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Operational Efficiency, Environmental, Social and Governance Disclosure and Market Value of Listed Oil and Gas Companies In Nigeria

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Abstract
The study examined the mediating effect of operational efficiency in the relationship between ESG and market value of listed oil and gas companies in Nigeria for a period of ten years from 2016-2025. The study used an ex-post facto research design where secondary data was collected from the annual reports and accounts of 8 listed oil and gas companies through content analysis. ESG as an independent variable was disaggregated into environmental, social and governance disclosure while market value was represented by Tobin's Q. Operational efficiency was a mediator. Structural Equations Modelling (SEM) was used for data analysis from which inferences were drawn. Directly and indirectly, the findings showed that there was a negative and statistically insignificant effect of environmental reporting on market value while Social and governance disclosures have positive and significant effect on market value of listed oil and gas companies in Nigeria. It was concluded that operational efficiency is a significant mediator in the ESG-MV relationship. It was recommended that management of listed oil and gas companies should focus on integrating ESG into core business operations rather than treating it merely as a marketing or compliance task. By this, management can leverage ESG disclosure as a tool for operational improvement. By improving operational efficiency as a mediator, firms can achieve a higher Tobin's Q, rather than expecting disclosure alone to raise valuation.

Keywords: Environmental, Social, Governance, Operational Efficiency, Tobin's Q, Nigeria

Introduction

The global market value has experienced substantial long-term growth, rising from $2.5 trillion in 1980 to approximately $128.2 trillion in 2024, though with periods of volatility and significant regional shifts. The total value of the global market portfolio (including fixed income and private assets) was an estimated $271 trillion by the end of 2023 (Szikszai & Crouch, 2024). Africa's market value, particularly in its stock exchanges, has experienced significant growth over the past few decades, driven by economic reforms, improved governance, and high commodity prices. However, this growth has been volatile and uneven across different countries and time periods, with a peak in overall market capitalization in 2015. The years between 2000 and 2014 were characterized as the Africa rising period, during which nearly half of the world's fastest-growing economies were in Sub-Saharan Africa. Foreign direct investment (FDI) saw a substantial increase, from $10.4 billion in 2000 to approximately $54.5 billion in 2014, signalling significant market expansion. The aggregate market capitalization of Africa's top 250 companies peaked at $948 billion in 2015, but has largely trended downwards since then, reaching $564 billion by the end of March 2025 (Calderon, et al., 2025). This decline has been attributed to various factors, including currency depreciation in key economies like Nigeria and the delisting of some major multinational corporations.

The oil and gas industry in Nigeria has faced dwindling market value performance. This is associated with factors such as fluctuating global oil prices, insecurity, regulatory challenges and

policy inconsistencies, corruption and governance issues, environmental concerns and sustainability pressures, dependence on exports which makes the industry to continually be under external shocks (Tao, et al., 2020). These challenges may be ameliorated through ESG disclosure which ensures that quality information is released to the public to boost investors' confidence and enhance financial sustainability and profitability of oil and gas companies operating in Nigeria.

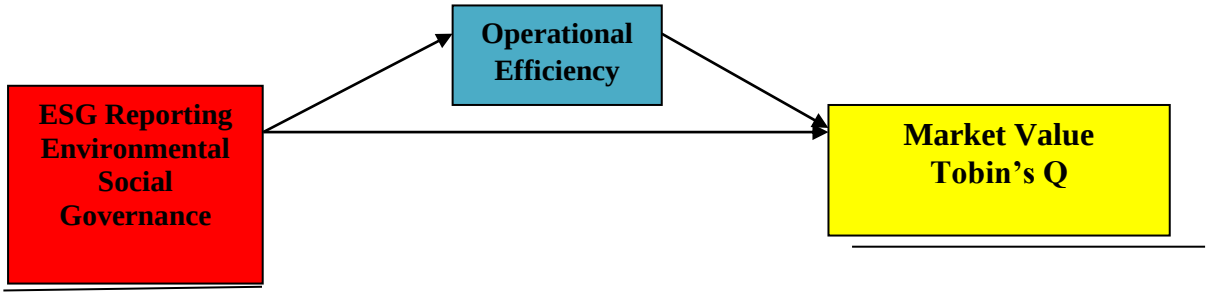
The increasing emphasis on ESG considerations has led to growing interest about the relationship between ESG and financial performance. Despite the growing body of research on the topic, there remains lack of clarity on how ESG factors directly impact financial performance of companies especially in the emerging markets. This study argues that for ESG to influence financial performance, the company should be operating efficiently to ensure that optimal performance is achieved. This is because, if a company imbibes ESG at a higher level but lacks operational efficiency, much may not be achieved in terms of accelerated financial performance. Operational efficiency can positively impact ESG disclosure by reducing environmental impacts, lead to cost savings, improved transparency, enhanced reputation and better resource allocation. By improving operational efficiency, companies can enhance their ESG performance and disclosure thereby contributing to long term sustainability and stakeholder value. This is why this study seeks to examine the effect of ESG disclosure on financial performance using operational efficiency as a mediating variable in the oil and gas industry in Nigeria.

Review of Related Literature

This section of the study discusses the conceptual framework, theoretical framework and empirical review of prior studies conducted in this area.

Conceptual Framework

Figure 1: The Schema of the Study



Source: Researcher's Conceptualisation, 2026.

Figure 1 shows the conceptual framework (schema) of the study. It shows the mediating effect of operational efficiency in the relationship between ESG disclosure and market value as represented by Tobin's Q of listed oil and gas companies in Nigeria. Details of these concepts are as follows:

Environmental, Social and Governance Disclosure (ESG)

Environmental, Social, and Governance is an investment concept and enterprise evaluation standard that focuses on corporate environmental, social and corporate governance

performance rather than traditional financial performance. The ESG framework aims to assess the sustainability of enterprises (Linnenluecke, 2022. The international ESG concept and evaluation system mainly includes three aspects: the regulations of international organizations and exchanges on ESG disclosure and disclosure, the rating of corporate ESG issued by rating agencies, and the ESG investment guidance issued by investment institutions. ESG is a value concept, investment strategy and evaluation tool that focuses on environmental, social and corporate governance performance rather than only financial performance, and is an important indicator used to evaluate the financial value of sustainable development of enterprises (Zhang & Jinbo. 2022). ESG has been widely used in information disclosure, rating, investment and other fields of listed companies, and is gradually regarded as a basic component of sustainable performance.

ESG are also widely used in corporate ratings, but there is significant disagreement among rating agencies about the ratings given to individual companies (Christensen, et al,, 2022). New energy investment is also the key word in the current market. The implementation of new energy strategy and the implementation of ESG investment theory are both important means to promote the realization of "Double Carbon" goal.

Environmental Pillar of ESG is concerned with the positive and negative effects of companies' activities on the environment as a result of the usage of the natural resources. This includes aspects such as pollution, carbon emission, reduction of biodiversity impact, ozone-depleting materials, waste management and recycling, reduction of toxic gases and chemicals, use of sustainable energy, water pollution and how the company handles these issues and reports on them.

Social pillar of ESG involves approaches connected with values and rights including labour and fundamental human rights, assurance of employee and customer health and safety, supplier ties and relations, management of diverse personnel needs and conflicts, community loyalty, product ownership and responsibility, and responsible marketing.

Governance pillar of ESG essentially captures the policies of the company, structure of the organisational hierarchy and CEO, constitution of corporate boards, rights of representatives of board members, board diversity, ethical, transparency and compensation issues, tax policies, shareholders' rights, stakeholder engagements, relationship between owners and other stakeholders and CSR strategies.

Operational Efficiency

Operational efficiency refers to the degree to which a firm's operations can achieve the goals of being right, fast, on time, productive and able to change (Slack et al., 2010). Saranga and Moser (2010) showed that increasing global competitiveness force companies to cut costs and develop operational excellence. They argue that to achieve this, organizations must structure, develop, and manage their activities in line with their objectives.

Operational efficiency impacts companies through cost reduction. Efficient operations can help companies reduce costs associated with implementing ESG initiatives. More so, operational efficiency helps to mitigate risk. Efficient operations can help

companies identify and mitigate risks associated with ESG factors. For example, a company with robust risk management processes can better manage the potential negative impacts of climate change or social issues. A company with strong ESG practices and efficient operations may experience a greater increase in profitability compared to a company with strong ESG but poor operational efficiency.

Market Value

Market value refers to the current worth of a company or asset in the financial markets, shaped by investors' perceptions and market dynamics. It indicates how much investors are willing to pay based on their evaluation of a firm's performance, growth potential, and associated risks. According to Emeka-Nwokeji and Osisioma (2019), investors' perceptions of management's capacity to adjust to shifts in the economy have an impact on a company's market value. Tobin's Q, a well-known forward-looking indicator that contrasts a company's market value with its book value, is used in this study to evaluate market value. According to Ameh and Obodo (2022), Tobin's Q is the ratio of the firm's total assets to the market value of equity, which is calculated as the share price multiplied by the number of outstanding shares, and the book value of debt, which is calculated as total assets less book equity. While a ratio below one may indicate undervaluation, a greater than one Tobin's Q indicates that the firm's market value exceeds its book value, showing strong investor confidence. The formula for TQ is as follows:
TQ = [(Market Value of common stock + Book Value of preference stock + Book Value of borrowings + Book Value of Current liabilities) / (Book value of Fixed Assets + Investment + Current Assets)] at the year end.

Theoretical Framework

The theory that underpins this study is the signaling theory. This theory is attributed to Spence (1973) in his seminal work on labour markets which demonstrated how a job applicant might engage in behaviors to reduce information asymmetry that hampers the selection ability of prospective employers. Spence illustrated how high-quality prospective employees distinguish themselves from low-quality prospects via the costly signal of rigorous higher education. Signaling theory is fundamentally concerned with reducing information asymmetry between two parties. Spence (2002) triggered an enormous volume of literature applying signaling theory to selection scenarios that occur in a range of disciplines from anthropology to zoology (Bird & Smith, 2005). Management scholars have also applied signaling theory to help explain the influence of information asymmetry in a wide range of research contexts. A study of corporate governance, for example, shows how CEOs signal the unobservable quality of their firms to potential investors via the observable quality of their financial statements (Zhang & Linbo, 2022). Diverse researchers use signaling theory to explain how firms use heterogeneous boards to communicate adherence to social values to a range of organizational stakeholders (Perez-Batres, et al., 2012).

Management scholars almost universally refer to either Spence's (1973) examination of signaling in job markets or Ross's (1977) study of managerial incentives as signals to describe the theory's central tenets. Over time, however, the key concepts underlying signaling theory have become blurred (Highhouse et al., 2007), causing some to argue that signaling theory is ill defined (Ehrhart & Ziegert, 2005). Although a number of studies integrate signaling concepts

with related management theories (Triyani et al., 2020), few existing management research has systematically described the core ideas of signaling theory and how management scholars have applied them. This gap in the literature is addressed by reviewing management research relying on signaling theory.

Firms that choose to voluntarily apply ESG disclosure also send out a signal about their ambitions (Campbell, 2006) that would lead to more transparent financial reports and reduce the information asymmetry between informed and uninformed investors (Armstrong 2010). That's why signaling prospects can be considered as explaining the agency theory assumptions. Thus, ESG disclosure could be considered as positive signal to the stakeholders as information disclosed under such disclosure is expected to be of high value and should be capable of assisting institutional investors with a way of applying sustainability information on the market to yield high return to investors.

Following this theoretical framework, it is clear that analysts' decision-making as reflected in their earnings financial analysts' forecasts is affected by the quality of the firm's financial information. Accordingly, analysts are among the most important users of financial statements and provide an avenue for the evaluation of the effects of the ESG disclosure as increased disclosure to accommodate the rising urge to disclose more information through ESG disclosure.

Empirical Review

Wang, et al. (2025) explored whether and how environment, social responsibility and corporate governance (ESG) affects firm operating efficiency (FOE). The potential moderating role of cash flow was studied in an effort to disentangle its relationships in this context. By using data on A-share listed companies from 2011 to 2020 in China, they found through panel regression analysis that a good ESG performance has a significantly positive impact on FOE. After changing the measurement of FOE, using Huazheng ESG performance and a series of stability tests such as endogenous tests, the results are still robust. Meanwhile, they also found that the primary driver of the positive impact of ESG on FOE lies in its capacity to enhance economies of scale. In addition, the study also found that ESG has a more pronounced effect on FOE for non-manufacturing enterprises and privately-owned enterprises.

Lee & Chow (2025) investigated the non-linear effects of environmental, social and governance (ESG) performance on operational efficiency and operational performance of Real Estate Investment Trusts (REITs). This study employed the pooled ordinary least squares regression on 190 listed REITs from various economies around the world over the period 2018 to 2022. This study found an inverted U-shaped association between overall ESG and individual ESG pillars and REITs' operational efficiency. The findings also revealed an inverted U-shaped association between overall ESG and REITs' operational performance. However, only the environmental pillar had a significant non-linear relationship with operational performance. The results indicated that when ESG investments are increasing from a low to moderate level, this could lead to better operational efficiency and performance.

Phan and Tran (2025) analysed environmental, social, and governance strategy implementation and operational efficiency in the banking system in Vietnam. Using a

quantitative approach, data was collected from various banks and analysed through partial least squares structural equation modelling (PLS-SEM) to establish causal relationships between the factors and ESG adoption. The findings revealed that leadership traits such as strategic vision, commitment and ESG awareness are critical drivers of ESG policies. Stakeholder groups, including regulators, customers and shareholders, exert substantial influence, while Big Data technology demonstrates transformative potential in facilitating ESG practices.

Ajape et al., (2025) evaluated the influence of environmental, social and governance (ESG) disclosures on the corporate value of listed firms in Nigeria. It used a sample of 27 listed firms on the Nigerian Exchange Group (NGX) cutting across several subsectors and with audited annual reports from 2018 to 2023 was selected. The findings from regression analysis demonstrated a strong negative influence of the three dimensions of ESG on the corporate value (TQ). The coefficients of each ESG dimension demonstrated a significant positive effect on the alternative measure of company value.

Omoregbe et al (2025) explored the dynamic relationship between Environmental, Social, and Governance (ESG) disclosure and corporate value among 16 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, it found that high ESG disclosure regimes significantly enhance corporate value across both sectors, while low ESG regimes yielded 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.

Iftikhar (2025) examined the relationship between ESG disclosure and financial performance in European energy companies from 2014 to 2023, analysing 860 firms with 3,691 firm-year observations. Using regression method, the findings revealed that while ESG disclosure shows no significant relationship with accounting performance (ROA), it has a significant negative correlation with market valuation (Tobin's Q). Individual component analysis demonstrated that social disclosure positively affects operational efficiency but negatively impacts market value, while environmental and governance disclosures show consistently negative relationships.

Romoke and Adesanm (2025) investigated the effect of environmental, social and governance (ESG) disclosure on the market performance of listed firms operating in the oil and gas sector in Nigeria. An ex post facto research design was employed to select seven firms from the period of 2014 to 2023. Share price performance was used to measure market performance. The study conducted both descriptive statistics and inferential statistics to analyze the data sourced. The model is analyzed using generalized method of moments (GMM). The results of this study disclosed that environmental disclosure ($p<0.01$) and social disclosure ($p<0.05$) have positive and significant impact on share price performance while governance disclosure showed no statistically significant effect on share price performance.

Osongbule, Zubairu and Naburgi ((2025) examined the effect of sustainability ESG reporting on the firm value of listed service companies in Nigeria. Using a panel data approach, the study analyzed secondary data from the financial reports of selected listed service companies

covering the period from 2014 to 2023. Firm value was proxied by Tobin's Q, while sustainability ESG reporting was decomposed into four dimensions: environmental, social, economic, and governance disclosures. Multiple regression analysis was employed for the analysis. The findings revealed that environmental and governance disclosures have a statistically significant positive effect on firm value, while social and economic disclosures show no significant impact.

Chen and Yu (2024) explored the impact and mechanism of ESG performance of listed companies in the environmental protection field on their operational capabilities. Based on quarterly data from 2010 to 2023, this study used the Topsis model and linear regression analysis to do empirical analysis. Findings showed that the comprehensive ESG performance of environmental protection enterprises is significantly positively correlated with their operational capabilities.

Pwagusadi (2024) examined the effect of environmental disclosure on market value of listed oil and gas companies in Nigeria. An ex-post facto research design was used and d statistics and ordinary least square regression technique were employed in the analysis of data. Environmental disclosure was proxied by environmental management policies, recognition of environmental activities, prevention and repair of environmental damage, environmental liabilities and stakeholder's engagement, while market value was proxied by Tobin's Q. Data for the study were generated from published annual accounts and reports of listed oil and gas companies in Nigeria covering the period 2009 to 2019. This study revealed that: environmental management policies have significant negative effect on market value (TQ).

Methodology

The study used an ex-post facto research design which is viewed as an inquiry to discover whether, and to what extent, a variable (event) which occurred in the past has affected the occurrence of the present event. This study used all the eight (8) oil and gas companies listed on the Nigeria Exchange Group, inferring that a consensus sampling technique (total population sampling) was used. ESG data was obtained from annual reports and accounts of the companies through content analysis while that of TQ was calculated from those financial statements as tabulated below:

Table 1: Summary of Variable Definition and Measurement

Variable	Type	Definition	Source
Tobin's Quotient (TQ)	Dependent	Market value of equity divided by book value of total assets	Kwanum, et. al, 2021; Garg (2007)
Environmental Disclosure	Independent	Environmental score or rating	Halid, et. al (2023); Shen (2023); Fu & Li (2023); Boulhaga, et. Al. (2022); Mahmut, et. Al. (2022); Al-Issa, et. Al. (2022);
Social Disclosure	Independent	Social score or rating	Halid, et. al (2023); Shen (2023); Fu & Li (2023); Boulhaga, et. Al. (2022); Mahmut, et. Al. (2022); Al-Issa, et. Al. (2022);
Governance Disclosure	Independent	Governance score or rating	Halid, et. al (2023); Shen (2023); Fu & Li (2023); Boulhaga, et. Al. (2022); Mahmut, et. Al. (2022); Al-Issa, et. Al. (2022);

Operational Efficiency	Mediating	Operating costs divided by operating income	Biriyani (2009)

Source: Researcher's compilation, 2026.

A descriptive analysis of the data was conducted to observe the individual characteristics and level of ESG disclosure and to obtain the sample characteristics among the companies for all the other variables of the study. After this analysis, regression analysis was conducted using the panel data collected from different available sources. In this study, the Structural Equation Modelling (SEM) was used to analyse the data. In SEM, the goodness of fit model needs to be satisfied before carrying out the hypothesis testing. It is the appropriate model for analysing effect such as mediation where both the direct and indirect effects are tested simultaneously.

In order to test for the relevance of the hypotheses regarding the effects of ESG disclosure on market value of listed oil and gas companies listed on the Nigerian Exchange Group, the following model was used:

$TQ_{it} = \beta_{0it} + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + e_{it}$ …….(1)

where;
TQ = Tobin's Quotient representing financial performance variable
ESG = Economic, Social and Governance Disclosure
ENV = Environmental Disclosure
SOC = Social Disclosure
GOV = Governance Disclosure
β_0= the regression constant
$\beta_1 - \beta_7$ = the regression coefficients
e = the error term in the regression model
it = company i at time, t

As the study seeks to examine the mediating effect of operational efficiency in the ESG-FP relationship, the mediating variable is brought into the model. Also, as the data is panel, the firm and company are represented in the final model as shown below:

$OE_{it} = \beta_{0it} + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + e_{it}$ …….(2)

$TQ_{it} = \beta_{0it} + \beta_1 OE_{it} + e_{it}$ …….(3)

$TQ_{it} = \beta_{0it} + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it\ t} + \beta_4 OE_{it} + e_{it}$ …..(4)

where;
OE = Operational Efficiency
it= firm i at time t

Data Analysis and Discussion of Findings

This section was used to present the data that were collected from the annual reports and accounts of the sampled oil and gas companies listed on the NGX. The processed data was then analysed, hypotheses tested and results discussed.

Table 2: Result of the Descriptive Statistics

Variables	Mean	Std Dev	Min	Max
TQ	1.902	1.357	0.25	8.18
ENV	0.6501	0.4799	0	1
SOC	0.7403	0.4366	0	1

GOV	0.6181	0.4667	0	1
OE	1.9277	1.92E+08	0	29.1212

Source: Researcher's Compilation, 2026.

Table 2 shows that Tobin's Q ratio has a mean of 1.90 and indicates the capacity of the sampled companies to undertake social, environmental and governance investments and disclose on them. The maximum value of TQ stands at 8.18 and indicates the ability of the companies to adequately cater for the provision of nonfinancial needs of the various stakeholders of the company. The table also shows that environmental disclosure has a mean of 0.6501 and a standard deviation of 0.4799. This indicates that most of the sampled companies report their environmental issues culminating to 65.01%. The minimum and maximum values stood at 0 and 1 respectively.

This suggests that while some companies report on their environmental concerns, other don't report at all Social disclosure shows a mean of 0.7403 and a variation of 0.4366. This means that social disclosure had a 74.03% disclosure among the sampled companies. This implies that social disclosure was highly reported by these companies. The minimum and maximum values were 0 and 1 respectively suggesting that some companies reported on the social interactions while others failed to do so. Governance disclosure has a mean of 0.6181 with a variation in standard deviation of 0.4667. This indicates that the sampled oil and gas companies report on their governance issues up to 46.67% showing moderate to high rate of disclosure. Meanwhile, the minimum and maximum values stood at 0 and 1 respectively implying that while some companies report on their governance issues, others don't report at all.

On operational efficiency, a mean value of 1.9277 with a standard deviation of 1.92e+8 was found. The result showed that most of the companies incurred operational cost higher than their operational incomes. This value is highly vulnerable to get as standard deviation stood very high at 1.92e+8. With minimum and maximum values of 0 and 29.1212, it could be observed that while some companies had 0 values (years of non-performance), some companies' costs cover 29 times their operating revenue. Surprisingly, it could be deduced that companies in the oil and gas sector in Nigeria suffered from operational inefficiencies as depicted by this analysis.
In order to explain the level of relationship existing amongst ESG (the independent variables) of the study on a one-on-one basis, correlations statistics was used as presented in table 3.

Table 3: Correlations Statistics

	ENV	SOC	GOV	OE
ENV	1.0000			
SOC	-0.1326	1.0000		
GOV	0.2698	-0.0095	1.0000	
OE	-0.1943	0.1303	-0.0402	1.0000

Source: Results from STATA, 2026.

Table 3 presents the strength of the relationship existing between the variables under investigation. Although some of the variables have negative relationship, the essence of presenting a correlation matrix in this study is to ascertain the strength or otherwise of the relationship amongst the independent variables. From the table, all the coefficients are low

suggesting that there is the absence of collinearity problem where independent variables are highly correlated to cause spurious results.

To test for normality of data, Shapiro-Wilk tests was used and gauged against p-value of 0.05 respectively. The result is presented as follows:

Table 4 Shapito-Wilk test for normal data

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
ENV	80	0.97694	1.583	1.006	0.15716
SOC	80	0.94859	3.528	2.763	0.00287
GOV	80	0.98873	0.773	-0.563	0.71341
OE	80	0.28916	48.792	8.518	0.00000

Source: STATA v 17 Output, 2026.

The Shapiro-Wilk test for normal data was also used against the raw data to check data normality. However, as all the p-values are below 0.05 (except environmental and governance disclosure), the raw data is said to be non-normal. However, the study applied the central limit theorem which states that when observations of a data set are well above 30, the data assumes normal, implying that normality may not be an issue as observations are 80.

Table 5 Variance Inflation Factor (VIF) Statistics

Variable	VIF	1/VIF
ENV	1.13	0.882033
GOV	1.08	0.926403
OE	1.05	0.951037
SOC	1.03	0.970386
Mean VIF	1.07	

Source: Results from STATA, 2026.

Table 5 presents the VIF results for the independent variables of the study. Variance Inflation Factor (VIF) was used to detect the presence of multi-collinearity (correlation between predictors) among the variables employed in a regression model. A VIF greater than 10 suggests too much correlation between the independent variables which is usually considered problematic (Akpa, 2011; Gujarati & Sangeetha, 2007). Therefore, since the VIF of the independent variables presented in Table 5 above are consistently less than 2, there is absence of multi-collinearity among the variables.

Regression Result for Direct Effect

Table 6: ESG and Tobin's Q

Number of Obs	80			
Prob	0.0201			
TQ	**Coefficients**	**Std Error**	**Z**	**P>/z/**
ENV	-0.0802	0.0606	-1.32	0.186
ENV-OP	-0.0854	0.0646	-1.32	0.186
SOC	0.4038	0.0753	5.36	0.000

SOC-OP	0.4299	0.0812	5.29	0.000
GOV	0.1263	0.0612	2.06	0.039
GOV-OP	0.1345	0.0653	2.06	0.039
OE	1.0648	0.0319	33.37	0.000
Constant	-0.3472	0.1371	-2.53	0.011

Source: Researcher's compilation, 2026.

Table 6 shows the direct and indirect of ESG, operational efficiency and TQ. It shows that an increase in environmental disclosure will reduce TQ by 0.0802 units. This implies that environmental disclosure has the ability to influence market value of the sampled firms negatively. As a major ESG variable, its negative effect suggests that the sampled companies have not been carrying out possible environmental protection activities as they should or were not adequately disclosed. This has the potentials of not only making their environment unsafe but will go a long way in reducing the safety needs of both their employees and the society as a whole. The indirect effect is higher than direct effect by (0.0854 -.0802) 0.0052 units or 0.52%. This implies that operational efficiency has mediating effect on the relationship between environmental disclosure and market value of the sampled oil and gas companies even though the significance has not changed.

Meanwhile, an increase in social disclosure will increase Tobin's Q by 0.4038 units. This implies that the level of disclosure on societal issues has been much popularised by companies to the extent that more disclosure may have positive effect on company market value. This disagrees with what Friedman (1974) claimed about CSR activities by stating that it will amount to mere waste of shareholders money in the short run but with the opportunity of having positive effects in the future. Meanwhile, applying operational efficiency as a mediating variable, the relationship between social disclosure and market value will increase by (0.4299-4038) 0.0261 units or 2.61%. Therefore, if oil and gas companies operate efficiently, their market values will improve.

For governance disclosure, a unit increase will also increase TQ by 0.1263. This implies that the companies did not only see it good to safeguard their environment and social status, but they also go ahead to ensure that governance structures are sustained and respected. This will make the companies have legitimacy among the communities where they are located and this may directly or indirectly affect their market value in the desired direction. This may improve the organisational structure, respect for human rights, maintain a good mix of board members split into institutional, foreign, gender and concentration of ownership. These corporate governance structures are necessary to ensure that companies enjoy orderliness and friction-less operations. If governance disclosure is mediated by operational efficiency, market value (TQ) will increase by 0.1345. This gives an increase of (0.1345 - 0.1263) 0.0082 units or 0.82%. This implies that if oil and gas companies efficiently operate by way of cost minimisation, they can improve their market values.

Discussion of Findings

Environmental Disclosure, Operating Efficiency and TQ

Findings of this study indicate that environmental disclosure has negative insignificant (coeff = -0.0802; p-value 0.186) effect on TQ of listed oil and gas companies in Nigeria. The

negative and insignificant effect of environmental disclosure on Tobin's Q indicates that while increased disclosure of environmental activities, costs, or performance such as waste management or carbon emissions may slightly reduce a firm's market value, this effect is not statistically significant and is largely ignored by investors. A negative, statistically insignificant effect of Environmental Disclosure (ED) on Tobin's Q (market valuation), mediated by Operational Efficiency, suggests that while firms invest in environmental disclosures, these actions do not immediately improve investor confidence or market valuation, often due to associated costs that fail to yield immediate, tangible efficiency gains. If the costs of implementing environmental, social, and governance (ESG) practices (disclosure) are higher than the savings generated through efficiency, the mediating effect on firm value becomes negative.

Studies that agree with this result include Ajape et al., (2025) which found a strong negative influence of the three dimensions of ESG on the corporate value (TQ). However, Iftikhar (2025) showed negative effects on market value (TQ). Li et al., (2025) found that environmental disclosure has positive effect on TQ. Romoke and Adesanm (2025) found that environmental disclosure had positive significant effect on share price and TQ. Osongbule et al., (2025) found that environmental disclosures have a statistically significant positive effect on firm value. Li et al., (2024) found a positive effect of ESG disclosure on firm value (Tobin's Q). Also, Pwagusadi (2024) found a significant but negative influence on market performance (TQ).

Social Disclosure, Operational Efficiency and TQ

Social disclosure, a component of Environmental, Social, and Governance (ESG) disclosures, has a significant positive effect on Tobin's Q, which measures a company's market value relative to the replacement cost of its assets. This positive relationship indicates that shareholders and investors value the intangible assets such as reputation, brand and long-term sustainability that are highlighted in social reports. Social disclosure which is the disclosure of information regarding a company's labor practices, workplace safety, community engagement, and human rights has a positive and significant effect on Tobin's Q (market valuation) when mediated by operational efficiency. This relationship suggests that social disclosures are not merely marketing tools but, by fostering a more efficient and productive organization, they signal to investors that the firm has enhanced long-term value potential.

Studies have shown that social disclosure has a significant positive effect on market value, as proxied by Tobin's Q. For instance, Omoregbe et al., (2025) found 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. Yeap and Kok-Haur (2025) found that social disclosure has positive effect on TQ. Romoke and Adesanm (2025) found that social disclosure had positive significant effect on share price and TQ. Bai et al., (2025) revealed that a robust ESG performance significantly enhances corporate value by strengthening brand equity and optimizing resource allocation Osongbule et al., ((2025) found that social disclosures have a statistically significant positive effect on market value. Zheng, et al (2025) indicated that ESG performance had a significant positive impact on firm value. Li et al., (2024) found a positive effect of ESG disclosure on firm value (Tobin's Q), However, Iftikhar (2025) found that social disclosure negatively impacts market value (TQ). Osongbule et al., ((2025) found that social

disclosures have a statistically insignificant effect on firm value. Amadi (2025) found the social disclosure does not explain variations in firm market value.

Governance Disclosure, Operational Efficiency and TQ

Governance disclosure which is the transparent disclosure of a company's internal control structures, board composition and ethical guidelines have significant positive effect on Tobin's Q, a key, market-based indicator of firm value. The relationship between governance disclosure and firm values as measured by Tobin's Q is significantly influenced by operational efficiency, which acts as a mechanism for translating governance, transparency, and oversight into higher market value. High-quality governance disclosure often signals effective internal controls, leading to improved resource allocation and, subsequently, better operational performance. Robust governance disclosure (e.g., disclosure of board structures, audit committee effectiveness, and remuneration policies) reduces information asymmetry between managers and investors. This transparency forces managers to act in the best interests of shareholders, reducing inefficiencies associated with the principal-agent problem. Effective governance mechanisms, as reported in annual reports, encourage efficient usage of resources and, in turn, contribute to better operational performance.

Studies such as Bai et al., (2025) revealed that a robust ESG performance significantly enhances corporate value by strengthening brand equity and optimizing resource allocation. Osongbule et al., (2025) found that governance disclosures have a statistically significant positive effect on firm value. Li et al., (2024) found a positive effect of ESG disclosure on firm value (Tobin's Q), However, Iftikhar (2025) found that governance disclosure consistently showed negative effects on market value (TQ).

Conclusion and Recommendations

This study employed an ex-post facto research design where secondary data were collected from the annual reports and accounts of 8 listed oil and gas companies through content analysis. Structural Equations Modelling (SEM) was used for data analysis to provide results from which inferences were drawn. This study shows that environmental, social, and governance (ESG) performance positively and significantly affected Tobin's Q except that environmental disclosure is negative and insignificant. It therefore concludes that sustainable practices enhance firm market valuation. This indicates investors reward higher ESG ratings with a premium, viewing these companies as lower-risk and having superior long-term growth potential. It has to be reiterated that environmental, social, and governance (ESG) factors are not just mere costs, but strategic investments positively and significantly influencing a firm's market value, as measured by Tobin's Q. This study recommended that management should focus more on minimizing operational costs without compromising product quality, as this directly boosts profitability and increases the Q ratio, streamline workflows, reduce bottlenecks and remove redundant steps in production or service delivery to increase overall efficiency, implement better inventory organisation to speed up turnover and prevent capital from being tied up unnecessarily. Management should integrate social practices such as waste reduction and ethical sourcing directly into the production and operation manuals to enhance efficiency. This can be achieved by focusing social disclosure efforts on initiatives such as energy efficiency or

waste reduction that decrease operating expenses as these directly improve operational efficiency and lead to higher market valuation. Management should not view governance disclosure merely as a compliance exercise but boards should directly link ESG performance and governance disclosures to internal operating efficiencies to ensure that higher disclosure standards translate into lower agency costs and better resource allocation. Since operational efficiency is the channel through which governance boosts value, companies should prioritize investing in technologies and processes that enhance operational efficiency. This study contributes to knowledge by bridging the gap between ESG disclosures, internal firm performance and investor valuation. It transforms the understanding of ESG from a mere compliance cost into a driver of competitive advantage.

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