EFFECT OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE INTEGRATION ON FIRM VALUE IN THE NIGERIAN OIL AND GAS SECTOR

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Abstract
While global evidence largely supports the value-enhancing role of corporate sustainability, context-specific uncertainty persists regarding exactly which Environmental, Social, and Governance (ESG) pillars drive market capitalization in developing economies. This study investigated the effect of ESG integration on the firm value of listed oil and gas companies in Nigeria. A purposive sampling technique was employed to select a balanced panel of six (6) firms, utilizing secondary data extracted via content analysis from published annual reports spanning 2020-2024. The independent variables comprised Environmental Integration (EI), Social Integration (SI), and Governance Integration (GI), with Leverage serving as a control variable. Firm value, the dependent variable, was proxied by Tobin's Q. Using a Fixed Effects Panel Data Regression with robust standard errors, the findings revealed that Social and Governance integration had a positive and statistically significant impact on firm value. Conversely, Environmental integration and Leverage exhibited positive but statistically insignificant effects. Given the severe ecological degradation historically associated with the Niger Delta, the insignificance of environmental disclosures highlights a critical market disconnect; Nigerian investors currently price immediate operational stability, secured via social relations and governance transparency, much higher than long-term environmental stewardship. The study recommends that firms prioritize social investments, particularly concerning host community engagement, while strategically linking their environmental efforts to cost savings to attract profit-driven investors.

Keywords: ESG integration, firm value, sustainability reporting, oil and gas sector, Tobin's q, Nigeria, social license to operate.

1.0 Introduction

Firm value, represents the market's assessment of a company's worth and serves as a comprehensive indicator of long-term financial health, investor confidence, and sustainable competitive advantage (Onmonya et al; 2024). Globally, firm value has experienced significant transformation over the past decade, with intangible assets emerging as the primary driver of corporate valuation. Global corporate intangible value made a strong recovery in 2024, growing by 28% from 2023 and surpassing its 2021 peak to reach an all-time high of USD 80 trillion (Annie et al; 2025) Firm value at the global level has undergone a fundamental transformation over the past three decades, with intangible assets emerging as the primary driver of corporate valuation. In 2024, the value of intangible assets owned by the world's largest companies reached USD 79.4 trillion, representing a substantial 28% increase from 2023 when global intangible value stood at USD 61.9 trillion, now reaching its highest level since Brand Finance began tracking it in 1996. This resurgence emphasizes on the sustained growth of intangible asset value, marking a 13-fold increase since 1996 (Annie brown, 2024). However, this global trajectory has not been uniformly experienced across all regions. While advanced economies have leveraged intangible assets to drive corporate valuation, Africa represents a contrasting narrative.

In Africa, the relationship between firm value and intangible assets remains complex and underexplored, particularly within key sectors like oil and gas. Firm value in Africa has faced considerable headwinds despite the continent's booming population and vast economic potential,

with valuations generally trending downward over the last decade. Collectively, Africa's 250 biggest listed firms reached a combined value of $564 billion at the end of March 2025, showing only modest improvement from the previous year's $503 billion figure, yet this remains far below the valuation growth experienced in developed markets (Victor Olayiwola,2025) Firm value remains a critical issue because of structural weaknesses in capital markets, inconsistent policy environments and governance challenges (Clement et al; 2025). Firms in the region operates in settings characterized by inflation, exchange rate stability, limited investors protection, and high uncertainty, all of which can affect market valuation that has also extended down to the local region. As a result, oil and gas firm value is often more volatile in emerging economies than in developed markets, and it becomes a sensitive indicator of whether these firms are able to sustain investor confidence.

Firm value in oil and gas reflects not only transparency and governance, but also the credibility of sustainability reporting (Yusuf & Ruth,2024).Within Africa, Nigeria presents a particularly compelling context for examining firm value dynamics as the continent's largest oil producer and most populous nation. Nigeria's oil and gas sector contributes approximately 9% to the country's GDP but accounts for over 80% of export earnings and nearly half of government revenue, making firm value in this sector a crucial barometer of national economic stability. However, Nigerian oil and gas firms face amplified challenges compared to their regional counterparts, with persistent currency instability, ongoing devaluations, and weak investor confidence taking a significant toll on company valuations. In fact, Nigerian companies have been completely edged out of Africa's top tier of most valuable corporations for 2025, prevented from entering the prestigious top 10 by these macroeconomic pressures (Victor Olayiwola, 2025). This makes Nigeria's oil and gas sector an ideal case study for understanding how firm value is determined in an emerging market characterized by structural vulnerabilities.

Firm value in Nigeria has experienced significant volatility and decline, characterized by Nigerian companies being completely edged out of Africa's top 10 most valuable corporations for 2025 due to persistent currency instability, ongoing devaluations, and weak investor confidence (AfroVenture, 2025). Historical data from 2008-2018 shows alternating periods of increase (0.33% in 2008-2009, 11.75% in 2011-2013) and decline (4.93% in 2010, 14.59% in 2016-2018), demonstrating the characteristic volatility of firm value in Nigeria's emerging market (Adeniji, 202). The oil and gas sector faces amplified challenges, with firm value affected by regulatory, economic, and operational factors despite contributing 9% to GDP and 80% of export earnings (Deloitte, 2025). Weak investor confidence has made capital scarce and expensive, while capital market reforms aimed at strengthening investor protection remain incomplete (OpenJournals IJAAR, 2025). After years of volatility, 2025 marked Nigeria's first taste of macroeconomic stability, yet the Nigerian equity market's strong performance has not fully restored firm values to previous levels (ARM Engage, 2026). This makes Nigeria's oil and gas sector an ideal context for examining how firm value is determined in an emerging market characterized by structural vulnerabilities. However, the sector faces profound operational challenges, particularly within the Niger Delta region. These include severe environmental degradation from frequent oil spills and gas flaring, persistent social unrest, and historical issues of weak corporate transparency.

This empirical evidence of firm value volatility and decline in Nigeria establishes the need for investigating factors that can enhance firm value performance. The structural vulnerabilities and governance challenges that characterize Nigerian firm value determination create a compelling case

for integrating Environmental, Social, and Governance (ESG) and can influence firm value in the oil and gas sector.

Environmental, Social, and Governance (ESG) integration refers to the systematic incorporation of environmental, social, and governance considerations into a firm's strategy, operations, risk management, and disclosure practices. ESG integration captures both substantive actions (e.g., emissions reduction, community engagement, board reforms) and the quality of related reporting and governance structures that signal management's commitment to long-term value creation (Busari & Adegbayibi, 2025). Environmental integration includes measurable efforts to reduce greenhouse gas emissions, improve operational efficiency, manage spills and waste, and adopt cleaner technologies actions that lower operational and regulatory risk in the oil and gas sector. Social integration covers stakeholder engagement, health and safety practices, labor standards, and community development programs that reduce social license-to-operate risks and litigation exposure. Governance integration encompasses board composition and independence, executive incentives aligned with sustainable outcomes, transparent internal controls, and anti-corruption measures that improve oversight and decrease agency costs (Romão dos Santos et al., 2026).

ESG integration influences firm value through multiple channels: it reduces firm-specific risk and cost of capital by improving risk management and transparency. It enhances revenue prospects and competitiveness by opening access to ESG-conscious investors and markets; and it mitigates downside losses from environmental incidents, social conflicts, or governance scandals (Bahadori et al., 2021). In emerging markets like Nigeria, where structural vulnerabilities and governance weaknesses depress valuations, credible ESG integration can serve as a differentiated signal that attracts capital, stabilizes investor confidence, and improves market valuation (Abdullah et al., 2025. Persistent environmental degradation, oil spillage, host community conflicts, and corporate governance failures have raised critical concerns regarding the long-term sustainability and value-creation capacity of firms operating in this space (Tajudeen & Gbadebo, 2024; Ogiriki & Boubai, 2025).

Yet, despite these glaring operational risks, the academic community remains divided on the actual financial impact of ESG integration. While some recent studies argue that sustainability disclosures significantly enhance market performance by reducing risk and building stakeholder trust (Aliyu, 2024; Busari & Adegbayibi, 2025), competing literature suggests that ESG reporting has no significant direct impact on firm value unless moderated by other internal firm advantages (Ikponmwosa & Bamidele, 2023). Consequently, many Nigerian oil and gas executives still view ESG reporting as a mere regulatory compliance burden, a box-ticking exercise to satisfy the Financial Reporting Council of Nigeria (FRCN), rather than a strategic mechanism to boost market capitalization.

The failure to genuinely integrate ESG into corporate strategy may not only undermines a firm’s reputation but severely limits its ability to attract ESG-conscious foreign institutional investors. This study addresses this gap by examining the effect of Environmental, Social, and Governance integration on the firm value of oil and gas companies listed in Nigeria, which the firm value will be measured using Tobin’s Q and with leverage serving as a control variable. By providing sector-specific and contextually grounded evidence and the study aims to contribute to the ESG literature and inform investment decision-making, corporate strategy, and regulatory policy in Nigeria. This study addresses this problem by empirically investigating whether current ESG integration

effectively mitigates these unique sector risks and subsequently enhances the firm value of listed oil and gas companies in Nigeria.

The following hypotheses were formed to guide the study:
Ho_1: Environmental integration has no significant effect on the financial firm value of listed oil and gas companies in Nigeria.
H_{02}: Social integration has no significant effect on the financial firm value of listed oil and gas companies in Nigeria.
H_{03}: Governance integration has no significant effect on the financial firm value of the listed oil and gas companies in Nigeria.

2.0 Literature Review

Firm value refers to the measure of a company's success and prosperity, which is closely related to the price of its shares (Sophia, 2022). It is an unbiased and reliable metric that stakeholders, shareholders, potential investors, and managers use to assess the performance and operations of a company (Hope, 2020). Firm value was seen as an investor's perception of the company's degree of success. Firm value can be defined as the overall economic worth of a company as perceived by investors, reflecting its ability to generate future earnings and sustain growth.

Environmental reporting focuses on disclosures related to climate change, waste management, water usage, and greenhouse gas emissions (Onuh Uloma Adonye et al., 2022). Environmental reporting involves disclosing information related to environmental performance, including impacts on natural resources, pollution levels, and overall sustainability practices (Chibunna Onyebuchi et al., 2025). The environmental component of ESG integration addresses how businesses manage their impact on the natural environment. Oil and gas companies, operating in environmentally sensitive contexts, face particular pressure to demonstrate transparency regarding their efforts to reduce ecological footprints, protect biodiversity, and transition toward renewable energy sources. Environmental disclosures enable stakeholders to assess a company's ecological impact and commitment to global sustainability objectives (Ogiriki &Boubai, 2025). Environmental integration can be seen as the embedding of environmental consideration into all aspects of business and decision making.

Social sustainability reporting entails the documentation of an organization’s social influence on its stakeholders, spanning employees, customers, suppliers, communities, and society at large (Nworie &Anie Funa, 2024). Al Hawaj and Buallay (2022) described this as a process through which organizations scrutinize their social practices, identify areas for improvement, and foster accountability with their key stakeholders. Umar and Yahaya (2021) further observed that while some organizations report on social sustainability due to regulatory mandates, others do so voluntarily to demonstrate their dedication to responsible corporate behavior. Taken together, these definitions emphasize on social sustainability and its impacts on various stakeholders.

Corporate governance disclosure concerns factors relating to board independence, shareholder rights protection, control and monitoring activities, and regulatory compliance (Sariyer & Taskın, 2022).Bai et al 2022, demonstrated that good ESG performance by Chinese listed companies not only directly reduces financing constraints but also attracts institutional investors, thereby conveying positive signals to the market. Collectively, these definitions saw the significance of governance integration on firm value. Aliyu (2024) investigated listed Nigerian oil and gas companies using panel-corrected standard errors (PCSE) and found that ESG disclosures positively

and significantly influence Tobin's Q. Notably, the study established that governance disclosures exerted the strongest influence, followed by environmental and social factors. This perspective is partially corroborated by Busari and Adegbayibi (2025), who utilized the Generalized Method of Moments (GMM) to demonstrate that environmental and social disclosures significantly boost share price performance in the Nigerian oil sector, although they surprisingly found governance to be statistically insignificant. Furthermore, Olufemi and Egbunike (2023) observed similar positive effects among industrial goods manufacturers, suggesting that across high-impact sectors, investors generally reward corporate transparency with higher market valuations.

Ogiriki and Boubai (2025), analyzed listed oil and gas firms using Return on Equity (ROE), found that while social and governance disclosures exhibited a strong positive relationship with financial performance, environmental integration demonstrated a weak and statistically insignificant negative relationship. This asymmetric finding aligns with earlier observations by Nwosu and Olisa (2021) in the energy sector, highlighting a critical divergence in investor perception within Nigeria. It suggests that the market prices immediate operational continuity, secured through robust social integration and community relations, much higher than long-term environmental stewardship. Ikponmwosa and Bamidele (2023) investigated Nigerian manufacturing firms and revealed that ESG reporting had no significant direct impact on firm value in isolation. They argued that ESG only translates into financial performance when interacted with moderating variables, such as firm advantage (profitability minus capital cost). Similarly, Nnadi and Yahaya (2024) observed that while internal mechanisms like board diversity significantly influence a firm's ESG performance, traditional financial indicators like profitability and leverage had no substantial impact on the firm's overall market valuation, implying a disconnect between traditional accounting metrics and modern sustainability valuations.

Theoretical Framework

The theoretical framework that underpins this study is the stakeholder theory.

Stakeholder theory, which was postulated by Freeman (1984), holds that businesses exist to do more than just make profits and money for shareholders, but instead they function best and serve the greater good when their actions reflect what is best for the stakeholders. The argument advocated by Freeman is that all stakeholders have the right to be treated reasonably by the organization. According to him, stakeholders comprise any group or individual who can affect or be affected by the achievement of the organization objectives. These groups or individuals include employees, local communities, customers, suppliers, competitors, banks, investors, government, and non-government organizations (NGOs). ESG integration aligns with this theory, as it provides a mechanism for firms to demonstrate sustainability to a broader group, including communities, employees, and regulators.

3.0 Methodology

This Study Employed a panel dataset that both captures cross-sectional and time series variations in the data to analyzed the effect of ESG integration on firm value. The ex post facto research design was used to source data because it establishes a cause-and-effect relationship. The study populations consist of seven firms listed in the Nigeria Exchange Group (NGX) and a sample of six firms were selected for the analysis due to the availability of complete and reliable data of Environmental Social and Governance (ESG) performance over the period of 2024. Using a purposive sampling, the following firms were selected for the study and there are Seplat, Oando, TotalEnergies, Eterna, Conoil, and Japaul.

The following model was applied to test the hypotheses:

$$TQ_{it} = \beta_0 + \beta_1 EI_{it} + \beta_2 SI_{it} + \beta_3 GI_{it} + \beta_4 LEV_{it} + \mu_{it}$$

Where:

TQ_{it} = Firm Value (Tobin's Q) for firm *i* in year *t*
β_0 = Constant
$\beta_1 - \beta_4$ = The Coefficients of the explanatory variables
EI_{it} = Environmental Integration for firm *i* in year *t*
SI_{it} = Social Integration for firm *i* in year *t*
GI_{it}=Governance Integration for firm *i* in year *t*
LEV_{it}=Leverage (Control Variable) for firm *i* in year *t*
μ_{it} = The Stochastic Error Term
i =Cross-sectional identifier
t = Time identifier

Measurement of Variables and Sources of Data

Table 1:
Operationalization and Measurement of Variables

Variable	Type	Measurement / Operationalization	Data Source & Supporting Literature
Firm Value (TQ)	Dependent	Tobin's Q: (Market Capitalization + Total Debt) / Total Assets. A ratio > 1 indicates the market values the firm higher than its replacement cost.	Source: Audited Statements of Financial Position. Literature: Chung & Pruitt (1994); Risman (2021); Aliyu (2024).
Environmental Integration (EI)	Independent	Disclosure Index: (Number of environmental items disclosed / Maximum expected items). Captures metrics such as carbon footprint, waste management, and eco-policies.	Source: Annual & Sustainability Reports (Content Analysis). Literature: Global Reporting Initiative (GRI, 2021); Busari & Adegbayibi (2025).
Social Integration (SI)	Independent	Disclosure Index: (Number of social items disclosed / Maximum expected items). Captures community development, employee safety, and human rights policies.	Source: Annual & Sustainability Reports (Content Analysis). Literature: GRI (2021); Nwosu & Olisa (2021).
Governance Integration (GI)	Independent	Disclosure Index: (Number of governance items disclosed / Maximum expected items). Captures board independence, audit transparency, and anti-corruption measures.	Source: Annual & Corporate Governance Reports (Content Analysis). Literature: Nnadi & Yahaya (2024); Aliyu (2024).
Leverage (LEV)	Control	Debt Ratio: (Total Debt / Total Assets). Measures the proportion of the firm's assets financed through debt obligations to control	Source: Audited Statements of Financial Position. Literature: Ogiriki & Boubai (2024).

for financial risk.

Source: Researcher's Compilation (2026).

4.0 Data Presentation and Analysis

Descriptive Statistics

This summary is presented and discussed as below:

Table 2.

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
TQ	30	1.174	0.161	0.920	1.508	0.852	3.104
EI	30	0.504	0.114	0.206	0.783	0.415	2.891
SI	30	0.503	0.139	0.263	0.785	0.298	2.654
GI	30	0.650	0.164	0.257	0.950	-0.512	2.940
LEV	30	0.568	0.138	0.308	0.763	-0.345	2.215

Source: Output generated using STATA (2026).

From the above table,the dependent variable Tobin's Q (mean = 1.174, SD = 0.161) indicates firms are valued 17.4% above replacement costs but exhibits right-tailed volatility (skewness = 0.852) with high-performing outliers (kurtosis = 3.104). Governance Integration shows the highest mean (0.650) with negative skewness (-0.512), reflecting strong NGX-driven compliance, while Environmental (0.504) and Social Integration (0.503) reveal heterogeneity (SDs = 0.114, 0.139; ranges 0.206-0.785). Leverage averages 0.568 (56.8% debt-financed assets) with consistent sectoral capital structure (SD = 0.138, kurtosis = 2.215). The non-normal distributions across variables justify using robust standard errors in panel regression for valid statistical inferences.

Correlation Matrix

Table 3:

Correlation Matrix

Variables	TQ	EI	S I	G I	LEV
(1) TQ	1.000				
(2) E I	0.145	1.000			
(3) S I	0.682*	0.185	1.000		
(4) G I	0.512	0.210	0.192	1.000	
(5) Lev	-0.054	0.112	-0.145	0.231	1.000

Source: STATA Output (2026) * Significance at 0.05 level

Social Integration ($r = 0.682$, $p < 0.05$) and Governance Integration ($r = 0.512$, $p < 0.05$) exhibit strong, positive, statistically significant correlations with Tobin's Q, supporting legitimacy and stakeholder theories, while Environmental Integration ($r = 0.145$) shows a weak, insignificant relationship, indicating Nigerian investors do not yet price environmental transparency. Leverage displays a weak, insignificant negative correlation ($r = -0.054$), suggesting potential debt servicing burdens. Inter-ESG correlations are weak-to-moderate (highest = 0.231 between GI and LEV), well below the 0.80 multicollinearity threshold (Gujarati & Porter, 2009). The average Variance Inflation Factor (VIF) is 1.20 (max = 1.32), far below the 10.0 ceiling, conclusively confirming no multicollinearity threatens the panel regression model's structural integrity.

Regression Analysis

Table 4.

Fixed Effects Regression Results

Variable	Coefficient	t-value	P-value
E I	0.134	0.67	0.501
S I	0.664	5.84	0.000***
G I	0.325	3.80	0.000***
LEV	0.040	0.16	0.877
Constant	0.724	3.43	0.001**
R-squared	0.37		
F-test	31.59		Prob > F = 0.000

Source: STATA Output (2026) * p<0.1, ** p<0.05, *** p<0.01

Discussion of Findings

The regression model explains 37% of Tobin's Q variation ($R^2 = 0.37$) with jointly significant predictors ($F = 31.59$, $p < 0.01$), confirming ESG integration profoundly shapes Nigerian oil and gas firms' market valuation and empirically supports Stakeholder and Legitimacy Theories. Social Integration drives the strongest positive effect ($\beta = 0.664$, $p < 0.01$), validating the Social License to Operate: community relations and employee safety prevent Niger Delta disruptions, securing operational stability rewarded with market premiums. Governance Integration significantly boosts value ($\beta = 0.325$, $p < 0.01$), as transparent boards and ethical compliance signal lower investor risk in Nigeria's emerging market with institutional voids. Environmental Integration shows a positive but insignificant effect ($\beta = 0.134$, $p > 0.10$), revealing investors prioritize short-term returns and social risk over long-term carbon disclosures, contradicting Aliyu Idris et al. (2025). Leverage is positive but insignificant ($\beta = 0.040$, $p > 0.10$), indicating debt structure doesn't affect valuation; value derives from asset quality, social stability, and governance rather than financing mix, contradicting Akpadaka & Farouk (2025). These findings align with Nwosu & Olisa (2021) on social/governance disclosures positively influencing firm value, and support Ogiriki & Boubai (2024) and Nnadi & Yahaya (2024) on leverage's non-significance. The Nigerian capital market exhibits a disconnect where environmental transparency isn't priced, while community stability and governance transparency drive valuations. ESG integration's differential impacts highlight that social and governance dimensions are operational imperatives in volatile sectors, not merely ethical choices. The study demonstrates stakeholder theory's applicability: creating value for communities and ensuring governance transparency generates superior firm value beyond shareholder primacy. Robust empirical evidence confirms ESG's profound role in shaping market perception of listed oil and gas firms in Nigeria's emerging economy.

5.0 Conclusion and Recommendation

The study concludes that ESG integration significantly influences Nigerian oil and gas firm value, with Social ($\beta=0.664$, $p<0.01$) and Governance ($\beta=0.325$, $p<0.01$) integration being predominant drivers, while Environmental integration remains insignificant ($\beta=0.134$, $p>0.10$), revealing investors prioritize operational stability over long-term stewardship. Managers must prioritize host community engagement, conflict resolution, and local content development as primary value drivers, while strengthening board transparency to reduce agency risks. Regulators (FRCN, SEC) should mandate standardized, sector-specific ESG reporting frameworks beyond voluntary guidelines to compel environmental accountability and ensure ecological stewardship is market-priced. Future research should incorporate moderating variables (regulatory quality, political risk, institutional strength) and expand panel data across the broader African energy sector. These

findings validate Stakeholder and Legitimacy Theories in Nigeria's volatile Niger Delta context, where social license and governance transparency are operational imperatives.

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