

# Exploring High and Low ESG Disclosure Thresholds: Impact on Corporate Value in Nigeria's Industrial and Oil & Gas Sectors

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## ABSTRACT

This study explores the dynamic relationship between Environmental, Social, and Governance (ESG) disclosure and corporate value among listed Oil and Gas and Industrial Goods firms in Nigeria, covering the period from 2011 to 2022. Employing a nonlinear fixed-effect panel threshold regression model, the research evaluates the effects of high and low ESG disclosure regimes on corporate performance metrics, represented by Tobin's Q and EBITDA. The findings reveal that high ESG disclosure regimes significantly enhance corporate value across both sectors, while low ESG regimes yield mixed results, particularly in the Oil and Gas sector. These results underscore the pivotal role of ESG practices in fostering sustainable corporate performance and align with signaling theory. This study contributes to the discourse on ESG strategies, offering actionable insights for policymakers, corporate leaders, and stakeholders aiming to optimize sustainability practices and financial outcomes.

**Keywords:** ESG disclosure, corporate value, Tobin's Q, EBITDA, Nigeria, sustainability

## INTRODUCTION

In recent years, the combination of environmental sustainability and corporate governance has gained unprecedented attention, primarily due to the increasing environmental degradation and widening inequality gap as highlighted by scholars (Winston, 2020). This shift has prompted calls for a reevaluation of the selective disclosure regime in favor of a more inclusive Environmental, Social, and Governance (ESG) reporting system (Waddock, 2016). Consequently, the last two decades have witnessed a surge in corporate disclosure of non-financial information, driven by both regulatory and non-regulatory pressures (La Torre et al., 2020). The adoption of global reporting standards and the rise of professional frameworks such as the Carbon Disclosure and the Global Reporting Initiative (GRI) project have played pivotal roles in standardizing and enhancing the quality of these disclosures (Diouf and Boiral, 2017).

A plethora of research has been carried out to investigate the nexus between the performance of firms and Environmental, Social, and Governance (ESG) practices. Aboud and Diab (2018) found that ESG-listed companies have higher firm value than all listed companies in the North African market. From a financial perspective, Giese et al. (2019) concluded that companies with strong ESG profiles tend to have higher market valuations due to lower costs of capital arising from huge market value. Similarly, Azaro et al. (2020) indicated that financial performance is a determinant of firm value in the market. Constantinescu et al. (2021) found that non-financial information also contributes to the investment decisions of local and foreign investors.

Subsequently, Environmental, Social, and Governance (ESG) disclosure has emerged as a critical factor

influencing corporate strategy, investor decisions, and regulatory policies. This comprehensive approach goes beyond traditional financial metrics, encompassing a broader spectrum of non-financial factors that contribute to sustainable long-term growth and corporate value (Atif, Liu, & Nadarajah, 2022). Despite the widespread adoption and perceived benefits of ESG practices, the empirical evidence on their impact on disclosure quality and performance remains inconclusive (Lock and Seele, 2016; Hassan and Romilly, 2018; Tashman et al., 2017).

Although corporations prioritize maximizing shareholder value, they typically hesitate to disclose their sustainable practices due to uncertainties about market, investor, and customer perceptions. Nevertheless, they allocate significant resources to sustainability reporting to reduce potential expenses and increase corporate reputation, customer retention, and investor trust (Iliemena, Amedu & Uagbale-Ekatah, 2023).

Consequently, the ongoing discussion revolves around whether ESG disclosure and investment will result in future financial gains, with a potential direct relationship to increased sales and market value over time (Ezekwesili & Ezejiofor, 2022).

This study therefore seeks to bridge this gap by exploring the intricate relationship between ESG disclosure and corporate value, providing insights into how sustainability practices can influence overall corporate performance.

### **Statement of the Problem**

The mixed outcomes and ongoing debate surrounding the relationship between sustainable ESG disclosure and corporate performance has garnered significant attention from both professionals and the academia. Empirical studies conducted by researchers such as Oladipo (2023), Singh (2023), Kamilla (2020), Persakis (2023), Salisu, Sani, & Lawan (2018), Sharma, Panday, & Dangwal (2020), among others, have provided valuable insights into this nexus in various contexts. While some studies have underscored positive associations, others have depicted negative and inconclusive impacts of ESG disclosure on various firm performance metrics. This diversity in results underscores the necessity for a comprehensive examination of the link between ESG disclosure and corporate performance, particularly within the Nigerian landscape.

Furthermore, this study seeks to address the gap in the literature by employing a fixed effect panel threshold (FEPT) approach to investigate the effect of two distinct regimes of ESG disclosure (high and low regimes): on the value of companies operating in the Industrial and Oil and Gas subsectors of the firms on Nigerian stock exchange. This study aims to provide a clear understanding of how varying levels of ESG disclosure impact corporate performance in these critical sectors of the Nigerian economy.

### **Research Objectives**

The overall objective of this study is to explore the dynamic effect of environmental, social, and governance disclosure on the corporate value of quoted oil and gas and industrial goods firms in Nigeria.

#### **Specific objectives are:**

1. to examine the effect of high ESG disclosure regime on the corporate performance of quoted Oil & Gas and Industrial Goods firms in Nigeria.
2. to examine the effect of a low ESG disclosure regime on the corporate performance of quoted Oil & Gas and Industrial Goods firms in Nigeria.
3. To examine the effect of both high and low ESG disclosure regimes on the corporate value of the combined sector.

### **Research questions**

To guide our investigation, we posed the following research questions:

1. What is the effect of high ESG disclosure regime on the corporate value of quoted oil and gas and industrial goods firms in Nigeria?
2. To what extent does low ESG disclosure drive the corporate value of quoted oil and gas and industrial goods firms in Nigeria?
3. How do overall high and low ESG disclosure regimes affect the corporate value of the combined sectors?

## Research Hypotheses

Based on our research questions, we proposed the following hypotheses:

1. H<sub>01</sub> High ESG disclosure does not significantly affect the corporate value of quoted oil and gas and industrial goods firms in Nigeria.
2. H<sub>02</sub> Low ESG disclosure does not significantly drive the corporate value of quoted oil and gas and industrial goods firms in Nigeria.
3. H<sub>03</sub> Overall high and low ESG disclosure does not significantly affect the overall value corporate value of the combined sectors.

## Scope and significance of the study

This study explored the impact of ESG disclosure on corporate value within two subsectors of the Nigerian economy: Oil and Gas (9 firms) and the Industrial sector (7 firms). ESG disclosure was segmented into two regimes: high and low regimes using data spanning over a decade (10 years), from 2012 to 2022. The findings of this study hold significance for various stakeholders, including companies, corporate boards, government, and researchers.

## LITERATURE REVIEW

### Corporate Performance

Corporate performance is a quantitative assessment of a company's overall value, incorporating multiple metrics. Profitability is frequently regarded as a vital indicator of success. Prior research investigating the correlation between ESG (Environmental, Social, and Governance) scores and profitability has utilised many metrics, including Stock Returns, Return on Assets (ROA), Return on Equity (ROE), and Earnings Before Interest, Taxes, Depreciation, and Amortisation (EBITDA). This study enhances the existing research in this subject by using Tobin's Q as a performance metric.

### Tobin's Q Ratio

Tobin's Q assesses a company's market value relative to the expense of asset replacement. A ratio exceeding 1 signifies market confidence in the company's growth prospects or intangible worth. In ESG research, Tobin's Q functions as a metric for the market's assessment of sustainable activities. Research by Kamilla (2020) and Oyedokun et al. (2019) has shown that increased transparency in environmental disclosures is associated with improved Tobin's Q values. In the Nigerian setting, Garba and Ahmad (2023) discovered that environmental disclosure positively influences market value, indicating that investors favour transparent and accountable governance approaches.

### Environmental, Social, and Governance Disclosure Index

The Environmental, Social, and Governance (ESG) Disclosure Index assesses the clarity of ESG-related information provided by companies. Research by Khan et al. (2021) and Serafeim (2022) underscores the significance of standardised ESG disclosures in shaping investor choices and enhancing corporate

responsibility. Salisu et al. (2018) and Niyi (2023) established significant correlations between ESG disclosures and financial success in Nigeria, underscoring the importance of these indexes in emerging markets.

## Review of Theory

The connection between ESG disclosures and company value is supported by three principal theories: Stakeholder theory, Legitimacy theory, and Signaling theory.

The Stakeholder Theory propounded by (Freeman, 1984) underscores the significance of addressing stakeholder interests via transparent ESG practices. By fulfilling stakeholder expectations, companies bolster confidence and loyalty, hence positively influencing financial indicators such as Tobin's Q and EBITDA.

Further, the Legitimacy theory put forward by Deegan (1992) suggest that organizations utilise ESG disclosures to conform to society norms, hence preserving legitimacy and mitigating reputational risks. This linkage appeals to socially conscious investors, enhancing corporate value.

Lastly, the Signaling Theory (Spence, 1973) promotes the idea that ESG disclosures serve as indicators of a firm's dedication to sustainability and operational efficacy. Transparent reporting diminishes information asymmetry, hence attracting investors and augmenting market worth.

Collectively, these theories elucidate how ESG disclosures cultivate trust, societal endorsement, and investor assurance, hence enhancing organizational value in terms of financial and market performance indicators.

## Empirical review of Studies on Environmental, Social, and Governance (ESG) Disclosures and Corporate Performance

Empirical studies examining the relationship between ESG disclosures and corporate performance have produced mixed results, reflecting variations across regions and sectors. In Nigeria, Salisu, Sani, and Lawan (2018) investigated the impact of corporate social responsibility (CSR) disclosure on financial performance in conglomerates. Using multivariate regression analysis, they found a significant positive relationship, suggesting that CSR practices enhance profitability and market value. This aligns with stakeholder theory, which emphasizes the role of ethical practices in improving corporate outcomes.

In another study Oyedokun et al. (2019) focused on the effect of environmental accounting disclosures on the market value of industrial goods companies in Nigeria. The study employed multiple regression analysis and revealed that environmental transparency significantly enhances firm value, as measured by Tobin's Q. The findings highlight the importance of environmental accountability in driving investor confidence and aligning with market expectations for sustainable practices.

Similarly, Garba and Ahmad (2023) examined the influence of profitability on board composition and integrated reporting in Nigerian Oil and Gas firms. Using fixed and random effects models, they observed a positive relationship, indicating that higher profitability encourages firms to adopt comprehensive reporting standards, including ESG disclosures. Their study underscores the potential of ESG practices to improve governance structures and long-term financial performance.

Niyi (2023) explored the link between sustainable corporate governance and environmental disclosure in manufacturing companies listed on the Nigerian Stock Exchange. The study utilized ordinary least squares (OLS) regression and found mixed effects, with governance mechanisms enhancing transparency in some cases while showing negligible impact in others. These results point to the need for sector-specific strategies to optimize ESG reporting.

Singh (2023) investigated the impact of ESG disclosure on dividend policy and business performance in firms listed on the NSE ESG 100 Index. By employing pooled, fixed, and random effects models with panel data, the study demonstrated a significant positive relationship, indicating that robust ESG practices attract investors and improve corporate financial outcomes. The findings align with signalling theory, emphasizing the role of

transparent disclosures in reducing information asymmetry.

Beyond Nigeria, Cheng, Kim, and Ryu (2023) examined the effect of ESG-related information disclosures on firm value in China, using a fixed-effects panel regression model. Their study revealed a positive and significant relationship, suggesting that high-quality ESG disclosures enhance investor perceptions and drive market valuations. Similarly, Buallay (2021) analyzed the relationship between ESG practices and bank performance in MENA countries, finding mixed results depending on sectoral contexts and disclosure quality.

In the United States, Persakis (2023) studied the impact of climate policy uncertainty on firm performance. Using regression analysis, the research found a significant negative effect, highlighting the challenges of inconsistent policy frameworks on ESG practices. Conversely, Sharma, Panday, and Dangwal (2020) reported a positive correlation between financial success and ESG disclosure among Indian companies, demonstrating that transparent practices bolster corporate reputations and profitability.

The diverse outcomes from these studies underscore the complexity of ESG disclosures and their varying impacts on corporate performance across regions and sectors.

In the Nigerian context, the need for nuanced strategies tailored to high and low ESG disclosure regimes remains underexplored, forming the basis of this study.

Table 1 : Summary of literature review

Year	Title	Authors	Methodology	Findings	Country
2023	The Impact of ESG-Related Information Disclosures on Firm Value: Evidence from China	Cheng, Kim, & Ryu	Fixed-effects panel regression model	+ve Significant	China
2021	The Relationship Between ESG and Bank Performance in MENA Countries	Buallay	Multivariate regression, corrdisclosure index analysis	Mixed	MENA
2023	Link between Sustainable Corporate Governance and Environmental Disclosure: Evidence from Nigerian Manufacturing Companies	Niyi	Ordinary Least Squares (OLS) regression analysis	+ve/Mixed	Nigeria
2018	Corporate Social Responsibility Disclosure and Financial Performance: Evidence from Nigerian Conglomerates	Salisu, Sani, & Lawan	Multivariate regression, corrdisclosure index analysis	+ve Significant	Nigeria
2019	Impact of Environmental Accounting Disclosure on Market Value: Evidence from Nigerian Industrial Goods Companies	Oyedokun et al.	Multiple regression analysis	+ve Significant	Nigeria
2023	Influence of Profitability on Board Composition and Integrated Reporting: Evidence from Nigerian Oil and Gas Firms	Garba & Ahmad	Fixed Effects and Random Effects models	+ve Significant	Nigeria
2023	The Impact of ESG Disclosure on Dividend Policy and Business Performance: Evidence from the NSE ESG 100 Index	Singh	Pooled, fixed effects, and random effects models with panel data	+ve Significant	Nigeria

2020	Effect of Corporate Governance on Company Value: Role of Corporate Environmental Disclosure	Kamilla	Structural Equation Model-Partial Least Square (SEM-PLS) method	+ve Significant	Indonesia
2023	Climate Policy Uncertainty and Firm Performance: Evidence from US Companies	Persakis	Descriptive, correlation, and regression analysis	-ve Significant	US
2020	Correlation between Financial Success and ESG Disclosure among Indian Companies	Sharma, Panday, & Dangwal	Ordinary Least Square (OLS) method	+ve Significant	India
2022	ESG Disclosure and Firm Performance: Evidence from Italian Companies	Pulino et al.	Panel regression analysis	+ve/Mixed	Italy
2020	ESG Risk Disclosure Practices in Australia's Extractive Sector	Lokuwaduge & de Silva	Fixed and Random effect model and Content analysis	+ve Significant	Australia
2021	Impact of CSR Disclosure on Shareholder Value: Evidence from Pakistan	Chaudhry, Ramakrishnan, Sulimany, & Sharif	Pool regression analysis	+ve Significant	Pakistan
2022	ESG Disclosure and Corporate Performance: Evidence from Russian Companies	Bataeva, Kokurina, & Karpov	Descriptive, correlation, and regression analysis	+ve Significant	Russia

Researchers Compilation 2024

## METHODOLOGY

The fixed-effect panel threshold model (FEPT) proposed by Hansen (1999) is employed due to its robustness in capturing non-linear relationships within panel data. This approach allows for the identification of distinct impacts of high and low ESG disclosure regimes on corporate value, a critical dimension highlighted in recent studies (Wang, 2015; Negara et al., 2024). The FEPT model's ability to account for firm-specific heterogeneity further enhances the reliability of the findings."

### Data, Population, Sample, and Justification of the Sample

The study's population consisted of all the 53 manufacturing companies listed on the Nigerian stock exchange as of December 31, 2022. A sample of 16 firms drawn from the Oil and Gas and Industrial subsector were purposively selected based on criteria such as availability of ESG data, as well as the firms' active participation on the stock exchange as of December 31, 2022.

Table 2: Sampled Oil and Gas and Industrial Goods firm

SN	Subsector	No
1	Oil & Gas	7
2	Industrials	9
	Total	16

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## Model Specification

The study involves two subsamples (industrial goods sector and the oil and gas sector) and a full-sample (combination of the two sectors). Moreover, two measures of corporate value (Tobin's Q and EBITDA) were considered. Thus, for the purpose of robustness, six (6) competing models were estimated. The model aims to capture the relationship between green reporting and corporate value of selected industrial and oil and gas firms in Nigeria. The models are specified below with the core independent variable as environmental, social and governance (ESG) index for green reporting while the control variable includes the firm size (FSE). Meanwhile, the dependent variables are Tobin's Q (TOBQ) and earnings before interest, tax depreciation and amortization (EBITDA) as the measures of corporate value. Thus functional or implicit forms of the models are specified as follows:

### TOBQ Model

$$TOBQ_{it} = f(ESG_{it}, FSE_{it})$$

### EBITDA Model

$$EBITDA_{it} = f(ESG_{it}, FSE_{it})$$

$t = 2012, \dots, 2022$  (annual time period)

$i = 1, 2, \dots, 16$  (individual manufacturing firms)

Thus, the explicit panel data regression models are expressed as follows:

### TOBQ Model

$$TOBQ_{it} = \beta_0 + \beta_1^H ESG_{it}^H (> \gamma) + \beta_1^L ESG_{it}^L (< \gamma) + \beta_2 FSE_{it} + \varepsilon_{it}$$

### EBITDA Model

$$EBITDA_{it} = \phi_0 + \phi_1^H ESG_{it}^H (> \gamma) + \phi_1^L ESG_{it}^L (< \gamma) + \phi_2 FSE_{it} + \varepsilon_{it}$$

### Where

$\gamma$ . = Threshold

$ESG_{it}^H$ . = High ESG Disclosure regime

$ESG_{it}^L$  = Low ESG Disclosure regime

$TOBQ_{it}$ . = Tobins Q Measure of corporate value

$EBITDA_{it}$ . = Earnings Before Interest, Tax and Depreciation

## DATA ANALYSIS AND RESULTS

### Preliminary Analysis

Essentially, the preliminary analysis includes descriptive statistics and pair-wise correlation analysis.

### Descriptive Statistics

This section presents the descriptive or summary statistics of the variables being examined in the study such Tobin's Q (TOBQ), earnings before interest, tax depreciation and amortization (EBITDA), environmental, social and governance index (ESG, a measure of green reporting) and firm size (FSE).

Table 3 -: Summary Statistics

<b>Industrial Goods Firms: N = 9, T = 11</b>				
<b>Variable:</b>	<b>TOBQ</b>	<b>EBITDA</b>	<b>ESG_INDEX</b>	<b>FSE</b>
<b>Statistics</b>				
Obs.	95	95	99	95
Mean	1.478	0.083	0.462	15.825
Maximum	4.972	0.333	0.595	19.908
Minimum	-0.425	-0.331	0.000	12.665
Std. Dev.	1.254	0.120	0.117	1.697
Skewness	0.984	-0.673	-2.496	0.487
Kurtosis	3.143	4.856	10.414	3.290
<b>Oil and Gas: N = 7, T = 11</b>				
Obs.	75	76	77	76
Mean	2.435	0.117	0.505	17.888
Maximum	51.098	1.820	0.595	19.545
Minimum	-0.111	-0.600	0.000	16.387
Std. Dev.	6.150	0.247	0.099	0.644
Skewness	6.854	4.397	-2.620	-0.103
Kurtosis	53.899	33.059	11.834	2.875

Source: Researcher’s computation, (2024)

The summary statistics of the variables being examined are shown in Table 3. In the distributions of industrial goods entities, it was observed that EBITDA exhibits high level of variability judging by the mean and standard deviation such that the standard deviations appear to be above the respectively mean values. The foregoing suggests that the variables may have low predictive power as regard corporate value of the selected industrial goods firms. However, TOBQ, ESG index and firm size (FSE) may witness low variability having their standard deviation below the respective mean values, thus, demonstrating low high predictive capacity. On the other hand, the distributions oil and gas show that both the considered corporate value measures (TOBQ and EBITDA) exhibits high level of variability such that the standard deviations appear to be above the respectively mean values, thus, the foregoing suggests that the variables may have low predictive power as regard corporate value of the selected oil and gas firms. However, ESG index and FSE may witness low variability having their standard deviation below the respective mean values, thus, demonstrating low high predictive capacity. Meanwhile, it appears that EBITDA and ESG are negatively skewed while TOBQ and FSE are positively skewed judging by their respective coefficients of skewness of the industrial goods firms.



On the other hand, in the oil and gas sector, it appears that ESG and FSE are negatively skewed while TOBQ and EBITDA are positively skewed judging by their respective coefficients of skewness of the industrial goods firms. In the both industrial and oil and gas sectors, all the variables being investigated appear to be leptokurtic, having their kurtosis coefficients highly above the threshold of 3 for a normal distribution.

### Multi-collinearity Test

The variance inflation factor (VIF) was utilized to test for the existence or otherwise of multicollinearity among the independent variables. The VIF indicates the level by which the variance of estimate of an explanatory variable may get inflated resulting from the any collinearity among the explanatory variables. Essentially, the VIF demonstrates the presence or otherwise of multicollinearity among the policy variables.

Table 4-: Variance Inflation Factor

Dependent Variable: TOBQ						
Industrial Goods Firms		Oil and Gas Firms		Combined		
Variable	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance
ESG Index	1.007	0.993	1.003	0.997	1.001	0.999
FSE	1.007	0.993	1.003	0.997	1.001	0.999
<b>Mean VIF</b>	<b>1.007</b>		<b>1.003</b>		<b>1.001</b>	
Dependent Variable: EBITDA						
ESG Index	1.007	0.993	1.003	0.997	1.001	0.999
FSE	1.007	0.993	1.003	0.997	1.001	0.999
<b>Mean VIF</b>	<b>1.007</b>		<b>1.003</b>		<b>1.001</b>	

Source: Researcher’s computation (2024)

Table 4. shows the VIFs and the tolerance (1/VIF) among the explanatory variables. As a rule of thumb, a variance inflation factor below the acceptable band of 10 indicates the absence of multicollinearity among the variables. As a result, all the VIFs are below 10, thus, suggesting that there is no presence of multicollinearity (strong relationships) among the included independent variables for each of the competing models.

### Model Estimation and Results

The study involves two subsamples (industrial goods sector and the oil and gas sector) and a full-sample (combination of the two sectors). Moreover, two measures of corporate value (Tobin’s Q and EBITDA) were considered. Thus, for the purpose of robustness, six (6) competing models were estimated. To capture the effects of high-ESG index () and low-ESG index () **regimes** for green reporting, the study employed the fixed-effect panel threshold model (FEPT) proposed by Hansen (1999) using the STATA “**xthreg**” command developed Wang (2015). Thus, FEPT model provides the individual effects of ESG index on each of the selected corporate value measures (TOBQ and EBITDA) for a given threshold. The estimation results include (i) threshold estimator and confidence interval (ii) threshold effect test (iii) the fixed-effect model estimation. For the purpose of simplicity, the study focuses on a single-threshold model.

**Tobin’s Q Models:** This model focuses on the nexus between green reporting (environmental, social and governance index [ESG]) and Tobin’s Q. For the purpose of robustness, three (3) specifications were estimated involving a combined-sector model and the two (2) individual sectors.

Table 5-: ESG Index Threshold and Threshold Effect Tests

Response variable: *TOBQ*

Sector	Threshold Estimator			Threshold Effect Test	
	Threshold ()	Lower	Upper	F-Stat.	p-value
Industrial Good	0.3890	0.3530	0.4130	15.980	0.0714*
Oil and Gas	0.5480	0.5129	0.5710	12.810	0.0450**
Combined	0.3890	0.3650	0.4130	21.910	0.0100**

Source: Researcher’s computation (2024)

**Note:** The values in the parentheses () are p-values of the respective coefficients and statistics while \*\*\*, \*\* & \* denote statistical significance at the conventional 1%, 5% and 10% levels of significance, respectively.

Tables 5 demonstrates the threshold analysis of the nexus between ESG index and TOBQ. It could be observed that the oil and gas sector generated the larger ESG index threshold ( = 0.5480) as compared to that of the industrial goods sector ( = 0.3890). The higher threshold is attributable to high sensitivity of green reporting in the oil and gas sector. Moreover, ESG index thresholds lie between the lower and upper limits. Evidently, the significant results of the single threshold effect test suggest that there is indeed a significant difference in the effect of high and low regimes of ESG index on corporate value (Tobin’s Q).

Table 6 -: Fixed-Effect Panel Threshold Model Estimation Results

Response variable: Tobin’s Q

Sector	Industrials	Oil & Gas	Combined
	T = 11, N = 9	T = 11, N = 7	T = 11, N = 16
<b>Independent Variable</b>			
Constant	4.7982* (0.0570)	-4.7989 (0.2260)	2.2760 (0.3030)
	5.0212*** (0.0000)	2.7524*** (0.0060)	4.1581*** (0.0000)
	2.2977*** (0.0020)	0.9424 (0.2510)	1.5021** (0.0120)

FSE	0.2134 (0.1640)	0.1882 (0.3790)	-0.0869 (0.4980)
<b>Statistics and Tests</b>			
<b>Explanatory Power</b>			
R-squared	0.2261	0.6746	0.1285
<b>Overall test</b>			
F-stat.	8.470 <sup>***</sup> (0.0001)	4.6900 <sup>***</sup> (0.0049)	7.7100 <sup>***</sup> (0.0001)
<b>Fixed effect test:</b>			
F-stat.	12.890 <sup>***</sup> (0.0000)	24.760 <sup>***</sup> (0.0000)	19.950 <sup>***</sup> (0.0000)

Source: Researcher’s computation (2024)

**Note:** The values in the parentheses () are p-values of the respective coefficients and statistics while <sup>\*\*\*</sup>, <sup>\*\*</sup> & <sup>\*</sup> denote statistical significance at the conventional 1%, 5% and 10% levels of significance, respectively.

As shown in table 6, the significant fixed effect tests suggest that the fixed effect estimator is superior to the common effect (pooled OLS) estimator. Following the estimation results, each of high-ESG index regime ( $ESG^H, \beta_1^H = 5.0212, p = 0.0000 < 0.01$ ) and low-ESG index regime ( $ESG^L, \beta_1^L = 2.2977, p = 0.0020 < 0.01$ ) exert positive and significant effect on Tobin’s Q of the selected industrial goods firms. Meanwhile, of the selected oil and gas firms, high-ESG index regime ( $ESG^H, \beta_1^H = 2.7524, p = 0.0060 < 0.01$ ) exert positive effect on Tobin’s Q while low-ESG index regime ( $ESG^L, \beta_1^L = 0.9424, p = 0.2510 > 0.1$ ) has positive, however, insignificant effect on Tobin’s Q. The combined-sector analysis reveals that each of high-ESG index regime ( $ESG^H, \beta_1^H = 4.1581, p = 0.0000 < 0.01$ ) and low-ESG index regime ( $ESG^L, \beta_1^L = 1.5021, p = 0.0120 < 0.05$ ) exert positive and significant effect on Tobin’s Q of the selected industrial goods and oil and gas firms.

Meanwhile, in all other subsectors and the combined sectors, firm size (FSE) appears to have positive, however, insignificant effect on Tobin’s Q. Overall, there is existence of overall significance of the model judging by the F-statistics of the overall tests.

**EBITDA Models:** This model focuses on the nexus between green reporting (environmental, social and governance index [ESG]) and EBITDA. For the purpose of robustness, three (3) specifications were estimated involving a combined-sector model and the two (2) individual sectors.

Table 7-: ESG Index Threshold and Threshold Effect Tests

Response variable: EBITDA

Sector	Threshold Estimator			Threshold Effect Test	
	Threshold	Lower	Upper	F-Stat.	p-value
Industrial Good	0.3890	0.3650	0.4130	10.540	0.0467 <sup>**</sup>

Oil and Gas	0.5240	0.5000	0.5489	5.930	0.0067***
Combined	0.3890	0.3650	0.4130	6.000	.0.0400**

Source: Researcher’s computation (2024)

**Note:** The values in the parentheses () are p-values of the respective coefficients and statistics while \*\*\*, \*\* & \* denote statistical significance at the conventional 1%, 5% and 10% levels of significance, respectively.

Tables 7 demonstrate the threshold analysis of the nexus between ESG index and EBITDA. It could be observed that the oil and gas sector generated the larger ESG index threshold as compared to the industrial goods sector. The following suggests that the oil and gas sector is attributable to high sensitive of green reporting. Moreover, ESG index thresholds lie between the lower and upper limits. Like the Tobin’s Q model, the significant results of the single threshold effect test suggest that there is indeed a significant difference in the effect of high and low regimes of ESG index on corporate value (EBITDA).

Table 8-: Fixed-Effect Panel Threshold Model Estimation Results

Response variable: EBITDA

Sector	Industrials	Oil & Gas	Combined
	T = 11, N = 9	T = 11, N = 7	T = 11, N = 16
<b>Independent Variable</b>			
Constant	20.6869** (0.013)	-1.8755* (0.0790)	-1.0378 (0.6870)
	4.3136*** (0.0000)	-0.3856 (0.7830)	2.6940** (0.0150)
	1.6633** (0.044)	-0.3677 (0.7450)	1.0703 (0.1210)
FSE	-8.5069*** (0.0040)	-0.0962 (0.8030)	-0.1171 (0.4350)
<b>Statistics and Tests</b>			
<b>Explanatory Power</b>			
R-squared	0.5297	0.0939	0.0441
<b>Overall test</b>			
F-stat.	6.090*** (0.0008)	6.0800*** (0.0021)	2.4100* (0.0687)
<b>Fixed effect test:</b>			
F-stat.	3.880*** (0.0006)	4.3500*** (0.0009)	4.1200*** (0.0000)

Source: Researcher’s computation (2024)

**Note:** The values in the parentheses () are p-values of the respective coefficients and statistics while \*\*\*, \*\* & \* denote statistical significance at the conventional 1%, 5% and 10% levels of significance, respectively.

Similarly, as shown in table 8, the significant fixed effect tests suggest that the fixed effect estimator is superior to the common effect (pooled OLS) estimator. Following the estimation results, each of high-ESG index regime ( $ESG^H, \phi_1^H = 4.3136, p = 0.0000 < 0.01$ ) and low-ESG index regime ( $ESG^L, \phi_1^L = 1.6633, p = 0.0440 < 0.05$ ) exert positive and significant effect on *EBITDA* of the selected industrial goods firms. Meanwhile, of the selected oil and gas firms, each of high-ESG index regime ( $ESG^H, \phi_1^H = -0.3856, p = 0.7830 > 0.1$ ) and low-ESG index regime ( $ESG^L, \phi_1^L = -0.3677, p = 0.7450 > 0.1$ ) exert negative and statistically insignificant effect on *EBITDA*. The combined-sector analysis reveals that high-ESG index regime ( $ESG^H, \phi_1^H = 2.6940, p = 0.0150 < 0.05$ ) exerts positive and significant effect on *EBITDA* while low-ESG index regime ( $ESG^L, \phi_1^L = 1.0703, p = 0.1210 > 0.1$ ) exert positive, however, insignificant effect on *EBITDA* of the selected industrial goods and oil and gas firms.

Meanwhile, in all other subsectors and the combined sectors, firm size (FSE) appears to have negative and impact on *EBITDA* of the selected industrial goods firms while negatively insignificant effects were observed in the oil and gas firms as well as the combined-sector model. Overall, there is existence of overall significance of the model judging by the F-statistics of the overall tests.

### Summary of Hypotheses Testing Results

Following the estimation results, a summary of the tests of significance of the estimated models is provided in this section to reveal the tests of hypotheses result for the study.

Table 9-: Summary of Tests of Hypotheses Result

Green reporting index and corporate value				
	Tobin's Q		EBITDA	
Sub-Sector	DV = Tobin's Q	Stat. Sig.	DV = EBITDA	Stat. Sign.
1 Industrial	ESG – High regime	+Significant (p < 0.01)	ESG – High regime	+Significant (p < 0.01)
	ESG – Low regime	+Significant (p < 0.1)	ESG – Low regime	+Significant (p < 0.01)
2 Oil and Gas	ESG – High regime	+Significant (p < 0.01)	ESG – High regime	-Insignificant (p > 0.1)
	ESG – Low regime	+Insignificant (p > 0.1)	ESG – Low regime	-Insignificant (p > 0.1)
3 Combined	ESG – High regime	+Significant (p < 0.01)	ESG – High regime	+Significant (p < 0.05)
	ESG – Low regime	+Significant (p < 0.05)	ESG – Low regime	+Insignificant (p > 0.1)

Source: Researcher's compilation (2024).

Table 9 presents the summary of the tests of hypotheses results derived from the model estimation results. The table shows the direction of impact and test of significance of the hypotheses.

### DISCUSSION OF FINDINGS

This involves the analysis of the nexus between green reporting (environmental, social and governance) and corporate value of selected industrial and oil and gas sectors in Nigeria such six (6) models were estimated having three (3) for each of Tobin's Q and earnings before interest, tax depreciation and amortization (EBITDA). Utilizing the fixed-effect panel threshold regression analysis, the study's empirical outcomes revealed that both industrial goods and oil and gas sectors witnessed positive and significant effects of high-ESG index and low-ESG index regimes for green reporting on each of Tobin's Q and EBITDA measures of

corporate value. Meanwhile, oil and gas sector witnessed positive and consequential effect of high-ESG index regime on Tobin's Q while low-ESG index regime for green reporting ESG exerted positively significant effects on Tobin's Q. However, EBITDA responds insignificantly to high-ESG index regime and low-ESG index regimes. The combined-analysis of the selected industrial and oil and gas firms revealed positive and significant effects of high-ESG index regime on each of Tobin's Q and EBITDA. Meanwhile, low-ESG index regime exerted positively significant effect on Tobin's Q, however, positively insignificant effect on EBITDA arising from the combined analysis. It could be observed that impact arising from the combined analysis could be attributed to the prevailing impact arising from the analysis of the industrial goods sector.

## CONCLUSION

This study provides an in-depth analysis of the impact of ESG disclosure on corporate performance in Nigeria's Oil and Gas and Industrial Goods sectors, utilizing a fixed-effect panel threshold regression approach. The findings affirm that high ESG disclosure regimes exert a significant positive influence on corporate value, as evidenced by Tobin's Q and EBITDA metrics. Conversely, low ESG disclosure regimes demonstrate inconsistent effects, particularly in the Oil and Gas sector, where the predominance of downstream firms may dilute the efficacy of such practices. These outcomes highlight the critical importance of tailored ESG strategies that align with sector-specific dynamics. By bridging the gap between sustainability practices and financial performance, this research contributes to both theoretical frameworks, including signaling theory, and practical corporate governance.

## RECOMMENDATIONS

**Industrial Sector:** Companies should enhance their ESG reporting by adopting globally recognized frameworks such as the Global Reporting Initiative (GRI). This would improve transparency, bolster investor confidence, and optimize financial outcomes.

**Oil and Gas Sector:** Tailored ESG strategies are essential for downstream-focused firms. Initiatives like carbon footprint reduction, renewable energy investments, and emission reporting should be prioritized to align with global sustainability standards.

**General Corporate Practices:** Policymakers and regulatory bodies should incentivize high ESG disclosure regimes through tax benefits or public recognition programs, ensuring widespread adoption of sustainable practices.

**Future Research Directions:** Subsequent studies could explore the long-term effects of ESG practices across diverse sectors and investigate the mechanisms driving the observed sectoral differences in ESG impacts.

## Contribution to Knowledge

This study makes significant contributions to our understanding of the relationship between Environmental, Social, and Governance (ESG) scores and corporate performance across different sectors, notably Industrials and Oil & Gas. It provides detailed sector-specific insights, revealing that high ESG scores substantially enhance corporate value and profitability in the Industrial sector, underscoring the sector-specific nuances in ESG impacts.

Moreover, by distinguishing between high and low ESG scores, the research highlights the consistent positive effects of high ESG scores on financial performance metrics like Tobin's Q, while illustrating the less reliable and sector-dependent impact of low ESG scores. This analysis reinforces the argument for adopting and maintaining high ESG standards rather than merely avoiding poor scores.

Furthermore, the study enriches the literature by employing robust statistical methodologies to rigorously

assess the significance of ESG scores on financial performance. This methodological rigor not only enhances the credibility of the findings but also sets a precedent for future research in the field of corporate sustainability

and financial analysis thereby contributing substantively to both academic literature and practical corporate governance strategies."

### Implications for Future Research

The study's insights pave the way for further research into the sector-specific effects of ESG practices and the development of tailored ESG strategies that maximize financial performance. Future studies could explore the underlying mechanisms driving the observed sectoral differences and investigate the long-term impacts of ESG practices across a broader range of industries.

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