Sustainability Disclosure and Performance of Firms in Nigeria

Hafsah Haruna Rugga[1*], Prof. N.A Kaoje[2], Prof. A.A Aliyu[3] , Dr. N.M Koko[4]

[1, 2, 3] Department of Accounting and Finance,Usmanu Danfodiyo University, Sokoto.

[4] Department of Public Administration, Usmanu Danfodiyo University, Sokoto

[*]Corresponding Author

DOI: https://doi.org/10.47772/IJRISS.2026.100700508

Received: 24 July 2026; Accepted: 29 July 2026; Published: 06 August 2026

ABSTRACT

This paper examines the effect of sustainability disclosure (Environmental, Social, and Governance (ESG)) on firm performance in Nigeria's oil and gas and industrial goods sector. A quantitative panel research design was adopted using secondary data from 16 listed firms over the period 2014-2023. The study employed descriptive statistics, correlation analysis, diagnostic tests, and panel regression techniques. The Hausman test guided model selection, and a Random Effects model with clustered robust standard errors was used for estimation analyses using STATA version 14. The results show that governance disclosure has a strong positive and statistically significant effect on firm performance, social disclosure has a positive but marginally significant effect on firm performance, while environmental disclosure has a positive but statistically insignificant effect on firm performance. The study recommends firms to prioritize governance structures such as transparency, accountability, and board effectiveness to enhance financial performance, while gradually strengthening social and environmental practices for long-term sustainability.

Keywords: Environmental Disclosure, Social Disclosure, Governance Disclosure, Firm Performance, Nigeria.

INTRODUCTION

Sustainability disclosure specifically, environmental, social, and governance (ESG) has emerged as a significant framework for assessing corporate sustainability and transparency. ESG reporting provides stakeholders with information about how organizations manage environmental responsibilities, social relationships, and governance structures within their operations. Increasingly, investors, regulators, and policymakers are emphasizing ESG information when evaluating companies' long-term sustainability and financial stability. As a result, ESG disclosure has become an essential aspect of corporate reporting and an important factor that may influence organizational performance and value creation (Friede, 2021).

Environmental disclosure is a fundamental aspect of ESG reporting, focusing on how firms communicate their environmental policies, emissions management, resource use, and protection initiatives (Carnini et al 2022). In industries like oil and gas, where operations often affect local communities, effective social disclosure can strengthen stakeholder relationships and enhance corporate legitimacy. Empirical studies have found that social disclosure positively influences firm performance by increasing stakeholder trust and improving corporate reputation (Tonye & Boubai, 2025). Governance disclosure focuses on corporate governance mechanisms such as board composition, transparency, ethical standards, and accountability structures. Strong governance practices help ensure effective management oversight and reduce agency conflicts between managers and shareholders. Corporate governance disclosure therefore plays an important role in promoting investor confidence and organizational efficiency. Prior studies have shown that governance disclosure can positively influence firm value and financial performance by strengthening institutional trust and reducing corporate risks (Idris, 2024).

Environmental disclosure can influence firm performance by improving corporate reputation and ensuring compliance with environmental regulations. For instance, research on Nigerian oil and gas companies indicates

that environmental disclosure has a significant relationship with financial performance indicators such as return on assets and return on equity (Erinoso & Oyedokun, 2022).

Global empirical findings regarding the relationship between ESG disclosure and firm performance remain inconsistent in both developed and developing economies. While several studies report a positive association between ESG practices and financial performance, others find weak or insignificant relationships due to factors such as high compliance costs, weak institutional frameworks, and variations in regulatory enforcement. These mixed findings highlight the need for further empirical investigation, especially in emerging markets such as Nigeria where sustainability reporting practices are still evolving (Erin et al., 2022). These inconsistencies highlight the need for further empirical investigation, particularly within environmentally sensitive sectors (Otseme et al., 2025).

The importance of ESG disclosure is particularly pronounced in industries that have substantial environmental and social impacts, such as the oil and gas and natural resources sectors. These industries are frequently subject to strict regulatory scrutiny and intense public attention because their operations may significantly affect ecosystems, climate conditions, and host communities (Eccles et al., 2014). Consequently, firms operating within these sectors are increasingly expected to provide transparent information regarding their environmental practices, community engagement, and governance policies. Effective ESG reporting in such industries can therefore enhance corporate legitimacy, strengthen stakeholder trust, and potentially improve firm performance (Orazalin & Mahmood, 2021). The effectiveness of ESG initiatives is significantly influenced by the regulatory and governance environment. Strong regulatory frameworks and effective government practices are essential to enhance the positive effects of ESG initiatives on firm performance value (Iro & Omodero, 2025). There is a need for explicit standards and requirements for ESG disclosures in Nigeria. The absence of standardized reporting practices leads to inconsistent and non-comparable ESG data, which hampers the ability of investors and stakeholders to make informed decisions (Handoyo & Anas 2024).

In Nigeria voluntary nature of reporting frameworks and the difficulties associated with measurement add further complexity to sustainability and ESG reporting. Because many ESG disclosure standards are not mandatory, organizations often decide the information they want to disclose. This flexibility can lead to inconsistencies in reporting practices across firms and industries, making it challenging for stakeholders to compare performance effectively. These challenges may reduce the reliability and comparability of ESG information, thereby complicating the ability of investors, regulators, and other stakeholders to accurately assess a firm's sustainability performance and its implications for long-term value creation (Okaro & Okafor, 2017).

Given the strategic importance of the oil and gas and natural resources industry to Nigeria's economy and the increasing demand for sustainability reporting, examining the effect of sustainability disclosure on firm performance is both timely and relevant. Understanding how environmental, social, and governance disclosures influence firm performance can provide valuable insights for policymakers, regulators, investors, and corporate managers. Therefore, this study examines the effect of sustainability disclosure on firm performance among companies in the Nigerian oil and gas and natural resources industry. Accordingly, the specific objectives of the study are:

1. To evaluate the relationship between environmental disclosure and firm performance among oil and gas and industrial goods companies in Nigeria.
2. To investigate the relationship between social disclosure and firm performance among oil and gas and industrial goods companies in Nigeria.
3. To ascertain the relationship between governance disclosure and firm performance among oil and gas and industrial goods companies in Nigeria.

LITERATURE REVIEW

Conceptual Review

Environmental, Social, and Governance (ESG) disclosure has increasingly become an important component of corporate reporting as stakeholders demand greater transparency regarding firms' sustainability practices

(Alsayegh et al., 2020). ESG disclosure provides information on how companies manage environmental impacts, social responsibilities, and governance structures, thereby enabling investors and stakeholders to assess corporate sustainability and long-term value creation. ESG activities can influence firm performance through improved stakeholder relations, enhanced reputation, and reduced operational risks. The study of environmental, social and governance resulted a mixed findings such as Aryati 2023) in Indonesia, Agarwala (2024) in India, Ming (2024) in Malaysia, Ibrahim and Tahir (2024) in Nigeria and Izuagly & Abdullahi (2024).

Firm Performance

Firm performance refers to the ability of an organization to effectively utilize its resources to achieve its financial and operational objectives over a specific period. It reflects how well a company generates profits, increases shareholder value, and sustains its competitive position in the market Taouab & Issor 2024). Firm performance is often used by investors, managers, and other stakeholders as an important indicator for evaluating the efficiency, profitability, and overall success of business organizations. Firm performance is commonly assessed using both accounting-based and market-based measures. Accounting-based measures evaluate a firm's financial performance based on information obtained from financial statements, such as profitability and operational efficiency. Examples include return on assets (ROA), return on equity (ROE), and net profit margin Ibrahim & Tahir, (2024). Market-based measures assess firm performance from the perspective of investors and the capital market. These measures include indicators such as Tobin's Q, market-to-book ratio, and share price performance. Market-based indicators capture investors' expectations regarding a firm's future growth prospects and financial stability (Izuagly & Abdullahi (2024).

Environmental Disclosure

The environmental dimension of ESG disclosure focuses on the extent to which firms communicate information regarding environmental protection, pollution control, energy efficiency, and resource management (Ahmad et al., 2024). Environmental disclosure is particularly relevant in environmentally sensitive sectors such as oil and gas, where operational activities may have significant ecological impacts. Empirical evidence suggests that environmental disclosure can positively influence firm performance by improving corporate reputation, reducing regulatory risks, and enhancing stakeholder confidence (Liu et al., 2024). Environmental sustainability disclosures often have a negative impact on market performance in Nigerian firms. This suggests that while environmental initiatives are crucial, they may not be immediately valued by the market, potentially due to the costs associated with implementing these practices (Ibrahim & Tahir, 2024).

Social Disclosure

The social component of ESG disclosure reflects how firms manage relationships with employees, customers, and host communities. Social disclosure typically includes information about employee welfare, occupational health and safety, community development programs, and corporate social responsibility initiatives (Seow, 2024). In industries such as oil and gas, where business activities often affect local communities, social disclosure plays a crucial role in maintaining stakeholder legitimacy. Firms that actively engage in social responsibility practices often benefit from enhanced corporate reputation and stronger stakeholder trust, which can lead to improved financial performance. These findings suggest that transparent social disclosure can strengthen relationships with stakeholders and support sustainable organizational growth. Social sustainability disclosures tend to have an insignificant or negative impact on market performance. This could be due to a lack of immediate financial returns or market recognition of social initiatives (Ibrahim & Tahir, 2024).

Governance Disclosure

The governance dimension of ESG focuses on the structures and processes that guide corporate decision-making and ensure accountability. Governance disclosure generally includes information on board composition, ownership structure, managerial oversight, and ethical business practices. Strong governance mechanisms are essential for mitigating agency conflicts and promoting effective management practices (Elamer & Boulhaga., 2024). Studies indicate that firms with robust governance frameworks often demonstrate higher levels of operational efficiency and financial performance. Governance disclosures show a positive impact on stock prices

and market performance, highlighting the importance of strong governance practices in enhancing firm value (Iro & Omodero, 2025).

Empirical Review

Uwana and Eno (2025) the study investigated the relationship between corporate social responsibility (CSR) and the financial performance of publicly listed manufacturing firms in Nigeria. It specifically examined how various components of corporate responsibility, namely environmental responsibility, social responsibility, employee welfare, and economic responsibility affect the financial outcomes of these firms. The research adopted an ex-post facto design and utilized secondary data obtained from the annual reports of selected manufacturing companies. The data collected was analyzed using descriptive statistics and panel multiple regression analysis with the assistance of E-Views statistical software. The results revealed that environmental responsibility has a negative but statistically insignificant association with return on assets. Likewise, social responsibility was found to have a positive but insignificant effect on the financial performance of the firms. In contrast, economic responsibility and employee welfare practices demonstrated a positive and statistically significant relationship with return on assets. The findings imply that although certain dimensions of corporate social responsibility may not directly influence financial performance, other aspects can significantly enhance firms' profitability and overall performance.

Iro (2025) investigated the effect of environmental, social, and governance (ESG) disclosure on the stock prices of manufacturing firms in Nigeria, with a focus on consumable product companies. Using panel data from 18 listed manufacturing firms over the period 2000 to 2024, the research analyzed information obtained from firms' annual reports. The results indicate that environmental and social disclosures do not significantly affect the stock prices of Nigerian manufacturing firms, while governance disclosure shows a positive and significant relationship with stock prices at the 10% significance level. This suggests that governance practices contribute more strongly to firm value compared to other ESG components. The study concludes that ESG practices are still not adequately integrated within Nigerian manufacturing firms.

Hussain (2024) examined the link between environmental, social, and governance (ESG) disclosure and firm performance among non-financial companies listed on the Saudi stock exchange between 2017 and 2022. Using panel data from 100 firms, the analysis employed fixed effects, random effects, and the generalized method of moments (GMM) to address endogeneity issues. ESG disclosure was measured through an index developed using principal component analysis of environmental, social, and governance scores, while firm performance was assessed using return on assets (ROA), return on equity (ROE), and Tobin's Q. The findings reveal that ESG disclosure has a significant positive effect on firm performance across all estimation models. The study also reports sectoral variations, where non-manufacturing firms demonstrate a stronger positive ESG performance relationship than manufacturing firms. Furthermore, firm characteristics such as size, age, and liquidity were found to influence this relationship. Overall, the study highlights the importance of ESG disclosure in improving corporate performance and promoting sustainable business practices in Saudi Arabia.

(Idris 2024) explored the nexus of sustainability disclosures environmental, social, and governance (ESG) reporting on the firm value of listed oil and gas companies in Nigeria. Using panel data from 10 publicly listed firms covering the period 2014 to 2023, the research adopted a quantitative approach. Several diagnostic tests, including multicollinearity, heteroskedasticity, Hausman, Modified Wald, and serial correlation tests, were conducted to ensure the reliability of the model. Panel-corrected standard errors (PCSE) regression was then applied to examine the influence of environmental, social, and governance disclosures on firm value while controlling for firm size and age. The results show that sustainability disclosures have a positive effect on firm value, with governance disclosure having the strongest impact, followed by environmental and social disclosures. Based on these findings, the study suggests that regulators in Nigeria should introduce mandatory and sector-specific ESG reporting guidelines for the oil and gas industry to improve disclosure consistency. The study also recommends that companies enhance transparency in governance and environmental practices to strengthen firm valuation and attract sustainable investment.

Onwere (2024) the study examines whether the adoption of Environmental, Social, and Governance (ESG) practices influences firm value in Sub-Saharan Africa. The research utilized data obtained from 45 listed non-

financial companies operating in Kenya, Nigeria, and South Africa over an eleven-year period spanning from 2012 to 2022. Firm value was measured using Tobin's Q as the proxy variable. To analyze the relationship between ESG practices and firm performance, the study applied both fixed-effects and random-effects panel regression models.

The empirical findings reveal that the overall adoption of ESG practices has a positive and statistically significant impact on firm value across the sampled firms. Nevertheless, when the ESG dimensions were examined separately, environmental and social practices were found to have no significant effect on firm value, while governance practices exhibited a significant negative relationship. Based on these findings, the study suggests that regulatory authorities and policymakers should establish and enforce uniform ESG disclosure standards to enhance transparency and consistency in sustainability reporting.

Ezeokafor and Amahalu (2019) the study examined the effect of sustainability reporting on the financial performance of listed oil and gas companies in Nigeria. It specifically analyzed selected firms quoted on the Nigerian Stock Exchange over a seven-year period spanning from 2011 to 2017. The research relied on secondary data obtained from company annual reports, financial statements, and factbooks of the sampled firms. Statistical analysis was conducted using Pearson correlation and multiple regression techniques through E-Views software.

The results showed that sustainability reporting, represented by economic, environmental, and social performance indicators, has a positive and statistically significant relationship with major financial performance measures, including return on equity, net profit margin, and earnings per share. Based on the findings, the study recommended the development and implementation of a standardized Sustainability Index that would motivate companies to strengthen their commitment to environmental stewardship and sustainable business practices.

THEORETICAL REVIEW

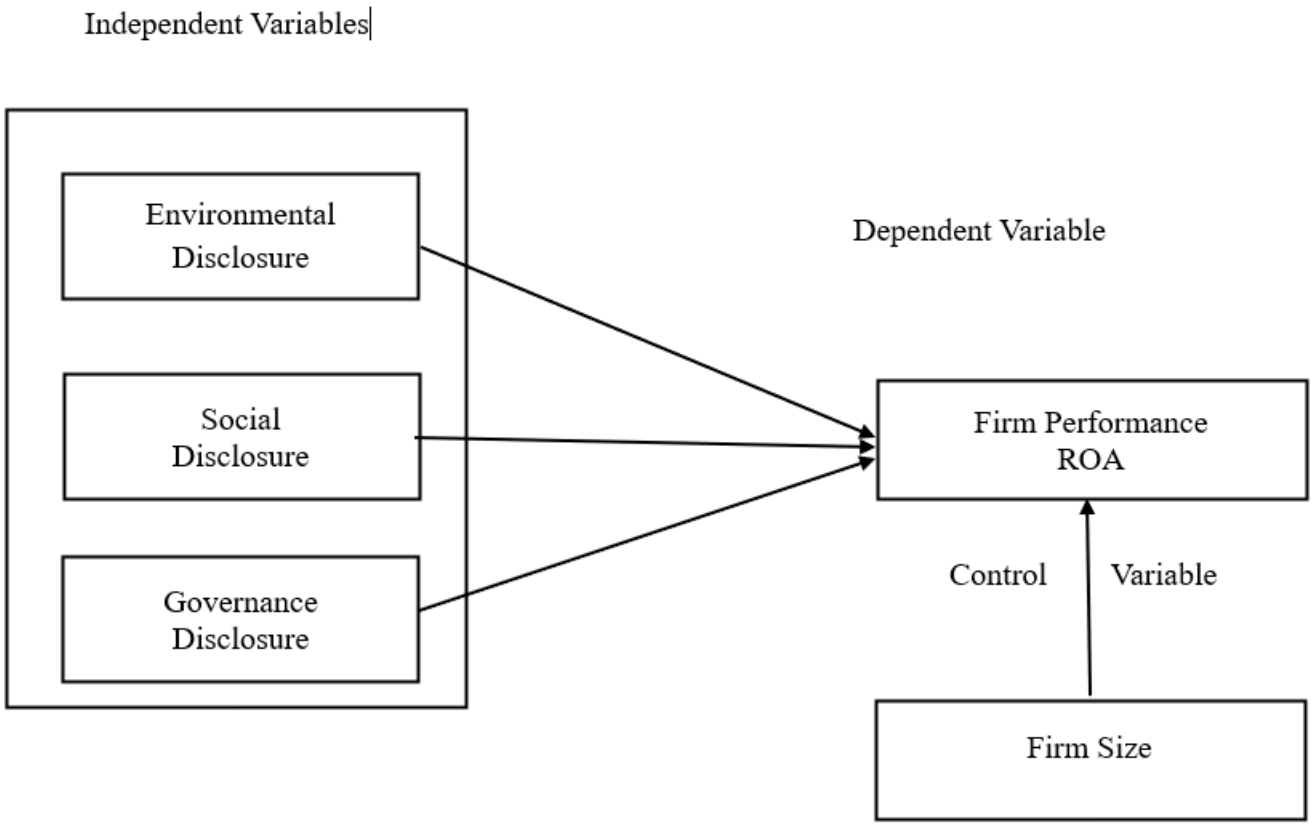
Stakeholder theory posits that firms use ESG practices as signals to convey their quality and commitment to stakeholders, including investors, customers, and regulators. High ESG performance can reduce information asymmetry, making firms more attractive to investors by enhancing their perceived value. Firms that are transparent about their ESG practices can effectively communicate their commitment to sustainability, which can improve their market valuation (Li et al., 2025).

Firm stakeholders interpret ESG signals in various ways, which can affect their perception of a firm's performance. For example, investors may view strong ESG performance as a sign of lower risk and higher long-term profitability, while customers may associate it with ethical practices and brand loyalty (Hussain et al., 2024).

Firms can strategically leverage signaling theory to enhance their ESG initiatives. By focusing on high-visibility ESG practices and ensuring credible disclosures, firms can strengthen their market position. For instance, media attention can amplify the positive signals sent by ESG initiatives, while a strong corporate reputation can enhance the credibility of these signals (Xiao et al., 2025).

Conceptual Framework

The conceptual framework of study presents the independent variable, dependent variable and the control variable.



METHODOLOGY

Research Design

This paper adopts a quantitative research design to examine the effect of Environmental, Social, and Governance (ESG) disclosure on firm performance, measured by Return on Assets (ROA), among firms in Nigeria's oil and gas and industrial goods sector. The population consists of listed firms in these sectors over the period 2014-2023. A balanced panel dataset of 16 firms, resulting in 160 firm-year observations, is used for the analysis. This structure combines both cross-sectional and time-series data, making it suitable for examining firm performance over time. Secondary data are obtained from published annual reports and sustainability-related disclosures of the selected firms.

The main variables in the study include ROA as the dependent variable, while Environmental Disclosure (ENVd), Social Disclosure (SOCd) and Governance Disclosure (GOVd) serve as the key independent variables. Firm Size (FSIZE), measured using the natural logarithm of total assets, is included as a control variable to account for differences in scale among firms. ESG variables are converted into percentage form (0-100) to improve interpretation and comparability with global ESG reporting practices. To further enhance interpretation of ESG performance levels, a Refinitiv-based grading framework is applied, where scores are classified as Grade D (0-25: poor performance), Grade C (26-50: moderate performance), Grade B (51-75: good performance), and Grade A (76-100: excellent performance). This classification helps to better interpret the quality of ESG disclosure among firms in the Nigerian oil and gas and industrial goods sector.

The study employs panel regression techniques to estimate the relationship between ESG disclosure and firm performance. Both Fixed Effects (FE) and Random Effects (RE) models are initially considered to account for unobserved firm-specific characteristics that may influence performance. The Hausman specification test is then used to determine the most appropriate model for the analysis. Based on the test results, the Random Effects model is selected as the preferred estimator. In addition, robust standard errors clustered at the firm level are applied to address potential heteroskedasticity and within-firm correlation, thereby ensuring reliable and efficient statistical inference. The variables are measured as follows;

Measurement of Variable

Table 1: Measurement of Variables

Variables	Proxy	Measurement	Source
Dependent Variable Firm Performance	ROA	Net income/ total Aset	Ibrahim & Tahir, (2024) and Idris (2024).
Independent Variables	ENV	Environmental disclosure index (0–100 scale)	Izuagly & Abdullahi (2024), Ibrahim & Tahir, (2024).
	SOC	Social responsibility disclosure index (0–100 scale)	Ibrahim & Tahir, (2024), Izuagly & Abdullahi (2024).
	GOV	Corporate governance disclosure index (0–100 scale)	Izuagly & Abdullahi (2024), Ibrahim & Tahir (2024).
Control Variable Firm Size	Fsize	Natural log of total assets.	Idris (2024)

Source: Compiled from empirical review and annual reports, (2026)

Model Specification

The empirical model used to examine the effect of ESG disclosure on firm performance is adapted from standard panel data models widely used in ESG and corporate finance literature (e.g., Velte, 2019; Buallay, 2018). The model is specified as follows:

$$ROA_{it} = \beta_O + \beta_1 ENVdit + \beta_2 SOCd_{it} + \beta_3 GOVd_{it} + \beta_4 FSIZE_{it} + \varepsilon_{it}$$

Where:

ROA_{it} = Return on Assets of firm *i* at time *t*
$ENVd_{it}$ = Environmental Disclosure
$SOCd_{it}$ = Social Disclosure
$GOVd_{it}$ = Governance Disclosure
$FSIZE_{it}$ = Firm Size
β_O = Constant term
β_1- β_4 = Coefficients of explanatory variables
ε_{it} = Error term

The panel regression framework is estimated using both Fixed Effects (FE) and Random Effects (RE) models. The Hausman specification test is then applied to determine the most appropriate estimator for the study.

RESULT AND DISCUSSION

Descriptive Statistics

This section presents the descriptive statistics of the variables employed in the study, namely Return on Assets (ROA), Environmental Disclosure (ENV), Social Disclosure (SOC), Governance Disclosure (GOV), and Firm Size (FSIZE). The statistics reported include the mean, standard deviation, minimum value, maximum value, and number of observations for the 160 firm-year observations drawn from 16 listed firms over the period 2014–2023. ESG-related variables are interpreted using the Refinitiv ESG grading framework, where scores between 0–25 represent Grade D (poor ESG performance), 26–50 represent Grade C (moderate/satisfactory performance), 51–75 represent Grade B (good performance), and 76–100 represent Grade A (excellent performance). This grading framework provides a clearer understanding of the quality of ESG disclosure among the sampled firms.

Table 2: Descriptive Statistics

Variables	Observation	Mean	Std. Dev.	Minimum	Maximum
Roa	160	10.638	7.227	-5.66	30.443
Envd	160	.508	.153	.093	.868
Socd	160	.518	.153	.226	.843
Govd	160	.511	.158	.18	.909
Fsize	160	8.035	.885	5.863	9.123

Source: State 14.0 Output, (2026)

Table 2 reveals that the average Return on Assets (ROA) of the sampled firms is 10.64%, indicating that firms in the Industrial Goods and Oil and Gas sectors generally generated positive returns from their assets during the study period. The relatively high standard deviation of 7.23 suggests substantial differences in profitability across firms. The minimum value of -5.66% indicates that some firms experienced losses, whereas the maximum value of 30.44% shows that certain firms achieved very strong financial performance.

Furthermore, the Environmental disclosure (ENV) records an average score of 50.81%, placing it at the threshold between Grade C and Grade B performance. This indicates that environmental reporting among the firms is moderate but gradually improving. The minimum score of 9.33% reveals that some firms provide very limited environmental disclosure, while the maximum score of 86.84% reflects excellent environmental reporting practices among others. Social disclosure (SOC) has a mean score of 51.84%, which falls within Grade B, suggesting a generally good level of social disclosure among the sampled firms. This reflects growing attention to employee welfare, community development, and social responsibility initiatives. Nevertheless, the variation between the minimum score of 22.56% and the maximum score of 84.32% indicates that the commitment to social disclosure differs considerably across firms. Governance disclosure (GOV) records a mean score of 51.11%, also classified under Grade B, indicating good governance disclosure practices among the firms. This suggests that many firms are increasingly emphasizing transparency, accountability, and sound corporate governance structures. The maximum score of 90.93% points to excellent governance disclosure by some firms, while the minimum score of 18.01% reveals weak governance reporting practices among a few firms.

Firm Size (FSIZE), measured as the natural logarithm of total assets, has an average value of 8.04 with a standard deviation of 0.89, indicating moderate variation in firm size. The minimum and maximum values of 5.863 and 9.123 respectively suggest that the study includes both relatively smaller and larger firms across the selected sectors.

In general, the descriptive statistics indicate that the sampled firms generally maintain good ESG disclosure practices, particularly in the areas of social and governance disclosure, as reflected in their Grade B average scores. However, the wide differences between the minimum and maximum values suggest that ESG disclosure practices remain uneven across firms, reflecting varying levels of commitment to sustainability reporting and corporate responsibility practices.

Correlation Analysis

This subsection presents the pairwise correlation matrix among the study variables to examine the direction and strength of associations and to provide preliminary insight into potential multicollinearity.

Table 3: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) Roa	1.000				
(2) Envd	0.670*	1.000			
	(0.000)				

(3) Socd	0.736*	0.805*	1.000		
	(0.000)	(0.000)			
(4) Govd	0.788*	0.794*	0.858*	1.000	
	(0.000)	(0.000)	(0.000)		
(5) Fsize	-0.418*	-0.087	-0.147	-0.187*	1.000
	(0.000)	(0.275)	(0.063)	(0.018)	
*** p<0.01, ** p<0.05, * p<0.1					

Source: State 14.0 Output, (2026)

Table 3 indicate strong positive relationships between ROA and ESG components, particularly governance disclosure (0.788). Environmental and social disclosures are also positively associated with profitability. Firm size shows a negative relationship with ROA (-0.418), suggesting that larger firms may experience lower returns on assets. Importantly, correlations among ESG variables are high but remain below critical multicollinearity thresholds.

Multicollinearity Test

Variance inflation Factor VIF is used to assess whether the explanatory (independent) variable are highly correlated. Multicollinearity can bias coefficient estimates and inflate standard errors; therefore, it is important to ensure it is not a concern in the model. The result are presented in Table 4 below:

Table 4: Variance inflation factor

Variables	VIF	1/VIF
Socd	4.508	.222
Govd	4.384	.228
Envd	3.247	.308
Fsize	1.048	.954
Mean VIF	3.297	.

Source: State 14.0 Output, 2026

The results indicate that all VIF values are below the commonly accepted threshold of 10, and even below the more conservative threshold of 5. The mean VIF of 3.30 confirms that multicollinearity is not a serious issue in the model. Therefore, the explanatory variables are sufficiently independent for reliable estimation.

Normality Tests

This subsection presents the normality tests conducted to examine whether the variables employed in the study are normally distributed. Normality testing is important because it helps determine whether the data conform to the assumptions underlying classical regression analysis. The study employed skewness and kurtosis to assess the distributional properties of the variables. The skewness and kurtosis statistics were used to examine the symmetry and peakedness of the data distribution. Skewness measures the extent to which a distribution deviates from symmetry, while kurtosis measures the degree of concentration in the tails of the distribution relative to a normal distribution. According to Hair et al. (2010), skewness values between -1 and +1 are considered acceptable and indicate approximate normality. Similarly, kurtosis values close to 3 suggest that the distribution does not significantly depart from normality.

Table 5: Normality Test: Skewness and Kurtosis Test

Variables	Obs	Skew.	Kurt.
Roa	160	.093	2.266

Envd	160	.363	2.619
Socd	160	.393	2.172
Govd	160	.326	2.267
Fsize	160	-.809	2.367

Source: State 14.0 Output, (2026)

Table 5 show that all variables fall within the acceptable threshold of -1 to +1 recommended by Hair et al. (2010), indicating that the variables are reasonably symmetric and free from severe asymmetry problems. ROA records a skewness value of 0.093, suggesting an approximately symmetric distribution. Environmental disclosure (ENVd), social disclosure (SOCd), and governance disclosure (GOVd) exhibit slight positive skewness, implying mild right-tailed distributions. Firm size (Fsize) records a skewness value of -0.809, indicating a moderate left-tailed distribution, although still within the acceptable range. With respect to kurtosis, all variables have values below 3, suggesting platykurtic distributions that are relatively flatter than the normal distribution. This indicates the absence of excessive peaks or heavy tails in the data. Overall, the skewness and kurtosis statistics suggest that the variables do not exhibit serious deviations from normality at the descriptive level.

Heteroskedasticity Test (Modified Wald Test)

This subsection presents the test for heteroskedasticity using the Modified Wald test for groupwise heteroskedasticity in the fixed effects regression model. The test is used to determine whether the variance of the error terms is constant across the cross-sectional units in the panel data. According to Greene (2018), the null hypothesis of the Modified Wald test assumes homoskedasticity, meaning that the error variances are equal across all groups. A probability value greater than 0.05 indicates that the null hypothesis cannot be rejected, implying the absence of heteroskedasticity.

Table 6: Modified Wald Test for Groupwise Heteroskedasticity

Test	Chi^2	df	Prob > Chi^2	Decision
Modified Wald Test	17.24	16	0.3704	Fail to reject H_0

Source: Stata 14.0 Output, 2026

Table 6 reveal a Chi-square value of 17.24 with 16 degrees of freedom and a probability value of 0.3704. Since the p-value is greater than 0.05, the null hypothesis of homoskedasticity cannot be rejected. This indicates that there is no statistical evidence of groupwise heteroskedasticity in the model, suggesting that the error variances are constant across the panel units.

Notwithstanding this result, cluster-robust standard errors were still employed in the regression analysis to ensure that the inference remains valid even in the presence of any potential mild violations of classical assumptions. This approach enhances the reliability and robustness of the estimated coefficients and their statistical significance.

Hausman Specification Test

The Hausman specification test was conducted to determine the appropriate panel estimation technique between Fixed Effects (FE) and Random Effects (RE) models. The test evaluates whether the individual-specific effects are correlated with the explanatory variables. According to Hausman (1978), the null hypothesis states that the difference in coefficients between the FE and RE models is not systematic, implying that the Random Effects model is appropriate. A probability value greater than 0.05 indicates failure to reject the null hypothesis.

Table 7: Hausman Specification Test Results

Variables	FE	RE	Difference (FE-RE)
Envd	3.8647	4.9502	-1.0855
Socd	7.5282	8.9675	-1.4393
Govd	19.7033	22.2820	-2.5787
Fsize	-4.7477	-2.3662	-2.3815
$\chi^2(4)=1.17$, Prob>χ^2=0.8833			

Source: State 14.0 Output, 2026

The Hausman test results in Table 7 show a Chi-square statistic of 1.17 with 4 degrees of freedom and a probability value of 0.8833. Since the p-value is greater than 0.05, the null hypothesis cannot be rejected. This indicates that there is no systematic difference between the Fixed Effects and Random Effects estimators. Therefore, the Random Effects model is more appropriate for this study, as the individual-specific effects are not significantly correlated with the explanatory variables. This confirms that the Random Effects estimator is both consistent and efficient for the analysis.

Test of Hypothesis

This section presents the main regression results of the study, estimated using the Random Effects model with robust (clustered) standard errors. The model examines the effect of environmental disclosure (ENVd), social disclosure (SOCd), governance disclosure (GOVd), and firm size (Fsize) on return on assets (ROA). The choice of the Random Effects model is supported by the Hausman specification test, which indicated that the model is appropriate for the analysis.

Table 8: Regression Result of Random Effects Model with robust (clustered) standard errors Dependent Variable: ROA

Independent Var.	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Envd	4.95	3.433	1.44	.149	-1.778	11.678	
Socd	8.967	4.581	1.96	.040	-.011	17.946	*
Govd	22.282	4.238	5.26	.007	13.977	30.587	***
Fsize	-2.366	.221	-10.69	.012	-2.8	-1.932	***
Constant	11.097	2.365	4.69	.009	6.462	15.733	***

Mean dependent var	10.638	SD dependent var	7.227
Overall r-squared	0.716	Number of obs	160
Chi-square	649.213	Prob > chi2	0.000
R-squared within	0.137	R-squared between	0.976
*** p<.01, ** p<.05, * p<.1			
Source: Stata 14.0 Output, (2026).			

Table 8 show the result of hypothesis testing using regression analysis following the random effects regression results as the preferred model based on the Hausman specification test, the hypotheses were evaluated at a 5% level of significance. The decision rule is that the null hypothesis is rejected when the p-value is less than 0.05, and not rejected otherwise.

H_0^1: There is no significant relationship between environmental disclosure and firm performance among oil and gas and industrial goods companies in Nigeria

The first hypothesis examines the relationship between environmental disclosure and firm performance among oil and gas and industrial goods companies in Nigeria. The results show that environmental disclosure (ENVd)

has a positive but statistically insignificant effect on return on assets (ROA), with a p-value of 0.149. This indicates that although firms with higher environmental disclosure tend to record slightly better performance, the relationship is not strong enough to be statistically meaningful within the sampled Nigerian companies. As a result, the null hypothesis is not rejected, implying that environmental disclosure does not have a significant relationship with firm performance in the study context.

H_O^2: There is no significant relationship between social disclosure and firm performance among oil and gas and industrial goods companies in Nigeria

The second hypothesis investigates the relationship between social disclosure and firm performance among oil and gas and industrial goods companies in Nigeria. The findings reveal that social disclosure (SOCd) has a positive and marginally significant effect on ROA, with a p-value of 0.040. This suggests that firms in Nigeria that place greater emphasis on social responsibility such as employee welfare, community engagement, and stakeholder relations tend to achieve better financial outcomes. Consequently, the null hypothesis is rejected at the 5% level, indicating that social disclosure has a significant relationship with firm performance in the sampled firms in the Nigeria's oil and gas and industrial goods sector.

H_O^3: There is no significant relationship between governance disclosure and firm performance among oil and gas and industrial goods companies in Nigeria

The third hypothesis examines the relationship between governance disclosure and firm performance among oil and gas and industrial goods companies in Nigeria. The results indicate that governance disclosure (GOVd) has a positive and highly significant effect on ROA, with a p-value of 0.007. This shows that strong governance practices, reflected in transparency, accountability, and effective oversight, are closely linked to improved financial performance in the Nigerian corporate environment. Therefore, the null hypothesis is rejected, confirming that governance disclosure has a significant positive relationship with firm performance among the sampled companies in the Nigeria's oil and gas and industrial goods sector.

In general, the findings reveals that within Nigeria's oil and gas and industrial goods sector, governance disclosure plays the most influential role in shaping firm performance, followed by social disclosure, while environmental disclosure shows a positive but statistically insignificant relationship.

DISCUSSION OF FINDINGS

This study investigated the relationship between environmental, social, and governance (ESG) disclosure practices and firm performance among firms in Nigeria's oil and gas and industrial goods sector. In achieving this, the study addressed key research questions focused on how environmental, social, and governance disclosures individually influence return on assets (ROA). To guide the analysis, three hypotheses were formulated. The study draws support from stakeholder theory, which suggests that firms create value not only by focusing on shareholders but also by responding to the expectations of wider stakeholder groups such as communities, employees, regulators, and investors (Freeman, 1984). In the same way, legitimacy theory explains that firms disclose ESG information to align with societal expectations and maintain legitimacy within their operating environment. From this perspective, ESG disclosure practices represent important mechanisms through which firms in Nigeria's oil and gas and industrial goods sector communicate responsibility, manage stakeholder pressure, and enhance long-term sustainability. The findings of this study reflect these theoretical ideas by showing that governance, social, and environmental disclosures influence firm performance in different ways and at different levels of strength.

The outcome of the first hypothesis (H1) shows that environmental disclosure has a positive but statistically insignificant relationship with firm performance among firms in Nigeria's oil and gas and industrial goods sector. This suggests that although environmental reporting is present, it has not yet translated into measurable financial benefits in the study context. This finding aligns with Uwana and Eno (2025), who reported a similar insignificant relationship between environmental responsibility and firm performance in Nigerian manufacturing firms. It also supports the view of Iro (2025), who found that environmental disclosure does not significantly influence firm value in Nigeria. However, this result contrasts with Hussain (2024), who observed a strong

positive relationship in a more developed ESG environment. This difference highlights the fact that in Nigeria's extractive and industrial sectors, environmental disclosure is still largely compliance-driven rather than value-driven.

The outcome of the second hypothesis (H2) indicates that social disclosure has a positive and marginally significant relationship with firm performance among firms in Nigeria's oil and gas and industrial goods sector. This suggests that firms that engage more in social responsibility activities such as community development, employee welfare, and stakeholder engagement tend to achieve better financial outcomes. This finding is consistent with Uwana and Eno (2025), who also found a positive effect of social responsibility on firm performance. It also aligns with Hussain (2024), who reported that social disclosure improves financial performance across different measures. In the Nigerian context, this relationship is particularly relevant because social tensions in oil-producing and industrial communities can directly affect operational stability, and improved social engagement helps firms maintain smoother business operations.

The outcome of the third hypothesis (H3) reveals that governance disclosure has a strong and highly significant positive relationship with firm performance among firms in Nigeria's oil and gas and industrial goods sector. This suggests that firms with stronger governance structures—such as transparency, accountability, and effective board oversight—tend to perform better financially. This finding is strongly supported by Idris (2024), who identified governance as the most influential ESG dimension in Nigerian oil and gas firms. It also aligns with Iro (2025), who reported that governance disclosure significantly enhances firm value, and Onwere (2024), who emphasized the dominance of governance in driving firm performance in African contexts. These consistent findings suggest that governance practices play a central role in improving efficiency, investor confidence, and overall financial outcomes in the Nigerian corporate environment.

The result of firm size further shows a negative and significant relationship with firm performance among firms in Nigeria's oil and gas and industrial goods sector. This suggests that larger firms may experience reduced efficiency due to increased complexity, bureaucratic structures, and coordination challenges. This finding is consistent with agency theory, which argues that as firms expand, monitoring difficulties and managerial inefficiencies may increase, thereby affecting profitability.

CONCLUSION

Environmental, social, and governance (ESG) disclosure plays an important role in shaping firm performance, especially in sectors such as oil and gas and industrial goods in Nigeria, where firms operate under strong regulatory pressure, environmental sensitivity, and stakeholder scrutiny. However, the effectiveness of ESG disclosure in translating into financial outcomes is often uneven due to differences in institutional capacity, governance structures, and the stage of ESG adoption across firms. In response to these realities, this study examined the influence of environmental, social, and governance disclosure practices on firm performance, measured by return on assets (ROA), among firms in Nigeria's oil and gas and industrial goods sector.

The findings of the study confirm that sustainability disclosure affect firm performance in different ways.

1. Specifically, governance disclosure shows a strong and significant positive relationship with firm performance, highlighting the importance of transparency, accountability, and effective oversight in improving financial outcomes.
2. Social disclosure also demonstrates a positive but weaker and marginally significant relationship with firm performance, suggesting that social responsibility practices such as community engagement and employee welfare contribute to performance, although their impact is still developing.
3. In contrast, environmental disclosure shows a positive but statistically insignificant relationship with firm performance, indicating that environmental reporting in the Nigerian context is still largely compliance-oriented and has not yet translated into direct financial benefits.
4. Additionally, firm size is found to negatively affect performance, suggesting that larger firms may face efficiency and coordination challenges that reduce profitability.

To conclude, the study underscores that improving firm performance in Nigeria's oil and gas and industrial goods sector requires a balanced but strategically focused approach to ESG practices. While environmental and social disclosures remain important for long-term sustainability and stakeholder relations, governance emerges as the most critical driver of financial performance. Firms that strengthen governance structures, improve transparency, and enhance accountability are better positioned to achieve higher efficiency, stronger investor confidence, and improved profitability in a competitive and resource-sensitive business environment.

RECOMMENDATIONS

Based on the findings above, the study proposed the following recommendations for firms operating in Nigeria's oil and gas and industrial goods sector:

1. The management and boards of directors of firms operating in Nigeria's oil and gas and industrial goods sectors should prioritize governance reforms by increasing board independence, strengthening audit committees, and enhancing transparency in financial and non-financial reporting. Firms can achieve this by appointing more independent non-executive directors, conducting regular board performance evaluations, establishing whistleblowing mechanisms, and publishing detailed governance reports in their annual reports. Since governance disclosure was found to have the strongest positive influence on financial performance, these measures are expected to improve investor confidence, reduce agency problems, and enhance profitability.

2. Management of oil and gas and industrial goods firms should integrate social responsibility initiatives into their core operational and strategic activities rather than treating them as occasional corporate social responsibility (CSR) programs. This include developing structured employee welfare policies, providing regular staff training and development programs, improving workplace safety standards, and establishing sustainable community development projects in host communities. Firms should also create dedicated sustainability or CSR units responsible for monitoring and reporting social initiatives. Given the positive relationship between social disclosure and financial performance, these actions can strengthen stakeholder relationships, improve corporate reputation, and contribute to long-term business performance.

3. The Financial Reporting Council of Nigeria (FRCN) and the Securities and Exchange Commission (SEC) should develop and enforce standardized ESG disclosure guidelines applicable to all listed firms, particularly those in environmentally sensitive industries such as oil and gas. These regulatory bodies can issue sector-specific ESG reporting templates, mandate periodic ESG reporting, conduct compliance audits, and impose sanctions for non-compliance. In addition, they should organize training programs and workshops to build firms' capacity for effective ESG reporting. Such measures would improve the quality, consistency, and comparability of ESG disclosures while encouraging organizations to integrate sustainability considerations into their strategic decision-making processes.

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