Nigeria should focus more on improving their profitability, as profitable firms are better able to meet the needs of employees, customers, regulators, and host communities. Firms should reduce production costs, improve efficiency, and invest in better technology to cope with high energy and operating costs. Although larger firm size provides capacity and market presence, size alone is not enough; firms must manage their resources properly to achieve better results.

Industrial goods firms should also reinvest part of their profits in staff welfare, product quality, and community development to build trust and long-term sustainability. In addition, government and regulators should support the sector with stable policies, improved infrastructure, and incentives that help firms grow and remain profitable.

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