

Moderating Effect of Corporate Governance on the Relationship Between Sustainability Reporting and Firm Value of Listed Oil and Gas Companies in Nigeria

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INTRODUCTION

Background of the study

The modern business environment necessitates continuous organizational adaptation to maintain competitive value in evolving markets. Firm valuation, conceptualized as the premium investors are willing to pay for corporate ownership, serves as a comprehensive indicator of both tangible assets and managerial efficacy in value creation (Massie et al., 2017; Setiadharmha & Machali, 2017). Contemporary corporate reputation management extends beyond financial metrics to incorporate environmental, social, and governance (ESG) dimensions, with robust non-financial disclosure frameworks becoming increasingly critical for capital acquisition and shareholder value optimization.

This paradigm shift has occasioned the development of sustainability reporting (SR) as an institutionalized practice for disclosing organizational impacts across economic, environmental, and social domains (Global Reporting Initiative, 2017a). As a relatively recent innovation, SR has emerged as a strategic tool for ESG risk assessment, opportunity identification, and organizational transparency enhancement (Global Reporting Initiative, 2017). The implementation of SR frameworks facilitates improved strategic planning, operational adaptability, and business continuity in an era where sustainability considerations significantly influence corporate decision-making and stakeholder expectations.

Within the Nigerian context, SR adoption remains predominantly voluntary, with mandatory compliance limited to premium board-listed entities. Current motivations for SR implementation frequently emphasize philanthropic corporate social responsibility (CSR) initiatives and reputational enhancement, raising concerns about potential greenwashing practices (Okwuosa, 2024). While extant research demonstrates positive SR-firm value correlations (Dhaliwal et al., 2011), the contingent nature of this relationship suggests the need to examine potential moderating variables, particularly corporate governance (CG) mechanisms.

Effective CG systems, comprising structured processes for accountability and transparency, serve as critical enablers of credible SR implementation (Oyerogba et al., 2024). The integration of robust CG frameworks with SR practices enhances organizational legitimacy and ethical standing (Krechovská & Procházková, 2014), while simultaneously mitigating operational, regulatory, and reputational risks (Hallikas et al., 2020; Kalia & Gill, 2023). Furthermore, strong governance architectures promote strategic decision-making horizons consistent with sustainable business principles (Post et al., 2011).

Despite growing scholarly attention, empirical findings regarding the SR-firm value relationship remain inconsistent across developed and developing economies. This study seeks to address these discrepancies by examining the interplay between SR, CG, and firm valuation within Nigeria's strategically vital oil and gas sector, providing evidence-based insights for regulatory bodies and corporate stakeholders navigating sustainability transitions.

Statement of the Problem

In contemporary business environments, sustainable development has emerged as a critical priority for organizations across diverse sectors (García-Sánchez et al., 2020). This growing focus stems from a combination of internal organizational drivers and external stakeholder expectations. Modern enterprises now view sustainability not as a secondary issue but as a fundamental strategic requirement (Dhanda & Shrotryia, 2020). By incorporating sustainability principles into core business processes, companies can synthesize financial data with comprehensive environmental, social, and governance metrics. This integrated approach enables more informed strategic decisions that align with broader organizational objectives (GRI, 2023).

Externally, demonstrated environmental stewardship correlates with improved investor perceptions, market valuation, and capital access (Dhanda & Shrotryia, 2020). However, critical analysis of Nigerian sustainability disclosures reveals substantive limitations, with reporting frequently emphasizing community engagement imagery while omitting material environmental externalities such as hydrocarbon pollution events or industrial carbon emissions (Okwuosa, 2024). This representational disparity underscores the tension between symbolic and substantive sustainability implementation.

Contemporary corporate sustainability requires balanced consideration of environmental preservation, social equity, and economic distribution alongside traditional shareholder value maximization (GRI, 2017b). The current research addresses this imperative by investigating how comprehensive sustainability reporting, moderated by effective governance structures, influences firm valuation in Nigeria's petroleum sector - an industry facing mounting sustainability pressures amid its economic significance.

The contemporary business landscape demands expansive corporate reporting that transcends traditional profit metrics to encompass ESG impacts, aligning with IFRS mandates for comprehensive disclosures (Atoyebi & Okpe, 2021). While prior studies (e.g., Bello & Abdullahi, 2024; Aondoakaa, 2015; Joseph et al., 2017) have examined aspects of sustainability reporting, significant gaps persist in the Nigerian context. Existing research often narrows its focus to isolated dimensions of sustainability (e.g., environmental or social reporting) or employs proxy variables (e.g., Nnamani et al., 2017's TPCTA/TETA) that inadequately capture the holistic GRI framework.

Moreover, mixed findings ranging from positive to negative or null effects underscore the need for further investigation on sustainability reporting and firm value. Anchored in Stakeholder Theory (Freeman, 1984) and Agency Theory (Jensen & Meckling, 1976), this study addresses these gaps by evaluating how all three GRI aligned sustainability pillars (environmental, social, economic) collectively influence firm value, while examining the moderating role of corporate governance for example audit committees in mitigating greenwashing risks (Okwuosa, 2024) and enhancing SR credibility. By focusing on Nigeria's oil and gas sector, this research aims to reconcile conflicting evidence and provide empirical clarity for policymakers and practitioners navigating the sustainability-value nexus.

Objectives of the Study

The primary objective is to investigate the moderating effect of corporate governance on the relationship between sustainability reporting and firm value of listed oil and gas companies in Nigeria. The specific Objectives are to:

- i. Examine the extent to which sustainability reporting, encompassing social, economic, and environmental disclosures, influences the firm value of listed oil and gas companies on the Nigerian Exchange Group (NGX).
- ii. Analyse how corporate governance mechanisms, specifically audit committee effectiveness, moderate the relationship between sustainability reporting (social, economic, and environmental disclosures) and firm value of listed oil and gas companies on the NGX.
- iii. Assess potential variations in the moderating effect of corporate governance across different firm size categories within the listed oil and gas companies on the NGX.

Research Questions

To achieve these objectives, the following research questions will guide this study:

- i. Does sustainability reporting, encompassing social, economic, and environmental disclosures, have a significant impact on the firm value of listed oil and gas companies on the NGX?
- ii. To what extent does corporate governance (audit committee effectiveness) moderate the relationship between sustainability reporting (social, economic, and environmental disclosures) and firm value of listed oil and gas companies on the NGX?
- iii. Are there any significant differences in the moderating effect of corporate governance (audit committee effectiveness) on the relationship between sustainability reporting (social, economic, and environmental disclosures) and firm value across various firm size categories within the listed oil and gas companies on the NGX?

Research Hypotheses

The following null hypotheses will be tested:

- H₀₁: There is no significant relationship between sustainability reporting (social, economic, and environmental disclosures) and the firm value of listed oil and gas companies on the NGX.
- H₀₂: Corporate governance (Audit committee effectiveness) does not significantly moderate the relationship between sustainability reporting (social, economic, and environmental disclosures) and firm value of listed oil and gas companies on the NGX.
- H₀₃: Firm size does not significantly moderate the effect of audit committee effectiveness on the relationship between sustainability reporting (social, economic, and environmental disclosures) and firm value across different firm size categories within the listed oil and gas companies on the NGX.

Scope of the Study

This study investigates how corporate governance moderates the relationship between sustainability reporting and firm value among Nigeria's listed oil and gas companies, using Tobin's Q (market-to-book ratio) as the primary valuation metric. This measure effectively captures investor perceptions of intangible assets like sustainability performance (Emeka-Nwokeji & Osioma, 2019) and reflects long-term market expectations better than accounting-based metrics. Analyzing panel data (2010-2024) from audited financial statements, the research employs specific operational measures for sustainability disclosures (environmental, social, economic) and governance mechanisms (audit committee's effectiveness) to assess their interactive effects on value creation in Nigeria's pivotal petroleum sector.

Significance of the Study

This research provides critical insights into the complex relationship between corporate governance, sustainability reporting, and firm value, with a specific focus on Nigeria's oil and gas sector. By demonstrating how robust corporate governance enhances the credibility and effectiveness of sustainability disclosures, the study underscores the role of ethical business practices in driving long-term value creation. These findings hold substantial relevance for multiple stakeholders:

For **investors**, the study offers a framework for evaluating firms that integrate strong governance with transparent sustainability reporting, enabling more informed capital allocation decisions that favour sustainable and ethically managed enterprises. For **regulators**, the research highlights the need for policies that promote rigorous governance standards and comprehensive sustainability disclosures, ensuring greater accountability in the sector. For **corporate management**, the findings emphasize the strategic importance of aligning governance structures with sustainability objectives to enhance reputation and stakeholder trust.

Finally, this study contributes to the broader discourse on sustainable business practices by providing empirical evidence that supports the integration of governance and sustainability reporting as key drivers of firm value in high-impact industries.

LITERATURE REVIEW

Introduction

The research began with a thorough elucidation of essential topics, including sustainability reporting and its components, company value, and corporate governance processes. The following section of the study examines key theoretical frameworks, including stakeholder theory, legitimacy theory, signalling theory, Agency theory and institutional theory, which form the basis of the link between sustainability reporting and business value. This paper analyses empirical research that evaluates the moderating influence of corporate governance on the correlation between sustainability reporting and firm value. The emphasis is on elucidating evidence regarding the moderating influence of corporate governance on sustainability reporting and its specific components, including environmental, economic, and social factors, on company value. This literature analysis aims to synthesize conceptual insights and empirical evidence about the moderating influence of corporate governance on the relationship between sustainability reporting and company value.

Conceptual Reviews

The introduction outlines the essential conceptual framework, which is further elaborated in the next sections to explain the moderating effect of corporate governance on sustainability reporting and value for the company.

Firm Value

The worth of a firm is a vital measure of a company's financial well-being and shareholder wealth. Fundamental analysis typically emphasizes corporate value to evaluate a company's entire performance. Companies endeavour to sustain their business viability and augment their firm value through strategic decision-making that immediately influences their worth (Ishak et al, 2024).

Kurshev and Strebulaev (2015) assert that Firm Value (FV), also referred to as business or corporate value, is essential in finance, economics, and business management. It signifies a company's whole value or economic worth. The core of maximizing firm value is to enhance its financial worth, consequently increasing investors' wealth through a rise in the market value of its shares. Clearly conveying a company's commitment to sustainable and responsible business practices is crucial for attracting investments, reducing risks, and improving financial performance, so maximizing its market value.

The calculation of Firm Value entails the aggregation of the actual market value (MV) of common stock and the projected market values of preferred stock and debt (Morck et al., 1988). The complex nature of assessing Firm Value involves diverse approaches and measurements, each providing distinct insights into a company's valuation. These metrics are essential for investors, financial analysts, and decision-makers aiming to attain a thorough comprehension of a company's worth.

A variety of criteria have been utilized to assess Firm Value, highlighting its complexity. The criteria encompass firm size, as noted by Hassan and Musa (2022); Tobin's Q (Marvadi, 2015; Emeka-Nwokeji & Osisioma, 2019; Onoh et al., 2023); share price, as discussed by Echobu et al. (2022); and Economic Value Added (EVA), as examined by Wijesinghe et al. (2019). These diverse criteria jointly enhance the understanding of a company's Firm Value, allowing stakeholders to make educated decisions based on a thorough evaluation of its economic worth.

Sustainability Reporting

Although a globally accepted definition of sustainability reporting does not exist, some experts and organizations have proposed their interpretations. Berthelot et al. (2012) perceive it as a voluntary disclosure of a company's

sustainable development efforts. Wensen et al. (2011) characterize it as an assessment and revelation of business performance in environmental, social, and economic dimensions.

Khavesh et al. (2012) offer a more thorough definition, highlighting the practice of measuring, revealing, and ensuring accountability to stakeholders on organizational performance in relation to sustainable development. The Dow Jones Sustainability Index, as described by KPMG (2008), characterizes sustainability reporting as a business strategy that generates long-term shareholder value through the management of economic, environmental, and social risks and opportunities.

As per GEP (2024), sustainability reporting constitutes a form of non-financial reporting that enables companies to convey their progress on diverse sustainability criteria, including environmental, social, and governance metrics, as well as the risks and impacts they may face currently or in the future.

The primary objective of sustainability reporting is to encourage concrete actions regarding projects. Sustainability reporting allows companies to communicate the good and negative impacts of their operations on the environment, society, and economy, thereby setting priorities. Organizations derive numerous competitive advantages from integrating sustainability into their fundamental strategies.

Furthermore, the Nigerian Stock Exchange (NSE, 2018) asserts that sustainability and ESG are used interchangeably, and for the purposes of the Sustainability Disclosure Guidelines (SDG), both terms encompass the comprehensive array of economic, environmental, social, and governance factors that can influence a company's capacity to implement its business strategy and generate or diminish value. Kozlowski, Searcy, and Bardeck (2015) and Harangozó, Széchy, and Zilahy (2016) asserted that sustainability reporting entails revealing a company's beneficial or bad effects on the environment, society, and economy. Sustainability reporting (SR), encompassing the disclosure of environmental, social, and economic data, has emerged as a crucial element of corporate transparency and responsibility (KPMG, 2023).

Jones et al. (2007) contend that sustainability reporting can address evolving public expectations and possibly reduce the necessity for heightened governmental intervention. Sustainability accounting, which incorporates social, environmental, and economic factors into company reporting, is strongly associated with sustainability reporting. The Organisation for Economic Co-operation and Development (OECD, 2011) defines sustainability as the maintenance of positive trends in economic growth and development. When an organization incorporates these concepts into a formal report, it is participating in sustainability reporting.

The Global Reporting Initiative (GRI, 2017) defines it as the disclosure of a company's economic, environmental, and social impacts, alongside its values, governance structure, and strategic alignment with sustainable development. This study utilizes the GRI definition, as it incorporates the three fundamental components of sustainability: environmental, social, and economic. These dimensions will function as the independent variables in this study.

Corporate Governance

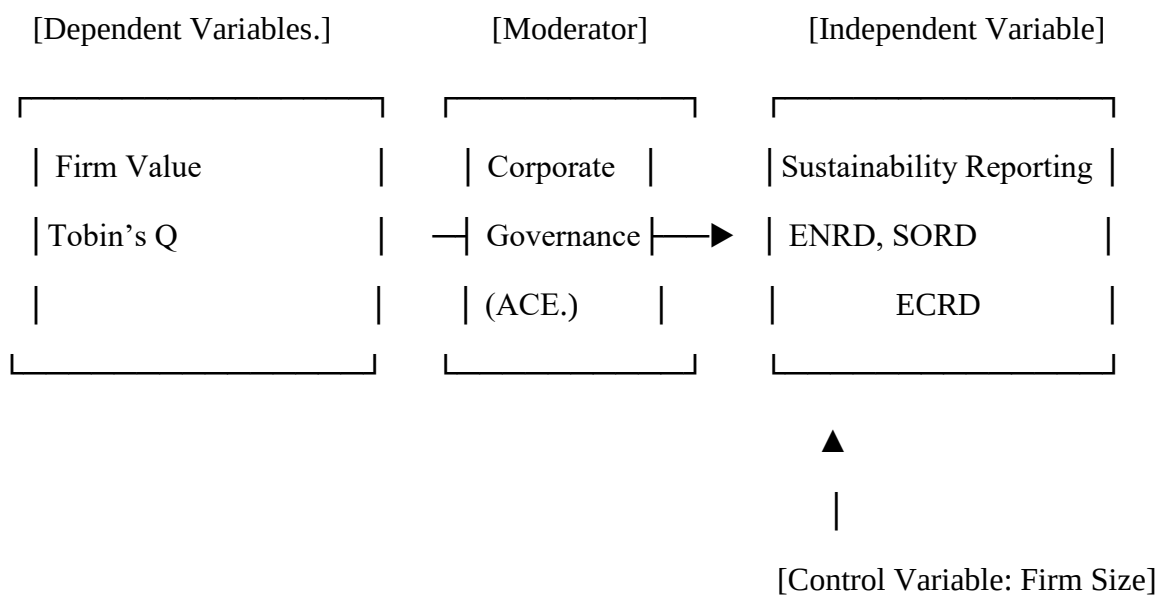
The GRI (2011) defines a sustainability report as a document issued by a firm or organization detailing the economic, environmental, and social effects of its daily operations. The OECD defines corporate governance as a complex interaction of laws, procedures, and processes that directs and controls a business. It outlines the allocation of rights and obligations among stakeholders, including the board, management, shareholders, and other relevant entities. This structure guarantees efficient decision-making, accountability, and transparency inside the organization.

The Chartered Governance Institute UK and Ireland (2024) underscores that a well-structured corporate governance framework is vital for cultivating trust and confidence among stakeholders. It delineates roles, duties, and decision-making processes, thereby mitigating the risk of conflicts of interest and ethical violations. Furthermore, strong governance procedures can enhance financial performance by facilitating efficient capital allocation, strategic decision-making, and risk management (Investopedia, 2024).

The importance of corporate governance transcends internal functions, impacting a company's outward interactions with investors, creditors, consumers, employees, and the wider community (Bashir et al., 2018). Organizations can manage risks, boost performance, and create long-term value by implementing effective governance processes (Ezazi et al, 2011).

In recent years, corporate governance has attained worldwide significance. Countries globally have acknowledged its significance in fostering economic growth, advancing sustainable development, and protecting investment interests. As firms navigate more complex and dynamic contexts, the implementation of solid corporate governance processes is essential (Grantham, 2020). This study will investigate the moderating influence of corporate governance measures, including board independence and audit committee efficacy, on the connection between sustainability reporting and business value.

2.3 Conceptual Frame work:



Theoretical Review

This study is grounded in four complementary theoretical perspectives that explain the relationship between sustainability reporting (SR), corporate governance (CG), and firm value (FV):

Stakeholder Theory

Building on Freeman's (1984) foundational work, stakeholder theory posits that corporations operate within an ecosystem of interdependent relationships with various constituencies, including shareholders, employees, communities, and environmental systems. The theory suggests that SR serves as a critical communication channel that: (1) enhances transparency (Gibler et al., 2013), (2) mitigates stakeholder conflicts (Phillips, 2003), and (3) facilitates access to essential resources (Freeman, 2010). By systematically disclosing ESG performance (KPMG, 2023), companies demonstrate commitment to stakeholder welfare, thereby building trust and securing long-term support (Deegan & Blomquist, 2006).

Legitimacy Theory

Suchman's (1995) legitimacy theory argues that organizations must align their operations with societal expectations to maintain their "license to operate." SR functions as: (1) a symbolic demonstration of compliance with environmental and social norms (Cho & Patten, 2007), (2) a risk management tool against reputational threats (Guthrie & Parker, 1989), and (3) a mechanism to secure regulatory and community support (De Villiers et al., 2016). High-quality disclosures enhance perceived legitimacy, leading to improved market positioning and financial access (Porter & Kramer, 2006).

Signalling Theory

Drawing from Spence's (1978) work, signalling theory explains how SR conveys private information about firm quality to capital markets. Credible sustainability reports: (1) differentiate responsible firms from competitors (McCarthy, 2017), (2) reduce information asymmetry (Dhaliwal et al., 2011), and (3) attract quality-sensitive investors. The theory emphasizes that CG structures (e.g., independent audit committees) enhance signal credibility by minimizing greenwashing risks (Cho & Patten, 2017).

Institutional Theory

Scott and Davis (2007) demonstrate how organizations conform to institutionalized practices within their operating environments. SR adoption reflects: (1) coercive pressures (regulatory requirements), (2) mimetic tendencies (industry benchmarking), and (3) normative expectations (professional standards). The theory predicts stronger SR-FV relationships in institutional contexts with robust sustainability norms (Ioannou & Serafeim, 2015), where CG systems help firms adapt to institutional demands (Buhr & Winn, 2008).

Agency Theory

Jensen and Meckling's (1976) agency theory provides critical insights into CG's moderating role. The framework identifies: (1) inherent conflicts between managers (agents) and shareholders (principals) regarding SR investments, (2) information asymmetry in sustainability performance, and (3) the monitoring function of governance mechanisms. Effective CG structures (e.g., independent boards, active audit committees) mitigate agency costs by: (1) aligning managerial incentives with long-term value creation, (2) ensuring accurate SR disclosures, and (3) preventing resource diversion (Eklemet et al., 2023). The theory particularly explains how strong governance enhances the value relevance of SR in emerging markets where agency problems are pronounced.

Theoretical Framework

This study employs Agency Theory and Stakeholder Theory to examine how corporate governance (CG) strengthens the relationship between sustainability reporting (SR) and firm value (FV). Agency Theory (Jensen & Meckling, 1976) explains how CG mechanisms like independent audit committees mitigate manager-shareholder conflicts by aligning sustainability investments with long-term value creation (Eklemet et al., 2023). Stakeholder Theory (Fyall et al., 2012) complements this by showing how effective CG ensures SR credibility among diverse stakeholders, transforming sustainability commitments into competitive advantage.

In Nigeria's emerging market context, robust CG plays a particularly vital moderating role due to weak institutional oversight. Strong governance structures compensate for regulatory deficiencies by: (1) validating SR authenticity in greenwashing-prone environments, (2) bridging institutional monitoring gaps, and (3) building stakeholder trust. This dual theoretical framework positions CG as both an agency conflict resolver and stakeholder value enabler, explaining how well-governed Nigerian firms convert sustainability efforts into financial performance despite challenging institutional conditions.

Empirical Review:

Numerous empirical studies have been undertaken to examine the moderating influence of Sustainability Reporting on business value across various sectors. This review synthesizes the key findings from prior research.

Sustainability Reporting and Firm Value

Sustainability reporting has emerged as a strategic imperative that significantly influences corporate valuation and market performance. Empirical studies demonstrate a strong positive relationship between comprehensive sustainability disclosures and Tobin's Q, a key indicator of market valuation (Ioannou & Serafeim, 2012). Firms with robust sustainability practices tend to achieve higher Tobin's Q ratios, suggesting that investors perceive them as more attractive and lower-risk investment opportunities (Orlitzky et al., 2003).

This valuation premium stems from several factors. First, effective sustainability reporting signals strong management quality and ethical business practices to capital markets. Second, it demonstrates the organization's commitment to addressing broader societal concerns, which enhances stakeholder confidence. These combined effects contribute to improved market perceptions of the firm's long-term viability and growth potential, ultimately translating into higher valuation multiples (Flammer, 2015).

The evidence suggests that sustainability reporting serves as an important mechanism for value creation in contemporary capital markets, with investors increasingly incorporating environmental, social and governance (ESG) factors into their valuation frameworks. This trend reflects the growing recognition that sustainable business practices contribute to both financial performance and risk mitigation.

Research examining the relationship between sustainability reporting (SR) and firm value, as measured by Tobin's Q, has yielded mixed findings. Emeka-Nwokeji and Osioma (2019) conducted a longitudinal analysis of 93 Nigerian non-financial firms from 2006 to 2015, employing pooled OLS regression to assess the impact of SR components on market value. Their results revealed a significant positive association between SR and firm value, with environmental and governance disclosures demonstrating stronger effects than social disclosures. These findings suggest that integrating comprehensive sustainability metrics into corporate reporting frameworks can enhance long-term value creation.

Conversely, Atanda et al. (2021) observed contrasting results in their study of Nigerian deposit money banks (2014–2018). Using fixed-effect regression analysis of audited financial data, they found that SR disclosures exerted a significant negative influence on firm value. This divergence in outcomes may reflect sector-specific characteristics, as banking institutions face different stakeholder expectations and regulatory pressures compared to non-financial firms. The study highlights the potential for SR implementation costs to outweigh short-term benefits in certain industries.

These contradictory findings underscore the contextual nature of SR's value relevance, emphasizing the need for industry-specific investigations into the SR-FV relationship.

Mohamed and Younis (2023) investigated the influence of social responsibility on the firm value (Tobin's Q) of 60 publicly traded companies in the Saudi Stock Market over a five-year period from 2017 to 2021. Multiple regression research indicated that SR significantly influences the valuation of companies listed on the Saudi Stock Market, thereby recommending the establishment of an accounting standard for SR disclosure.

Onoh et al. (2023) investigated the impact of sustainability disclosure practices on the firm value (Tobin's Q) of ten publicly listed Oil and Gas Companies in Nigeria, utilizing data collected over an eleven-year period (2010 to 2020) and analyzed through panel regression with a random effects model. The analysis indicates that environmental and economic disclosures contribute to value creation, however social disclosures hinder value creation for Oil and Gas businesses in Nigeria. The study advocated for complete adherence to SR laws and regulations to enhance long-term value.

Recently, Rahim et al. (2024) examined the impact of sustainability report (SR) publication on the firm value of mining businesses listed on the Indonesia Stock Exchange (IDX). This study utilized data from the financial reports of mining businesses listed on the Indonesia Stock Exchange from 2018 to 2022, employing a purposive sampling technique with a sample size of 50 companies. Various multiple linear regression techniques were employed. The findings indicate that the economic dimension of the sustainability report (SR) variable significantly influences company performance. The environmental component of the SR variable is insignificant for financial performance when assessed through the return on assets (ROA) ratio, although it strongly impacts financial performance when evaluated using the return on equity (ROE) ratio. The social dimension of the SR variable significantly impacts financial performance as measured by the return ratio.

Effective sustainability reporting offers insights into environmental, social, and economic activities, which are increasingly vital for long-term value development and overall organizational success. Empirical research indicates a positive correlation between SR and EVA (Ikechukwu & Blessing, 2020), showing that firms

dedicated to sustainable practices typically produce greater EVA. This may result from augmented brand reputation, superior stakeholder interactions, or greater risk management. Conversely, several studies have not demonstrated a substantial direct association between SR practices and EVA. Ikechukwu and Blessing (2020) investigate the impact of SR on the EVA of 21 publicly traded manufacturing firms in Nigeria from 2008 to 2019. The acquired data was analysed via Panel Least Squares (PLS) regression. The findings indicate that all SR components exert a favourable and significant influence on the EVA of the studied enterprises. Consequently, the study advocated for investing in sustainability initiatives to enhance the company's reputation and augment its economic value.

Iliemena et al. (2023) assessed the impact of SR components on the EVA of 37 publicly traded manufacturing firms in Nigeria, utilizing secondary data from 2012 to 2020, analysed through static regression (Random effect). The findings indicated that all SR components positively influence the EVA of the studied companies, with the exception of the environmental component, which does not significantly affect EVA.

Gonçalves et al. (2023) investigate the relationship between social responsibility (SR) and the economic performance (EVA) of 600 publicly traded firms in STOXX Europe during a nine-year period from 2012 to 2020. The data were analysed utilizing OLS, fixed and random effects regressions, along with a two-step system GMM estimator. All evaluations indicated that SR had a good and significant effect on EVA and suggested a transition from the traditional reporting system to the integration of fundamental sustainability activities to enhance economic performance.

Schiessl et al. (2022) assess the influence of CSR on the EVA of 4,287 major global corporations, in contradiction to the aforementioned findings. Data for the study was obtained from Eikon, a platform from Thomson Reuters, and subsequently analysed. The results indicate that CSR has a detrimental and considerable effect on the EVA of these companies.

Atoyebi and Okpe (2021) investigated the influence of corporate sustainability reporting on the financial performance of publicly listed manufacturing firms in Nigeria. The research employed ROA as the dependent variable, while economic, social, environmental, and governance disclosures served as the independent factors. The study employed a correlational research design to delineate the statistical relationship between the variables and to assess the effects of independent variables on the dependent variable. Data were obtained from the annual reports and financial statements of the 31 selected publicly listed manufacturing firms in Nigeria. The research employed generalized least squares (GLS) to evaluate the hypotheses. The results indicate that economic and environmental disclosures significantly enhance the financial performance of publicly listed industrial firms in Nigeria. Environmental disclosures exert the most influence, whereas social disclosures demonstrate the least, exhibiting a substantial negative impact during the analysed period

The moderating effect of Corporate Governance on Sustainability Reporting and Firm Value

There is a paucity of empirical information about the moderating influence of Corporate Governance on the relationship between Sustainability Reporting and Firm Value, with studies undertaken in both developed and developing nations. In Nigeria, few studies have been undertaken on this matter.

Fuadah et al. (2022) examined the impact of ownership structure on ESG disclosure, firm valuation, and business performance in Indonesia, focusing on the moderating effect of audit committees. The research utilized a quantitative methodology, examining secondary data from 140 publicly traded businesses on the Indonesia Stock Exchange from 2018 to 2020. The study employed partial least squares structural equation modelling to examine the effects of four ownership structures: foreign, public, state, and family ownership.

Rahman et al. (2024) employed profitability as a moderating variable in the relationship between social responsibility (SR) and firm value (FV) of eleven (11) publicly listed manufacturing companies in Indonesia over a five-year period from 2016 to 2020. The acquired secondary data was analysed using multiple regression. The analysis reveals that the disclosure of social responsibility significantly influences firm value (Tobin's Q), and that profitability enhances the beneficial effect of social responsibility on firm value.

This research conducted by Iskandar et al. (2023) analysed the influence of the quality and quantity of sustainability disclosures on business value in Indonesia, while assessing the moderating effect of good corporate governance (GCG). This study utilized a cross-sectional dataset of companies listed on the Indonesian Stock Exchange from 2017 to 2021 to investigate if Good Corporate Governance (GCG) enhances the association between sustainability disclosures and firm value.

Iskandar et al. (2023) investigate the moderating effect of effective corporate governance on the relationship between the quality and quantity of sustainability reporting and firm value (Tobin's Q) of publicly listed Indonesian companies over a five-year period. Corporate governance was represented by the board of commissioners' size, the ratio of independent commissioners, and the frequency of audit committee meetings. Multiple linear regression was employed for analysis, demonstrating that SR quality and quantity strongly influence Tobin's Q, but only Board Independence significantly moderates the relationship between SR and FV.

Novitasari and Puspawati (2022) investigate the moderating influence of financial performance (ROA) on the relationship between corporate governance (CG) and corporate social responsibility (CSR) and firm value (FV) of eighty-two (82) publicly listed Indonesian firms in 2020. The analysis utilizing multiple linear regression revealed that the audit committee, as a corporate governance proxy, significantly affects firm value, and that return on assets moderates the impact of corporate governance on firm value. Likewise, the Independent board of commissioners and CSR do not influence FV, ROA cannot mitigate the impact of the audit committee, and FP cannot moderate the effect of CSR on FV. Employing Chief Executive Officer Power (CEOP) as a moderating variable.

Na et al. (2022) investigate the relationship between the quality of Corporate Social Responsibility (CSR) disclosure and financial performance (FP), while also exploring the moderating effect of CEO tenure on the relationship between CSR and Firm Value (FV) among 3,248 Chinese publicly listed companies over a seven-year period (2014 to 2020). The data was analysed using OLS regression. The findings indicated that SR has a favourable and significant effect on FP, but CEO power adversely affects the relationship between CSR and both FP and FV.

Duan et al. (2023) investigated the correlations between ESG performance and corporate values, focusing on the mediating influence of financial restrictions and the moderating effect of R&D investment intensity. The research sample comprises imbalanced panel data from listed manufacturing businesses in Shanghai and Shenzhen A-shares, spanning from 2009 to 2021, totalling 16,185 observations. This study empirically examines how ESG performance influences the enterprise value of manufacturing firms utilizing STATA 16.0 software. The findings indicate that the ESG performance of manufacturing enterprises significantly enhances company value. Financing limitations serve as a partial middleman between ESG performance and company value. The intensity of R&D expenditure negatively moderates the association between ESG performance and the enterprise values of manufacturing enterprises. The heterogeneity analysis reveals that the positive effect of ESG performance on corporate value is more significant in eastern China, among non-state-owned enterprises, and within significantly polluting industries.

Khunkaew et al. (2023) examined the impact of social responsibility (SR) and gender diversity on corporate performance, specifically profitability and value, within the ASEAN region, encompassing Thailand, Malaysia, Indonesia, and the Philippines, over a decade (2010 to 2019). Profitability was measured using return on assets (ROA), while firm value was assessed through Tobin's Q. The analysis, conducted via logit regression, revealed that SR has a positive and significant effect on both profitability and firm value, with gender diversity moderating these relationships.

Recently. Bello and Abdullahi (2024) examined the moderating effect of corporate governance on the relationship between sustainability reporting and the firm value of publicly listed manufacturing companies in Nigeria. Secondary data for 36 chosen organizations was sourced from the Nigerian Exchange Group (NGX) database for a period of eleven years, from 2012 to 2022, and analysed using descriptive statistics and a two-step GMM approach. The findings indicated that SR has a positive and significant effect on EVA, while it does

not affect Tobin's Q. Additionally, the research showed that none of the added CG mechanisms had a moderating effect on either of the FV proxies utilized.

RESEARCH METHODOLOGY

Research Design

The research design selected for this study is ex-post facto. According to Kerlinger (1970), ex-post facto research, also referred to as causal comparative research, is utilized when the researcher seeks to establish a cause-and-effect relationship between independent and dependent variables to determine a causal relationship between them. This particular research design was chosen because of its suitability for this specific investigation.

Population of the Study

The population of this study consists of all the listed Oil and Gas companies on the Nigerian Exchange Group (NGX) as at 26th of July 2024. The total number of Oil and Gas Companies on this date was nine (9).

Sample Size and Sampling Technique

The sample size for the study is Seven (7) Oil and Gas Companies listed on the NGX, drawn from the population shown in table 3.1 above, using judgmental sampling technique. The choice of judgmental sampling technique was to capture the effect of sustainability reporting, corporate governance on firm value for the period of fifteen (15) years. These periods emphasized and greatly brought to the limelight the importance of sustainability reporting. In order for the analysis to cover the scope, only Oil and Gas Companies that were listed upward of fifteen years and above were selected.

Source and Method of Data Collection

The research utilized secondary data sourced from the financial statements and annual accounts of the sampled Oil and Gas Companies for the period 2010 to 2024 (26th July, 2024). The information relating to the TQ, SORD, ECRD, ENRD, ACE and FSIZE were computed from the time series and cross-section data that were collected.

Techniques for Data Analysis:

The research utilized multiple regression analysis. The researcher applied the Generalized Least Square (GLS) for the analysis of the panel data that were both cross-sectional and time series in nature. The GLS estimation is an efficient method for estimating the unknown coefficients of a linear regression model when the observations have unequal variance and there is a certain degree of correlation between the observations (Baltagi, 2011). It was used because it relaxed some of the assumptions of the OLS regression, specifically the assumption of normality of data, making it suitable for the present study.

Empirical Model Specification:

This study employs Tobin's Q ratio as a proxy for firm value. To investigate the moderating effect of corporate governance on sustainability reporting and firm value, environmental, social, and economic reporting indices, based on GRI G4 guidelines, are utilized as independent variables. Board Independence and Audit committee effectiveness are the moderators. The Firm size and leverage are included as control variables to account for differences in reporting levels across firms of varying sizes. This approach aligns with the findings of Awan (2018), who demonstrated a strong correlation between firm size and firm value.

To examine the direct relationship between sustainability reporting and firm value, we employ the following linear regression model:

$$TQ_{it} = \beta_0 + \beta_1 SORD_{it} + \beta_2 ECRD_{it} + \beta_3 ENRD_{it} + \epsilon_{it} \text{----- (1) (Base model)}$$

The next model investigates the moderating effect of corporate governance (Audit Committee effectiveness) on the relationship between sustainability reporting (Social reporting disclosure, Economic reporting disclosure and Environment reporting disclosure) and firm value (Tobin's Q):

$$TQ_{it} = \beta_0 + \beta_1 SORD_{it} + \beta_2 ECRD_{it} + \beta_3 ENRD_{it} + \beta_5 SORD * ACE_{it} + \beta_6 ECRD * ACE_{it} + \beta_7 ENRD * ACE_{it} + \epsilon_{it} \text{---(2) (Moderation model)}$$

The subsequent model incorporated firm size as a control variable to analyze the moderating effect of corporate governance (Audit Committee effectiveness) on the relationship between sustainability reporting (comprising social, economic, and environmental disclosures) and firm value (measured by Tobin's Q).

$$TQ_{it} = \beta_0 + \beta_1 SORD_{it} + \beta_2 ECRD_{it} + \beta_3 ENRD_{it} + \beta_4 SORD * ACE_{it} + \beta_5 ECRD * ACE_{it} + \beta_6 ENRD * ACE_{it} + \beta_7 FSIZE_{it} + \epsilon_{it} \text{---(3) (Full model)}$$

Where:

$TQ_{i,t}$ = Tobin's Q

β_0 = constant term

$\beta_1 SORD_{it}$ = Social Reporting Disclosure

$\beta_2 ECRD_{it}$ = Economic Reporting Disclosure

$\beta_3 ENRD_{it}$ = Environmental Reporting Disclosure

$\beta_4 ACE_{it}$ = Audit committee effectiveness

$\beta_5 FSIZE_{it}$ = Firm size

$\epsilon_{i,t}$ = error term

$\beta_1, \beta_2, \beta_3, \beta_4, \text{ \& } \beta_5$ = beta coefficient

Table 3.3: Measurement of Variable

Variable abbreviation	Variable definition	Measurement	Estimate	Expected relationship	Source
TQ	Tobin's Q	Dependent Variable	Market capitalisation plus total debts divided by total asset	\	(Umeh et al., 2020;, Onoh et al., 2023)
SORD	Social Reporting Disclosure	Independent Variable	Average aggregate disclosure level using 1 and 0 for disclosure and non-disclosure, respectively.	+	(Khan et al.,202, Farisyi et al.,2022, Babangida,2023, Fatma et al.,2019 and Ratanacharoenchai & Rachapradit, 2017).

ECRD	Economic Reporting Disclosure	Independent Variable	Average aggregate disclosure level using 1 and 0 for disclosure and non-disclosure, respectively.	+	(Khan et al.,202, Farisyi et al.,2022, Babangida,2023, Fatma et al.,2019 and Ratanacharoenchai & Rachapradit, 2017).
ENRD	Environmental Reporting Disclosure	Independent Variable	Average aggregate disclosure level using 1 and 0 for disclosure and non-disclosure, respectively.	+	(Khan et al.,202, Farisyi et al.,2022, Babangida,2023, Fatma et al.,2019 and Ratanacharoenchai & Rachapradit, 2017).
ACE	Audit Committee Effectiveness	Moderating Variable	Number of audit committee meetings held during the year.	+	(Alqatamin, R. M.,2018).
FSIZE	Firm size	Control	Natural Log of Total Assets	+	(Ucheagwu et al., 2019,Awan,2018,Nekhili, et al.,2017, Chang, 2015)

Source: Researcher's compilation, 2025.

Data Presentation and Analysis

Introduction

This section presents the data and empirical analysis of the moderating effect of corporate governance on sustainability reporting firm value of selected oil and gas companies listed on the Nigeria Exchange Group. The section begins with a descriptive analysis of the data, before conducting a preliminary analysis using Panel ordinary least Square (POLS) estimator. The POLS estimator is diagnosed for various specification issues, and appropriate correction made to the model.

Descriptive Analysis

The descriptive analysis explores the data for its distribution, centralisation, and dispersion pattern. Thus, measure of central tendency (mean and median), dispersion (variance and standard deviation), bivariate correlation matrix, and distribution statistics (i.e. skewness, kurtosis, normality test) are reported.

Summary Statistics

Table 4.1 report the summary statistic with a focus on the mean, median, standard deviation, minimum and maximum value. The test also reports a test for deviation from the normality of each variable considered in this study.

Table 4.1: Summary Statistics

VARIABLE	OBS.	MEAN	MED	MIN	MAX	STD. DEV.	SKEW	KURT	JB	JB PROB.
LOGTQ	105	2.444	2.726	-0.705	4.2337	1.2138	-1.3526	4.0077	36.5	0.0000
SORD	105	0.857	1	0	1	0.3516	-2.0412	5.1667	93.5	0.0000
ECRD	105	0.676	1	0	1	0.4702	-0.7531	1.5671	18.9	0.0001
ENRD	105	0.276	0	0	1	0.4493	1.00113	2.0023	21.9	0.0000
ACE	105	3.743	4	0	7	1.1096	-0.795	5.2511	33.2	0.0000
FSIZE	105	7.88	7.763	6.943	9.7189	0.534	1.31689	4.7587	43.9	0.0000

Source: Researcher's Compilation 2025

The analysis indicates that the firm value, measured by Tobin's Q (LOGTQ), varies from -0.705 to 4.2337, with an average firm value of 2.444. The skewness, kurtosis, and Jarque-Bera statistic indicate the non-normality of the cross-sectional time series variable present in the data. The summary statistics indicate that most of the selected oil and gas companies engage more in social reporting disclosure (SORD), with an average disclosure index of 0.86, followed by economic reporting disclosure (ECRD), which has an average disclosure index of 0.68. Environmental reporting disclosure (ENRD) ranks lowest, with an average disclosure index of 0.28. The effectiveness of the audit committee (ACE) is reflected in an average of 3.74 meetings held annually, with a maximum of 7 meetings recorded. The data indicates that firm size ranges from 6.94 to 9.72, with an average size of 7.88.

Correlation Matrix

The correlation matrix is utilised to evaluate the degree of association between the dependent and independent variables in the study, as well as among the independent variables. The relationships among the study variables are outlined below.

Table 4.2 Correlation Matrix

VARIABLES	LOGTQ	SORD	ECRD	ENRD	ACE	FSIZE
LOGTQ	1.00					
SORD	-0.11	1.00				
ECRD	0.19	0.59	1.00			
ENRD	0.29	0.25	0.29	1.00		
ACE	0.02	-0.10	-0.12	-0.20	1.00	
FSIZE	0.16	0.22	0.35	0.26	0.18	1.00

Source: Researcher's Compilation, 2025

Table 4.2 reveals a strong positive correlation between Economic Reporting Disclosure (ECRD) and Social Reporting Disclosure (SORD). This finding suggests a potential association between economic development and

a higher level of social responsibility in corporate reporting. Furthermore, a moderate positive correlation was observed between Environmental Reporting Disclosure (ENRD) and firm size, indicating a tendency for larger firms to exhibit greater levels of environmental reporting compared to their smaller counterparts.

Residual Diagnostic

While the Ordinary Least Squares (OLS) estimator provides Best Linear Unbiased Estimators (BLUE) under the classical assumptions of the linear regression model, the residuals may exhibit deviations from these assumptions. These potential violations, including multi-collinearity, non-normality, heteroscedasticity, autocorrelation, and cross-sectional dependence of the error term, can lead to inefficient estimates, although the OLS estimates remain consistent. The results of the residual diagnostic tests are presented in the Appendix and summary of findings presented as follow.

Multi-collinearity Test

To assess potential multi-collinearity among the independent variables, Variance Inflation Factors (VIFs) were computed for the OLS models (appendix). As outlined by Gujarati and Porter (2009), a common guideline suggests that VIF values exceeding 10 or tolerance values below 0.10 may indicate strong evidence of multi-collinearity.

The results of the centred multi-collinearity test, presented in Table 4.6 (excluding the constant term from the analysis), were examined to identify any potential issues.

Table 4.3: Variance Inflation Factor

VARIABLE	VIF	1/VIF
SORD	1.58	0.634234
ECRD	1.73	0.578576
ENRD	1.27	0.786096
ACE	1.16	0.861131
FSIZE	1.95	0.513166
Mean VIF	1.48	

Source: Researcher's Compilation 2025

Table 4.3 indicates that the VIF values for the majority of variables fall within a range of 1.16 to 1.95, with none exceeding 2. The mean VIF of 1.48 suggests mild multi-collinearity, as it exceeds 1 but remains below 2. While these VIF values are greater than 1, they are not sufficiently close to the critical threshold of 10 to indicate severe multi-collinearity issues.

It is important to note that the analysis in Table 4.3 was conducted under the assumption that the intercept (constant term) is not a legitimate variable and was therefore excluded from the estimation.

Normality Test

The normality of the residuals was assessed using a combination of visual inspection of histograms and the Jarque-Bera test. Results indicate that the null hypothesis of normality could not be rejected for the basic OLS model (appendix) at the 10% significance level. However, for the extended OLS model with corporate

governance and firm size, the Jarque-Bera test, with p-values of 0.00053 and 0.00515 respectively, led to the rejection of normality at the 1% significance level.

Serial Autocorrelation

To investigate the presence of serial autocorrelation, both the Wooldridge autocorrelation test and the Breusch-Godfrey Lagrange Multiplier (LM) test were conducted for all three models. The results consistently indicated significant first-order autocorrelation (AR (1)) in the residuals. The null hypothesis of no first-order autocorrelation was rejected at the 1% significance level for all models.

Heteroscedasticity

The presence of heteroscedasticity was assessed using the likelihood ratio (LR) test. For the three OLS model estimated (appendix), the LR test statistics were 127.19, 145.90, and 133.68, respectively, with corresponding degrees of freedom of 16.18, 20.16, and 28.69. These results led to the rejection of the null hypothesis of homoscedasticity at the 1% significance level, indicating the presence of heteroscedasticity across firms or periods.

Cross-Sectional Dependence

Three tests were employed to assess cross-sectional dependence: Breusch-Pagan LM, Pesaran Scale LM, and Pesaran CD. For the models in the basic OLS model and the one extended with corporate governance variable and firm size, the test results did not provide sufficient evidence to reject the null hypothesis of no cross-sectional dependence at the conventional 10% significance level.

However, for the extended OLS model involving on corporate governance variable, the Breusch-Pagan LM, Pesaran Scale LM, and Pesaran CD test statistics (66.35, 6.997, and 3.81, respectively) indicated significant cross-sectional dependence at the 10% significance level.

Hausman Specification Test

In panel data analysis, the choice between fixed effects (FE) and random effects (RE) models is crucial. The Hausman test examines the correlation between individual effects and regressors, with the null hypothesis being no correlation (random effects) and the alternative hypothesis being correlation (fixed effects).

For the basic OLS results, the one-way Hausman test, assuming strong individual firm effects and weak period effects, rejected the null hypothesis of random effects at the 5% significance level (chi-square value of 12.84, p-value of 0.0050). This suggests that the fixed effects (FE) estimator might be more appropriate. However, given the relatively small sample size ($n = 7$) compared to the time dimension ($t = 15$), the FE estimator may not be consistent. Therefore, the Feasible Generalized Least Squares (FGLS) estimator was employed as an alternative, addressing potential inconsistency issues while maintaining efficiency.

For the extended model with corporate governance moderating effects, the initial Hausman test resulted in a positive definite matrix, likely due to finite sample properties. Following Hauser (2019), a restricted Hausman test was performed after removing the interaction terms. This restricted test failed to reject the null hypothesis of random effects at the 5% significance level (chi-square value of 9.33, p-value of 0.0533). Therefore, the RE model was deemed appropriate for this model. However, due to the potential inconsistency of the RE model in small N and large T scenarios, the FGLS estimator was used.

For the extended OLS model moderating for corporate governance variable and controlling for firm size effects, similar issues with the Hausman test were encountered. A reduced version of the Hausman test failed to reject the null hypothesis at the 10% significance level (chi-square value of 5.198, p-value of 0.3923). Thus, the RE model was supported. However, given the potential inconsistency of the RE model in small N and large T scenarios, the FGLS estimator was employed.

Empirical Analysis

The panel OLS regression was re-estimated using the Feasible Generalized Least Squares (FGLS) method. The results of this analysis are presented in Table 4.4.

Table 4.4 FGLS Estimates				
	Dependent Variable: LogTQ			
Variable	Coef.	Std. err.	z	P>z
SORD	0.0934	0.0621	1.5000	0.1320
ECRD	-0.1480	0.0476	-3.1100	0.0020
ENRD	0.1323	0.0407	3.2500	0.0010
C	3.2211	0.0614	52.4600	0.0000
Fit Statistics				
Wald Chi2				16.67
Prob>Chi2				0.0008

Source: Researcher's Compilation 2025

Table 4.4 presents the findings of a model investigating the direct relationship between sustainability reporting disclosures and firm value in listed Nigerian oil and gas companies.

The Wald chi-square statistic of 16.67 (p-value = 0.0008) provides strong evidence that the model coefficients are jointly statistically different from zero at the 1% significance level, indicating a good overall model fit.

Table 4.5 below, presents the findings of the Feasible Generalized Least Squares (FGLS) regression analysis.

Table 4.5: Feasible GLS Estimate				
	Dependent Variable: LogTQ			
Variable	Coef.	Std. err.	z	P>z
SORD	-2.054	0.563	-3.650	0.000
ACE	0.008	0.127	0.060	0.953
SORD*ACE	0.354	0.140	2.530	0.012
ECRD	1.722	0.272	6.340	0.000
ECRD*ACE	-0.323	0.073	-4.410	0.000
ENRD	0.784	0.433	1.810	0.070
ENRD*ACE	-0.091	0.108	-0.840	0.400

_cons	2.635	0.523	5.040	0.000
Fit Statistics				
Wald Chi2				31.88
DF				7
Prob>Chi2				0.0000

Source: Researcher's Compilation 2025

The results indicate that Audit Committee Effectiveness (ACE) significantly moderates the positive relationship between social reporting disclosure and firm value at the 5% significance level (p-value = 0.012). A simultaneous 1% increase in both ACE and social reporting disclosure is associated with a 0.35% increase in firm value. Conversely, a 1% increase in social reporting disclosure in the absence of effective audit committees is significantly associated with a 2.05% decrease in firm value at the 1% significance level (p-value = 0.000).

ACE significantly moderates the relationship between economic reporting disclosure and firm value negatively at the 1% significance level (p-value = 0.000). A simultaneous 1% increase in both ACE and economic reporting disclosure is significantly associated with a 0.32% decrease in firm value. In contrast, a 1% increase in economic reporting disclosure in the absence of effective audit committees is associated with a 1.72% increase in firm value at the 1% significance level (p-value = 0.000).

The moderating effect of ACE on the relationship between environmental reporting disclosure and firm value is weak and statistically insignificant at the 10% significance level (p-value = 0.364). A simultaneous 1% increase in both environmental reporting disclosure and ACE is associated with a negligible -0.09% decrease in firm value at the 10% significance level (p-value = 0.400). In the absence of effective audit committees, a 1% increase in environmental reporting disclosure is associated with a moderate 0.78% increase in firm value at the 10% significance level (p-value = 0.070).

The Wald chi-square statistic of 31.88 provides strong evidence for the overall fit of the moderating effect model at the 0.1% significance level (p-value = 0.0000).

Table 4.6 examines the sensitivity of the results presented in Table 4.5 to the inclusion of firm size as a control variable.

Table 4.6: Feasible GLS Estimate				
	Dependent Variable: LogTQ			
Variable	Coef.	Std. err.	z	P>z
SORD	-2.247	0.591	-3.800	0.000
ACE	0.013	0.130	0.100	0.918
SORD*ACE	0.381	0.147	2.590	0.010
ECRD	1.887	0.296	6.380	0.000
ECRD*ACE	-0.356	0.078	-4.550	0.000

ENRD	0.903	0.451	2.000	0.045
ENRD*ACE	-0.112	0.111	-1.010	0.312
FSIZE	0.092	0.125	0.740	0.462
_cons	1.909	1.089	1.750	0.080
Fit Statistics				
Wald Chi2				38.32
DF				8
Prob>Chi2				0.0000

Source: Researcher's Compilation 2025

Table 4.6 indicates that the moderating effect of corporate governance on the relationship between sustainability reporting and firm value is not significantly influenced by firm size (p-value = 0.462). Specifically, a 1% increase in firm size is associated with an insignificant 0.092% increase in firm value at a significance level exceeding 10%.

Furthermore, Table 4.6 suggests that the relationship between sustainability reporting and firm value may be relatively insensitive to firm size, as firm value itself may not be strongly dependent on the absolute size of the firm.

Robustness Test

A robustness test was conducted using the actual Tobin's Q measure of firm value instead of the natural logarithm of the Tobin's Q. The empirical result above utilized the natural logarithm of raw Tobin's Q for scale uniformity. Table 4.10 presents the results obtained when using raw Tobin's Q data compared with when using its natural logarithm.

Table 4.7: Feasible GLS Estimate						
	Dependent Variable: LogTQ			Dependent Variable: TQ		
Variable	Coef.	Std. err.	P>z	Coef	Std. err.	P>z
SORD	-2.2475	0.5909	0.0000	-1107.06	1155.625	0.3380
ACE	0.0135	0.1302	0.9180	198.9314	251.175	0.4280
SORD*ACE	0.3812	0.1472	0.0100	133.5049	300.996	0.6570
ECRD	1.8872	0.2959	0.0000	2268.437	867.926	0.0090
ECRD*ACE	-0.3557	0.0782	0.0000	-382.809	202.203	0.0580
ENRD	0.9034	0.4506	0.0450	3094.93	1591.557	0.0520
ENRD*ACE	-0.1120	0.1107	0.3120	-627.83	397.020	0.1140

Fsize	0.0921	0.1252	0.4620	-277.473	145.586	0.0570
_cons	1.9091	1.0890	0.0800	2404.915	1352.153	0.0750
Fit Statistics				Fit Statistics		
Wald Chi2			38.32	Wald Chi2		24.39
DF			8	DF		8
Prob>Chi2			0.0000	Prob>Chi2		0.0020

Source: Researcher's Compilation 2025

Table 4.7 demonstrates that, with the exception of the impact of firm size (which exhibits a negative relationship when using raw Tobin's Q), the sensitivity of the results to the measurement of Tobin's Q is minimal across the other predictor variables.

However, Table 4.7 also reveals a potential issue: the use of raw Tobin's Q may lead to inflated coefficient estimates and increased standard errors.

DISCUSSION OF FINDINGS

The study hypothesized that environmental reporting disclosure does not significantly affect firm value. However, the results demonstrated a strong positive and statistically significant relationship (p -value = 0.0020) between environmental reporting and firm value at the 1% significance level, leading to the rejection of the null hypothesis. This indicates that increased environmental reporting disclosure is positively associated with higher firm value. The findings suggest that a 1% increase in environmental reporting disclosure is associated with a 13% increase in firm value, and vice versa. This strong positive relationship can be attributed to factors such as increased investor confidence resulting from transparent communication of environmental investments and corporate social responsibility initiatives. These findings align with the research of Mohamed & Faouzi (2014), Aondoakaa (2015), Chang (2015), Plumlee et al. (2015), Raymond et al. (2016), Tarmuji et al. (2016), Joseph et al. (2017), Li et al. (2017), and Nnamani et al. (2017), while contradicting the findings of Talebnia et al. (2013), Qiu et al. (2014), Utami (2015), Ratri et al. (2017), and Ratanacharoenchai et al. (2017).

Similarly, the study hypothesized that economic reporting disclosure does not significantly affect firm value. However, the results revealed a strong inverse and statistically significant relationship (p -value = 0.0010) between economic reporting disclosure and firm value at the 1% significance level, leading to the rejection of the null hypothesis. This indicates that increased economic reporting disclosure is negatively associated with firm value. The findings suggest that a 1% increase in economic reporting disclosure is associated with an approximate 15% decrease in firm value, and vice versa. This negative relationship may be attributed to the extensive reporting requirements mandated by the adopted GRI G4 reporting guidelines, potentially leading to increased compliance costs and reduced flexibility for firms. These findings are consistent with the research of Utami (2015) and Kuzey et al. (2017), while contradicting the findings of Stacchezzini et al. (2016) and Ratanacharoenchai et al. (2017).

The study hypothesized that social reporting disclosure does not significantly affect firm value. The results showed a weak positive relationship between social reporting disclosure and firm value, although this relationship was not statistically significant at conventional levels (p -value = 0.1320). Therefore, the null hypothesis could not be rejected. These findings are consistent with the research of Fatemi et al. (2016), Kwanbo (2011), Carnevale et al. (2012), Talebnia et al. (2013), and Ratanacharoenchai et al. (2017), while contradicting the findings of Li et al. (2017), Tarmuji et al. (2016), Abiodun (2012), and Qiu et al. (2014).

Furthermore, the study examined the moderating effect of Audit Committee Effectiveness (ACE) on the relationship between environmental, social, and economic reporting disclosure and firm value. The results indicated that ACE did not significantly moderate the relationship between environmental reporting disclosure and firm value, even though environmental reporting alone appear to moderately impact firm value positively by 0.078 (p -value = 0.070). Meanwhile, ACE is shown in this research to significantly moderate the relationship between economic reporting disclosure and firm value negatively at the 1% significance level (p -value = 0.000) negatively by 0.032, because in its absence economic reporting disclosure increase firm value by 1.72 at the 1% significance level (p -value = 0.000). In addition, the research found that ACE significantly moderated the relationship between social reporting disclosure and firm value positively by 0.35 at the 5% significance level (p -value = 0.012), even though social reporting alone appears to significantly reduce firm value by 2.05 at the 1% significance level (p -value = 0.000).

Overall Findings and Implications

The study's findings demonstrate that while ACE did not significantly moderate the relationship between environmental reporting and firm value, it significantly moderated the relationships between economic and social reporting disclosures and firm value. These findings partially support agency theory, suggesting that effective audit committees play a crucial role in enhancing the positive impact of sustainability reporting on firm value, particularly in the context of economic and social reporting. These findings support the findings of Novitasari and Puspawati (2022), but contradict the findings of Fuadah et al. (2022) and Iskandar et al. (2023).

Finally, the finding of the research shows that firm size did not significantly influence the moderating effects of corporate governance on the relationship between sustainability reporting and firm value at 10% significance level (p -value = 0.462). This implies that the moderating effect of corporate governance mechanism and the direct relationship between sustainability reporting and firm value does not vary according to the firm size. This is line with findings of Iskandar et al. (2023). However, contradict the findings of Fuadah et al. (2022). Thus, firm value may not exhibit a strong direct correlation with the absolute size of the firm within the context of this study.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

- The study demonstrates that among sustainability reporting components, environmental reporting disclosure exerts a significant positive effect on firm value, suggesting that higher levels of environmental transparency are associated with increased market valuation for Nigerian oil and gas companies. Conversely, economic reporting disclosure displays a significant negative effect on firm value, indicating that increased economic disclosure may be perceived unfavourably by the market, potentially because of elevated compliance costs or diminished managerial flexibility. In contrast, social reporting disclosure shows no statistically significant impact on firm value within the scope of this research.
- The effectiveness of the audit committee significantly moderates the relationship between both social and economic reporting disclosures and firm value. Specifically, ACE enhances the positive effect of social reporting disclosure on firm value, indicating the importance of effective audit oversight in realizing value from social responsibility activities. In contrast, ACE moderates the relationship between economic reporting disclosure and firm value negatively, which may reflect stricter committee oversight amplifying the constraints or costs associated with extensive economic reporting. However, ACE does not have a significant moderating effect on the relationship between environmental disclosure and firm value.
- The analysis finds that firm size does not significantly alter the moderating effects of corporate governance or the direct relationship between sustainability reporting and firm value. This indicates that, within the sample, the value relevance of sustainability reporting and governance mechanisms is relatively insensitive to differences in firm size.

Conclusions

The findings of this study reveal that environmental reporting disclosure (ENRD) exerts a positive and significant influence on firm value, as proxied by Tobin's Q. Conversely, economic reporting disclosure (ECDRD) demonstrates a strong inverse significant influence on firm value. Social reporting disclosure (SORD), however, was found to be statistically insignificant. These results collectively suggest that investors incorporate sustainability aspects into their investment decision-making processes, aligning with stakeholder theory, which posits that companies can enhance investor value through effective sustainability reporting.

Furthermore, the study examined the moderating role of Audit Committee Effectiveness (ACE). While ACE did not significantly moderate the relationship between environmental reporting and firm value, it significantly moderated the relationships between economic and social reporting disclosures and firm value. This finding supports the notion that effective audit committees play a crucial role in monitoring sustainability performance, as stipulated by agency theory.

Finally, the analysis suggests that firm size does not significantly moderate the relationship between sustainability reporting and firm value. This implies that firm value may not exhibit a strong direct correlation with the absolute size of the firm within the context of this study.

Recommendations

Based on the study's findings, several recommendations are offered;

Firstly, oil and gas companies in Nigeria should be encouraged to enhance and incentivize comprehensive sustainability reporting, with a particular emphasis on environmental and social dimensions.

Secondly, prioritizing environmental sustainability initiatives and effectively communicating environmental performance to stakeholders is crucial.

Thirdly, strengthening social responsibility programs that align with community needs and expectations is recommended.

Finally, oil and gas companies should continuously strive to enhance the effectiveness of their audit committees to improve overall corporate governance.

Limitations of the Study

This research employed a secondary data approach, utilizing financial statements and annual reports from selected listed oil and gas companies on the Nigerian Exchange Group. While this approach offers valuable insights, it is important to acknowledge the potential limitations associated with secondary data.

Suggestions for Future Research

To further deepen our understanding of the intricate relationship between sustainability reporting, corporate governance, and firm value within the oil and gas sector, future research could explore several avenues. Conducting longitudinal studies across various industries would enable researchers to observe changes in sustainability reporting, corporate governance, and firm value over time, facilitating comparative analysis and more robust insights into causal relationships.

Furthermore, complementing quantitative analysis with qualitative methodologies, such as questionnaires, interviews, and case studies, can provide valuable contextual insights and managerial perspectives, offering a richer understanding of the phenomena under investigation.

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