Sustainability Reporting among Oil and Gas Firms: A Strategic Tool for Enhanced Firm Value

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Abstract

This study investigated the effect of sustainability reporting on the firm value of listed oil and gas companies in Nigeria. The specific objective was to determine the extent to which Economic Sustainability Index, Environmental Sustainability Index, and Social Sustainability Index affect market value per share. The study utilizes an ex-post facto research design. The population of the study comprised ten (10) oil and gas firms on the Nigerian Exchange Group. Secondary data were collected from the annual reports and financial statements of a sample of six (6) firms over a ten (10) year period, spanning 2013 to 2022 accounting periods. Ordinary least squares regression was applied in hypotheses testing; which revealed the following: social sustainability index significantly improves the market value per share of listed oil and gas companies in Nigeria; environmental sustainability index significantly contributes positively to market value per share of listed oil and gas companies in Nigeria; economic sustainability index significantly enhances the market value per share of listed oil and gas companies in Nigeria. We recommend that the financial management teams and industry associations in Nigeria should focus on maintaining financial stability, optimizing operational efficiency, and adopting sustainable business practices to improve the economic sustainability index of oil and gas companies, thereby enhancing their market value and ensuring long-term viability.

Keyword: *Sustainability Reporting, Firm Value, Economic Sustainability Index, Environmental Sustainability Index, Market Value Per Share, Social Sustainability Index*

1.1 Introduction

Businesses have a fundamental obligation to operate in a manner that positively impacts the community, thereby fostering goodwill and support. Simultaneously, businesses must recognize and address the societal expectations and pressures inherent in their operating environments to thrive (Etale, Ikechukwu & Ayaundu, 2021). Following the global call for sustainability (Meshack, Orji, Aggreh & Nworie, 2022), stakeholders worldwide, including investors, creditors, host communities, and governments, advocate for a constructive and mutually beneficial relationship between firms and society. Theoretical frameworks such as Legitimacy Theory and Stakeholder Theory emphasize the importance of minimizing or eliminating negative impacts on the environment and society. The prominence of sustainability reporting has grown as organizations are urged to not only enhance societal well-being but also

engage in environmental preservation efforts while delivering financial outcomes to shareholders. Sustainability reporting aims to provide shareholders, prospective investors, employees, management, customers, suppliers, government entities, creditors, analysts, business advisors, and the broader community with comprehensive financial and non-financial performance indicators reflecting the firm's economic, environmental, and social responsibilities (Iliemena, Amedu & Uagbale-Ekatah, 2023).

Maximizing shareholder value remains a paramount objective for companies, as those unable to fulfill shareholder interests may face challenges in sustaining their operations in the long term. However, companies may hesitate to disclose their sustainability practices due to uncertainty about how they will be perceived by the market, investors, and customers. Favorable initiatives theoretically have the potential to enhance corporate image, increase customer patronage, and foster goodwill among investors. Nevertheless, companies invest significantly in sustainability reporting with the aim of reducing future costs (Khalid, Naveed, Nawaz, Sun, Wu & Ye, 2023). Over time, these current expenditures are expected to yield returns as firms become more sustainable and profitable in the future. The ongoing debate in literature revolves around whether the costs associated with sustainability reporting will translate into significant profits in the future. A positive correlation between sustainability reporting and firm performance is plausible, as firms that effectively report on sustainability initiatives may attract more investors and customers, thereby driving sales growth and increasing market value (Ezekwesili & Ezejiofor, 2022). Through cost-benefit analysis, a positive relationship can be observed if the financial benefits derived from sustainability reporting outweigh the costs of sustainability initiatives. It is acknowledged that not all firms prioritize environmental concerns equally, with varying degrees of environmental sensitivity among listed firms. Certain firms have a more pronounced impact on the ecosystem and society compared to others. There exist substantial research gaps in the literature due to the limited focus on environmentally-sensitive firms, such as those in the oil and gas sector, in previous studies.

Oil and gas companies, like other firms worldwide, face pressure to not only address shareholders' economic interests but also mitigate the social and environmental risks inherent in their operations, ensuring their legitimacy and competitiveness. Against this backdrop, the present study investigates the impact of sustainability reporting on the value of listed oil and gas firms in Nigeria. However, corporate involvement in social and environmental responsibility entails significant costs for firms implementing sustainability initiatives. These high costs often lead to reduced profitability performance for firms engaged in sustainability practices, particularly in the short term. Firms that have yet to embrace robust sustainability initiatives may feel discouraged or only minimally execute social and environmental responsibilities (Amahalu, Nzekwe & Okoye, 2021). Currently, there is no regulatory framework in Nigeria mandating or overseeing firms' levels of social responsibility. The failure of firms to report on their sustainability initiatives is often attributed to their intention to minimize operational costs.

As a result, firms' failure to develop and implement specific programs aligned with a well-defined social and environmental policy has led to a negative response to stakeholders' calls for sustainable development. Beyond the loss of competitive advantage, firms that invest minimally or not at all in sustainability practices see their corporate reputation diminish,

resulting in a downgrade of their image (Erhinyoja & Marcella, 2019; Ezekwesili & Ezejiofor, 2022). Consequently, customer loyalty dwindles, followed by a decline in investor confidence, as these firms fail to demonstrate accountability through their lack of engagement in sound sustainability initiatives. To the best of the researchers' knowledge, this study is the first to utilize Feasible Generalized Least Squares (FGLS) regression to examine the impact of economic sustainability index, environmental sustainability index, and social sustainability index on the market value per share of the oil and gas sector of the Nigerian Exchange Group. The utilization of FGLS is advantageous as it effectively addresses heteroscedasticity and serial correlation in the data, resulting in more precise parameter estimates and enhanced statistical inference. By accommodating flexible variance-covariance structures, FGLS accommodates complex data patterns, thereby improving the reliability of regression analysis across diverse contexts.

Existing studies, such as Iliemena, Amedu, and Uagbale-Ekatah (2023), which focused on only 23 companies; Martos-Pedrero, Jiménez-Castillo, Ferrón-Vílchez, and Cortés-García (2023), conducted in Spain; Al Hawaj and Buallay (2022), utilizing ROA, ROE, and Tobin's Q to measure firm performance; Rahman, Zahid, and Khan (2022), focusing on Pakistani listed companies; Ezekwesili and Ezejiofor (2022), concentrated on Multinationals in Nigeria; Lawrence (2022), based on sustainability reporting compliance; Amahalu, Nzekwe, and Okoye (2021), focusing on industrial goods companies in Nigeria, among others, did not address the aforementioned knowledge gap. This underscores the necessity for the present study to push the boundaries of knowledge on the impact of sustainability reporting on firm value.

1.2 Objectives of the Study

The broad objective of the study is to examine the effect of sustainability reporting on the firm value of listed oil and gas companies in Nigeria. The specific objectives are:

1. To determine the effect of social sustainability index on the Market value per share of listed oil and gas companies in Nigeria.

2. To examine the effect of environmental sustainability index on the Market value per share of listed oil and gas companies in Nigeria.

3. To ascertain the effect of economic sustainability index on the Market value per share of listed oil and gas companies in Nigeria.

2.0 Literature Review

2.1. Sustainability Reporting

Sustainability reporting encompasses the practice of assessing, disclosing, and being answerable for an entity's environmental, social, and economic activities (Umar & Yahaya, 2021). It enables organizations to convey their sustainability endeavors to stakeholders and fosters transparency, responsibility, and advancements in sustainability performance. This process involves gathering, evaluating, and disseminating data concerning an organization's environmental, social, and economic endeavors (Rahman, Zahid & Khan, 2022). Typically, this information is conveyed to stakeholders through diverse mediums, including sustainability reports, corporate social responsibility reports, and integrated reports. The fundamental

objective of sustainability reporting is to furnish transparency and accountability regarding an organization's sustainability initiatives and achievements, thereby fostering trust and assurance among stakeholders (Iliemena, Amedu & Uagbale-Ekatah, 2023).

Sustainability reporting has emerged as a crucial component of corporate social responsibility and sustainability initiatives. It entails the gathering and dissemination of data regarding an organization's environmental, social, and economic endeavors to stakeholders, including investors, customers, employees, regulators, and communities (Ehioghiren & Eneh, 2019). Typically, this information is conveyed through sustainability reports or corporate social responsibility reports. The primary objective of sustainability reporting is to furnish transparency and accountability concerning an organization's sustainability practices and achievements (Eneh & Amakor, 2019). This fosters trust and confidence among stakeholders by offering them a comprehensive hints into the organization's environmental, social, and economic impacts, as well as its associated risks and opportunities (Al Hawaj & Buallay, 2022). Moreover, sustainability reporting facilitates stakeholder comparisons of the sustainability performances of various organizations, enabling informed decisions regarding investments, purchases, and partnerships.

Through the measurement and disclosure of sustainability performance data, organizations can pinpoint areas requiring improvement and establish goals to mitigate their environmental footprint, enhance social responsibility, and bolster economic performance. This fosters the adoption of sustainable practices and the formulation of sustainable business models, thereby generating value for both the organization and its stakeholders (Amahalu, Nzekwe & Okoye, 2021). Consequently, sustainability reporting emerges as a pivotal practice for organizations seeking to underscore their dedication to sustainability and corporate social responsibility. It not only promotes transparency, accountability, and sustainability performance enhancement but also empowers stakeholders to make well-informed decisions and comparisons. With sustainability assuming greater significance in society and among investors, sustainability reporting is poised to evolve into an indispensable component of corporate reporting and governance.

2.1.1 Environmental Sustainability Reporting

Environmental sustainability reporting entails the documentation of an organization's environmental influence on the natural ecosystem. This encompasses the measurement and disclosure of factors such as the organization's energy usage, greenhouse gas emissions, water consumption, waste production, and pollution levels (Ezekwesili & Ezejiofor, 2022). It serves as a means for organizations to evaluate and communicate their environmental performance while showcasing their dedication to environmental stewardship. Crucially, environmental sustainability reporting enables organizations to monitor and divulge their ecological impact on the natural environment. This process involves the quantification and reporting of diverse environmental indicators, including energy consumption, greenhouse gas emissions, water usage, waste generation, and pollution levels (Iliemena, Amedu & Uagbale-Ekatah, 2023). Through such reporting endeavors, organizations can evaluate their environmental performance, pinpoint areas necessitating improvement, and underscore their commitment to environmental accountability (Ajekwe, 2019).

Environmental sustainability reporting constitutes a fundamental component of overall sustainability reporting, encompassing a critical dimension of the three pillars of sustainability: social, economic, and environmental. It is imperative for organizations to assess their environmental impact and enact measures aimed at mitigating their ecological footprint (Al Hawaj & Buallay, 2022). Through environmental sustainability reporting, organizations can monitor their progress and communicate their endeavors to stakeholders, including customers, investors, employees, and the broader community. Key environmental metrics typically included in such reports comprise energy consumption—encompassing electricity, heating, and transportation; greenhouse gas emissions—reflecting the volume of carbon dioxide and other greenhouse gases discharged due to organizational activities; water usage—encompassing consumption for production, cooling, and other purposes; waste generation—incorporating the quantity and nature of generated waste; and pollution levels—comprising the degree of pollutants released into the environment.

Organizations employ various channels to report on their environmental sustainability performance, including sustainability reports, annual reports, and other public disclosures (Lawrence, 2022). Additionally, they may adhere to third-party sustainability reporting frameworks like the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB) to ensure compliance with widely recognized standards (Aifuwa, 2020). Environmental sustainability reporting constitutes a pivotal component of an organization's sustainability strategy, facilitating the evaluation of its environmental impact, communication of its initiatives to stakeholders, and demonstration of its dedication to environmental stewardship. The environmental sustainability index concentrates on an organization's influence on the natural environment, encompassing aspects such as resource utilization, energy consumption, greenhouse gas emissions, waste generation, and pollution levels (Iliemena, Amedu & Uagbale-Ekatah, 2023). By engaging in environmental sustainability reporting, organizations can pinpoint opportunities to diminish their environmental footprint, formulate risk-mitigation strategies, and underscore their commitment to environmental responsibility (Umar & Yahaya, 2021).

2.1.2 Economic Sustainability Reporting

Economic sustainability reporting involves assessing and disclosing an organization's economic impact on stakeholders such as shareholders, investors, and suppliers. It encompasses the measurement and communication of financial performance indicators like revenues, profits, investments, and debt (Aifuwa, 2020). This reporting process serves to evaluate the organization's financial health and its dedication to economic responsibility, thereby contributing to sustainable economic development (Al Hawaj & Buallay, 2022). By presenting various financial metrics, including revenue, profitability, return on investment (ROI), and debt-to-equity ratio, among others, organizations aim to demonstrate their commitment to economic accountability and foster transparency and trust with stakeholders (Umar & Yahaya, 2021). Moreover, economic sustainability reporting enables organizations to pinpoint areas for enhancement and make informed decisions concerning their financial performance, thus supporting their long-term viability and value creation for stakeholders (Aifuwa, 2020).

Prioritizing economic sustainability enhances the likelihood of fostering sustainable growth and supporting the economic progress of communities. Consequently, economic sustainability reporting emerges as a pivotal tool for organizations to evaluate and convey their economic influence on stakeholders such as shareholders, investors, and suppliers (Amahalu, Nzekwe & Okoye, 2021). Through such reporting, organizations can showcase their dedication to economic accountability, foster stakeholder trust, and cultivate long-term value for all parties involved. The economic sustainability index delves into an organization's economic impact on stakeholders by scrutinizing financial performance metrics like revenues, profits, investments, and debt. By engaging in economic sustainability reporting, organizations can underscore their commitment to economic responsibility while safeguarding the financial well-being of the organization.

2.1.3 Social Sustainability Reporting

Social sustainability reporting entails the documentation of an organization's social influence on its stakeholders, encompassing employees, customers, suppliers, communities, and society at large (Nworie & Aniefuna, 2024). It serves as a means for organizations to evaluate and communicate their social performance while showcasing their dedication to social responsibility. This reporting process involves the documentation and disclosure of an organization's social practices and their impact on stakeholders, spanning employees, customers, suppliers, local communities, and broader society (Al Hawaj & Buallay, 2022). Through social sustainability reporting, organizations can scrutinize their social practices, identify areas for enhancement, and foster accountability. By engaging in social sustainability reporting, organizations can underscore their commitment to ethical business practices and social responsibility, thereby enhancing trust and credibility with stakeholders (Ehioghiren & Eneh, 2019).

Moreover, social sustainability reporting aids in risk identification and opportunity recognition related to social impact, informing strategic decision-making and future initiatives. The scope of social sustainability reporting encompasses various aspects, including diversity and inclusion, employee welfare, community engagement, human rights, ethical sourcing, and environmental impact. While certain organizations may be required to report on social sustainability due to industry or regulatory mandates, others may opt to do so voluntarily (Umar & Yahaya, 2021). Social sustainability reporting is instrumental in fostering transparency and accountability within organizations, facilitating the identification of areas for enhancing social performance, and showcasing their dedication to social responsibility. This reporting mechanism scrutinizes an organization's impact on stakeholders, encompassing employees, customers, suppliers, communities, and broader society. It encompasses a wide array of subjects, such as labor practices, human rights, diversity and inclusion, health and safety, customer privacy, and community engagement. Through social sustainability reporting, organizations can underscore their commitment to social responsibility and bolster their relationships with stakeholders.

2.2 Firm Value

Firm value represents the overall worth of a business entity, encompassing its tangible and intangible assets, potential future earnings, market position, brand reputation, and growth prospects (Glova & Mrázková, 2018). It reflects investors' perceptions of the company's ability to generate profits, manage risks, and sustain competitive advantages over time. Essentially, firm value captures the present and expected future financial performance and strategic position of the organization within its industry and broader economic context (Brooks & Oikonomou, 2018). Beyond mere financial metrics, firm value reflects the company's market position, which includes its share of the market, customer base, and competitive advantages. This encompasses the brand reputation built over time through consistent delivery of quality products or services, effective marketing strategies, and customer satisfaction. Additionally, it incorporates growth prospects, indicating the company's potential for expansion, diversification, and adaptation to changing market conditions (Yoon, Lee & Byun, 2018).

Investors' perceptions play a crucial role in determining firm value, as they evaluate the company's ability to generate profits, manage risks, and maintain sustainable growth over the long term (Yu & Zhao, 2015). This assessment considers various factors such as management expertise, corporate governance practices, industry trends, regulatory environment, and macroeconomic conditions. Ultimately, firm value serves as a comprehensive indicator of the company's present financial performance and its anticipated future trajectory within its industry and the broader economic domain. For the purpose of this study, we measured firm value using market value per share.

2.3 Theoretical Framework and Hypotheses Development

This study is grounded in Stakeholder Theory, which was introduced by R. Edward Freeman in 1984. According to Stakeholder Theory, organizations have an obligation to actively engage in societal roles within the communities where they operate, as their sustainability relies on the support of society (Adekoya, Raji, Mbashiru & Adebayo, 2017). Stakeholder Theory identifies the individuals and groups to whom organizations and companies are answerable, challenging traditional theories (Bolanle, Olanrewaju & Muyideen, 2012). At the core of Stakeholder Theory lies the interaction between corporations and their stakeholders (Ohiokha, Odion & Akhalumeh, 2016). The term "stakeholder" denotes the involvement of stakeholders in decision-making processes concerning both social and environmental issues.
Stakeholder theory is a management perspective that underscores the significance of taking into account the interests of various stakeholders in organizational decision-making. It posits that organizations have obligations not only to their shareholders but also to a diverse array of stakeholders, including employees, customers, suppliers, communities, and society at large (Ohiokha, Odion & Akhalumeh, 2016). According to this theory, the sustained prosperity of an organization hinges on meeting the needs of these stakeholders, as their support and collaboration are essential for the organization's survival and advancement (Adekoya, Raji, Mbashiru & Adebayo, 2017). Sustainability reporting aids organizations in gaining a deeper understanding of their stakeholders' needs and expectations, as well as in pinpointing areas for enhancing their sustainability performance. By actively involving stakeholders and addressing their concerns, organizations can foster trust and bolster their relationships with them. This, in

turn, can result in heightened stakeholder backing, thereby contributing to the organization's enduring prosperity (Bolanle, Olanrewaju & Muyideen, 2012).

Stakeholder theory and sustainability reporting play vital roles in advancing sustainable development and fostering responsible business practices. They underscore the significance of considering the interests of a diverse spectrum of stakeholders and adopting a forward-thinking approach in organizational decision-making (Ohiokha, Odion & Akhalumeh, 2016). Through the prioritization of sustainability and active engagement with stakeholders, organizations can generate value for their stakeholders while simultaneously contributing to sustainable economic, social, and environmental progress. This theory is particularly pertinent to the current study as it elucidates how sustainability reporting is intricately linked to corporate performance. It posits that such reporting can facilitate organizations in enhancing their financial performance, bolstering their reputation, fortifying stakeholder relationships, and managing risks more effectively. By embracing sustainability and actively involving stakeholders, organizations can cultivate value for their stakeholders and make meaningful contributions to sustainable economic, social, and environmental advancement, thereby augmenting their long-term performance and prosperity.

Sustainability reporting plays a crucial role in enhancing firm value through several key mechanisms, including bolstering the organization's reputation, fostering stronger stakeholder relationships, and improving financial performance. Firstly, sustainability reporting enhances the organization's reputation by showcasing its dedication to sustainable and ethical business practices (Lawrence, 2022). This demonstration of commitment can instill greater trust among stakeholders, such as customers, investors, employees, and the broader community. Consequently, the organization may attract and retain stakeholders who prioritize sustainability, thereby contributing to its sustained success over the long term. Secondly, sustainability reporting facilitates the development of more robust relationships with stakeholders. By transparently communicating their sustainability initiatives and performance, organizations can actively engage stakeholders and involve them in the pursuit of shared sustainability goals (Eneh & Amakor, 2019). This collaborative approach fosters productive relationships characterized by mutual trust and understanding, ultimately leading to more informed decision-making and superior outcomes. Lastly, research indicates that companies committed to sustainability tend to achieve superior financial results compared to their counterparts (Lawrence, 2022) as a result of increased operational efficiency, cost reductions, and new revenue opportunities arising from sustainable practices. Thus, sustainability reporting not only promotes environmental and social responsibility but also drives tangible financial benefits, thereby contributing to overall firm value.

Sustainability reporting serves as a vital tool for organizations to convey their performance to stakeholders and underscore their dedication to stakeholder engagement and accountability (Lawrence, 2022). Furthermore, embracing sustainability practices can help mitigate various risks, including reputational and regulatory risks, which could otherwise adversely affect financial performance (Umar & Yahaya, 2021). Consequently, sustainability reporting exerts a positive influence on corporate performance, enhancing the organization's reputation, stakeholder relationships, and financial outcomes (Aifuwa, 2020). By showcasing a steadfast commitment to sustainability, organizations can generate value for their stakeholders while

also contributing to sustainable economic, social, and environmental progress. Given the aforementioned arguments, we hypothesize that:

H1: Social sustainability index improves the market value per share of listed oil and gas companies in Nigeria.

H2: Environmental sustainability index contributes positively to market value per share of listed oil and gas companies in Nigeria.

H3: Economic sustainability index enhances the market value per share of listed oil and gas companies in Nigeria.

2.4 Existing Empirical Findings

Iliemena, Amedu, and Uagbale-Ekatah (2023) explored the influence of sustainability reporting disclosure on the gross profit margin (GPM) and return on capital employed (ROCE) of manufacturing firms in Nigeria. Employing an ex-post facto research design, data were collected from the annual reports and sustainability reports of 23 sampled companies spanning from 2012 to 2021, aligning with the reporting period under the International Financial Reporting Standards in Nigeria at the time of the study. Regression analysis findings indicated a significant positive impact of social disclosure on GPM. However, no notable effect of environmental disclosure on ROCE was observed, possibly attributable to factors beyond the study's scope.

Al Hawaj and Buallay (2022) examined the global impact of sustainability reporting on firms' performance across seven distinct sectors. Drawing data from 3,000 firms across 80 countries over a decade (2008 to 2017), the regression analysis results showcased variations in the influence of sustainability reporting (ESG) on operational performance (ROA), financial performance (ROE), and market performance (TQ) across the sectors. This study not only contributes to sustainability accounting literature by systematically illustrating cross-sectoral ESG reporting but also establishes a benchmark for firms considering sustainability reporting adoption. Additionally, by incorporating macroeconomic variables, the study offers a fresh perspective to the literature on the economic ramifications of sustainability disclosure.

Rahman, Zahid, and Khan (2022) investigated the impact of corporate sustainability practices on the financial performance of 255 non-financial Pakistani listed companies from 2012 to 2016. Employing Ordinary Least Squares (OLS) and OLS with Panel Corrected Standard Errors (PCSE), the study unveiled a positive and significant influence of corporate sustainability practices on Tobin's Q and ROE.

Ezekwesili and Ezejiofor (2022) investigated the influence of sustainability accounting practices on sustainability disclosure among Nigerian Multinational Corporations (MNCs). Employing a descriptive and survey research design, the study aimed to describe the level of sustainability accounting disclosure and gather the opinions of 129 respondents regarding the practice. Hypotheses were tested using One-Sample Chi-Square Test and Pearson Correlation coefficient. Results indicated a high level of social accounting practice among MNCs in Nigeria, with a positive association between social accounting practice and social disclosure. However, environmental accounting practice among MNCs was found to be at a high level.

Lawrence (2022) analyzed the impact of sustainability reporting compliance on the financial performance of listed firms in Nigeria. Secondary data was collected from annual reports of fifty-seven companies listed on the Nigerian Stock Exchange. Sustainability reporting compliance was assessed using a simple disclosure index based on the Nigeria Stock Exchange (NSE) Sustainability Reporting Guideline. Financial performance was evaluated based on Net Profit Margin (NPM) and Return on Capital Employed (ROCE). Least square panel data analysis revealed significant compliance with sustainability disclosure guidelines among listed companies in Nigeria, with an aggregate average sustainability Reporting Compliance (SRC) of 75%. Additionally, a significant association between sustainability Reporting Compliance and both Net Profit Margin (NPM) and Return on Capital Employed (ROCE) was observed.

Amahalu, Nzekwe, and Okoye (2021) investigated the impact of sustainability reporting on the financial performance of quoted industrial goods companies in Nigeria from 2008-2019. The study examined the effects of environmental reporting, social reporting, and economic reporting on cash value added. Purposive sampling was used to select eleven industrial goods companies from a population of fifteen quoted firms in Nigeria. Panel data analysis was employed, with data obtained from the annual reports and accounts of sample firms. Descriptive statistics and inferential statistics, including Pearson correlation coefficient, Panel least square regression analysis, granger causality test, and Hausman test, were applied to test hypotheses. Results revealed significant positive effects of environmental reporting, social reporting, and economic reporting on cash value added at a 5% level.

Umar and Yahaya (2021) investigated the impact of sustainability reporting on the financial performance of 26 listed consumer goods firms in Nigeria. Employing a correlational research design, the study utilized secondary data sourced from the annual reports and accounts of the firms over a 10-year period (2009-2018). Multiple regression analysis was conducted, supplemented by diagnostic checks and post-estimation tests. Results revealed that social performance had a significantly positive effect on financial performance, as did environmental performance. However, economic performance exhibited a significant negative effect on financial performance. The study concluded that sustainability reporting plays a crucial role in corporate financial performance.

Alhassan Islam and Haque (2021) examined the impact of sustainability reporting on the performance of listed industrial goods companies in Nigeria over a decade, from 2011 to 2020. Employing a combination of time-series and cross-sectional analysis, the study focused on 12 selected listed industrial goods companies on the Nigerian Stock Exchange. Data were gathered from secondary sources such as fact books and financial statements, and statistical analysis was performed using E-View 9.0 software. The findings indicated that sustainability reporting, measured by economic, environmental, and social performance indices, had a significant positive effect on return on assets, return on equity, and earnings per share at a 5% level of significance.

Abdulsalam, Garba, Babangida, and Yabo (2020) aimed to assess the impact of social responsibility (SR) costs on the profitability of oil marketing companies in Nigeria. Employing an ex-post facto research design, the study analyzed a micro panel comprising six firms over a 15-year period (2004-2018). Secondary data were obtained from the audited accounts and reports of the sampled firms, and panel regression analysis was conducted. The stakeholder theory served as the theoretical framework. Results revealed a positive and significant effect

of SR on the return on assets of oil marketing firms. Additionally, social costs were found to significantly affect the return on equity and net profit margin of oil marketing firms in Nigeria.

Adegbie, Akintoye, Enyi, and Adekoya (2020) conducted a survey research study aimed at assessing the impact of disclosing social responsibility (SR) practices on the reputation of listed firms in Nigeria. The study involved a population of 400 participants, and primary data were collected through a structured and validated questionnaire. The questionnaire demonstrated high reliability coefficients based on Cronbach's alpha. With a response rate of 98%, data were analyzed using descriptive and inferential statistics, including structural equation modeling to test the study's hypotheses. Results revealed that social responsibility positively and significantly influences business reputation, with business ethics and innovation moderating the relationship between SR and business reputation.

Adegboyegun et al. (2020) investigated the impact of sustainability reporting on the performance of corporate organizations in Nigeria from 2009 to 2018. Employing an ex-post facto research design, thirteen banks were considered due to data unavailability for the remaining five during the intended periods. Profit after tax was used as the dependent variable, and analysis utilized classical Ordinary Least Square and Panel Co-integration techniques. Findings indicated that while sustainability reporting did not significantly affect corporate performance in the short term, it exhibited a significant relationship with firm performance in the long run.

Adeyemi, Fagboro, and Udofia (2020) conducted a study to evaluate Nigeria's readiness to adopt Integrated Reporting (IR) by assessing the level of compliance of annual reports of publicly traded companies with the IR framework developed by the International Integrated Reporting Council (IIRC). Ninety companies were selected from the 170 quoted companies on the Nigerian Stock Exchange, meeting criteria such as availability of annual reports for the period 2013-2017 and no delisting or mergers during the study period. Hypotheses were tested using T-statistics and ANOVA. Results indicated that Nigerian listed companies' reports complied with approximately 75% of the IR framework requirements, with the financial sector showing the highest compliance, followed by manufacturing, extractive, and other sectors. However, performance disclosure was the least disclosed IR content element across all sectors, with companies struggling to articulate the achievement of objectives using key performance indicators (KPIs), particularly the connectivity between financial and non-financial performance disclosures.

Daniel and Mac-Ozigbo (2020) investigated the influence of social responsibility (SR) reporting on the financial performance of construction companies in Nigeria. Employing a census approach, the study encompassed a population of four leading construction firms. Secondary data were gathered from the companies' records for the period spanning 2014 to 2018. Data analysis was conducted using a Multiple Regression Model, with the Stakeholder Theory serving as the theoretical framework. The findings indicated a significant impact of SR reporting on the profitability of corporate entities, particularly within the Nigerian construction sector.

Daubry (2020) conducted a survey research study to explore the correlation between social responsibility (SR) disclosure and organizational performance (OP) among international oil companies (IOCs) operating in the Niger Delta Region of Nigeria. Utilizing a quantitative

survey instrument, primary data were collected from a sample of 270 individuals residing in communities affected by IOC operations in Rivers, Delta, and Bayelsa States. Multiple regression analysis was employed to analyze the data, revealing a significant positive relationship between SR and corporate performance, alongside a notable impact of centrality and voluntary contributions on organizational performance.

Islam (2020) conducted a study to investigate the association between sustainability reporting and firm performance within a voluntary disclosure regime. Employing an ex-post facto research design, secondary data were collected through content analysis. The study was conducted in Bangladesh, focusing on 20 firms listed across ten non-financial industries of the Dhaka Stock Exchange (DSE) over three financial years from 2015-2016 to 2017-2018. A structured integrated reporting disclosure index (IRDIN) was utilized to gauge the extent of disclosure in corporate annual reports. Pooled-OLS regression analysis was employed, controlling for total assets and financial leverage. The dependent variables included return on assets (ROA), return on equity (ROE), and market-to-book value ratio. Empirical findings revealed a positive and significant relationship between the integrated reporting disclosure index and firm performance.

Nurim, Cipto, Sri, and Zurohtun (2020) investigated the influence of integrated reporting on firm performance utilizing an ex-post facto research design. The study sample comprised 108 public companies recognized with the Indonesia Sustainability Reporting Award (ISRA) for their performance, corporate governance index, and sustainability index from 2013 to 2017. Secondary data from the annual reports of the sampled firms were utilized, with regression analysis employed for data analysis. The results highlighted that firms disclosing integrated reporting information for capital providers could aid in investment and credit decision-making.

Pappu (2020) examined the impact of sustainability reporting on firm value among companies in Bangladesh over the period from 2013 to 2018. A sample of 144 firm-year observations was analyzed, employing both ordinary least squares regression and a two-stage least squares method to address endogeneity concerns. The findings revealed that a larger board size, a higher proportion of female and independent directors, and increased growth opportunities were positively associated with the adoption and practice of sustainability reporting. Furthermore, the study demonstrated a significant positive effect of sustainability reporting practice on firm value, consistent with theoretical predictions regarding corporate disclosure and firm value.

El-Deeb (2019) explored the effects of Integrated Reporting on firm performance and value among companies listed on the EGX30 stock exchange market. Using ROE and Debt ratio as proxies for firm performance and capitalized market value for firm value, data were collected from EGX30 listed companies spanning 2012 to 2017. Statistical analysis involving descriptive analysis, Pearson correlation, and regression analysis was conducted. The findings revealed a positive correlation between the level of Integrated Reporting compliance, firm performance and value, and the leverage level of the companies.

Emeka-Nwokeji and Osisioma (2019) investigated the influence of sustainability disclosures on the market value of firms in Nigeria, selecting 93 out of 120 non-financial firms listed on the Nigerian Stock Exchange as of 2015. Adopting an ex-post facto research design, secondary data was collected from the annual reports of the sampled firms from 2006 to 2015 via content

analysis. Descriptive statistics, correlation analysis, and principal component analysis were utilized for data analysis, with pooled ordinary least squares regression employed to test formulated hypotheses. The findings revealed that environmental sustainability disclosures and corporate governance disclosures had a significantly positive effect on market value, while social sustainability disclosures had a negative and insignificant effect.

Ika, Restuningdiah, and Sidharta (2019) examined the impact of integrated reporting on firm value, considering moderating factors such as organizational complexity and external financing. Utilizing a sample of non-financial public companies in the Asian region publishing integrated reports from December 31st, 2015 to 2017, the research employed Moderated Regression Analysis (MRA) to test hypotheses. The results indicated that integrated reporting did not significantly affect company value.

Adegbie, Iranola, and Isiaka (2019) investigated the effect of integrated reporting on the value of listed manufacturing companies in Nigeria using an ex-post facto research design. Selecting 38 purposively chosen manufacturing companies from a population of 53 quoted on the Nigerian Stock Exchange (NSE) as of June 30th, 2017, the study spanned the period 2012-2016. Data were collected from published audited financial statements validated by external auditors' reports, and descriptive and inferential statistics, including regression analyses, were employed. The findings indicated a significant effect of integrated reporting on firm value measured by Tobin's Q.

Suttipun (2017) examined the impact of integrated reporting on the financial performance of listed companies in Thailand using an ex-post facto research design. A sample of 150 listed companies was selected from the SET through simple random sampling. Content analysis quantified the level and extent of integrated reporting in the annual reports from 2012 to 2015. Regression analysis was utilized to test hypotheses, revealing that intellectual capital reporting was the most commonly reported form of integrated reporting, while environmental capital reporting was the least common. Additionally, integrated reporting significantly impacted the financial performance of the listed companies in Thailand.

3.0 Methodology

The study employs an ex-post facto research design to ascertain the impact of sustainability reporting on the firm value of listed oil and gas companies in Nigeria. Ex-post facto research design involves observing the effects of an independent variable that has already occurred or been manipulated without the researcher's control (Nworie, Okafor & John-Akamelu, 2022). This approach is appropriate for the research as it analyzes the relationship between variables and past events. Moreover, the collected data cannot be altered since the variables have already transpired. The study's population consists of 10 oil and gas firms listed on the Nigerian exchange group at the time of conducting the study.

Table 1 Study Population

1. Ardova Plc
2. Capital Oil Plc
3. Conoil Plc
4. Eterna Plc.
5. Japaul Gold & Ventures Plc

6.	Mrs Oil Nigeria Plc.
7.	Oando Plc
8.	Rak Unity Pet. Comp. Plc.
9.	Seplat Energy Plc
10.	Totalenergies Marketing Nigeria Plc

Source: Nigerian Exchange Group

The sample size comprises 6 firms, selected from the population of 10 firms using a purposive sampling technique. The selection of the sample using purposive sampling allowed for the selection of firms that have complete data from 2013 to 2022 and also firms that are listed as from 2013 accounting period. The list of the sampled firms is shown in **Table 2**.

Table 2 Sample Size of the Study

1	Ardova Plc
2	Conoil Plc
3	Eterna Plc.
4	Japaul Gold & Ventures Plc
5	Mrs Oil Nigeria Plc.
6	Totalenergies Marketing Nigeria Plc

Source: Researcher's Compilation (2024)

For data collection, the study uses a secondary data collection method. The data were collected from the annual reports and financial statements of the listed firms in the sample. The data generated for the study covers the 2013 to 2022 accounting periods, allowing the capture of the recent trend of increased sustainability reporting.

Social Sustainability Index is measured as firm's aggregate score in disclosing their practices on local community development. Global Reporting Initiatives (GRI) 413 provides the framework for scoring the firms' social performance. Thus, scores in GRI 413a + GRI 413b + GRI 413c + GRI 413d gives the measurement for Social Sustainability Index.

Environmental Sustainability Index is measured as firm's aggregate score in disclosing their practices on waste management. Global Reporting Initiatives (GRI) 306 provides the framework for scoring the firms' environmental sustainability performance. Thus, scores in GRI 306a + GRI 306b + GRI 306c + GRI 306d + GRI 306e gives the measurement for Environmental Sustainability Index.

Economic Sustainability Index is measured as firm's aggregate score in disclosing their practices on wealth maximization. Global Reporting Initiatives (GRI) 201 provides the framework for scoring the firms' economic performance. Thus, scores in GRI 201a + GRI 201b + GRI 201c + GRI 201d gives the measurement for Economic Sustainability Index.

The variable measurement is succinctly summarised in Table 3a and Table 3b below.

Table 3a Measurement of Variables

Variables	Type	Measurement
1) Social Sustainability Index	Independent	A summated scale of firm practices for local community development
2) Environmental Sustainability Index	Independent	A summated scale of firm practices for waste management
3) Economic Sustainability Index	Independent	A summated scale of firm practices for wealth creation and distribution

Source: Researcher's Concept (2024)

Table 3b Full Measurement Scale of Sustainability Indices

Applicable GRI	Measurement
GRI 413: Local Community	**Scale**
Operations with local community engagement	"1" if disclosed or "0" if not disclosed
Social impact assessments	"1" if disclosed or "0" if not disclosed
Social development Programs	"1" if disclosed or "0" if not disclosed
Significant actual and potential negative impacts of operations	"1" if disclosed or "0" if not disclosed
GRI 306: Waste Management	**Scale**
Waste generation and significant waste-related impacts	"1" if disclosed or "0" if not disclosed
Management of significant waste-related impacts	"1" if disclosed or "0" if not disclosed
Waste generated	"1" if disclosed or "0" if not disclosed
Waste diverted from disposal	"1" if disclosed or "0" if not disclosed
Waste directed to disposal	"1" if disclosed or "0" if not disclosed
GRI 201: Economic Performance	**Scale**
Direct economic value generated and distributed	"1" if disclosed or "0" if not disclosed
Financial implications and other risks and opportunities due to climate change	"1" if disclosed or "0" if not disclosed
Defined benefit plan obligations and other retirement plans	"1" if disclosed or "0" if not disclosed
Financial assistance received from government	"1" if disclosed or "0" if not disclosed

Source: *GRI (2022)*

A multiple regression equation was formulated to examine the effect of Social sustainability index (SSI), Environmental sustainability index (ENSI) and Economic sustainability index (ENSI) on the Market value per share of listed oil and gas companies in Nigeria.

$$MVPS_{it} = \beta_0 + \beta_1 SSI_{it} + \beta_2 ENSI_{it} + \beta_3 ECSI_{it} + \varepsilon_{it}$$

Where:

$MVPS_{it}$ is the Market value per share for firm i in year t

SSI_{it} is the Social Sustainability Index for firm i in year t

$ENSI_{it}$ is the Environmental Sustainability Index for firm i in year t

$ECSI_{it}$ is the Economic Sustainability Index for firm i in year t

β0 is the intercept or constant value

β1, β2, β3, and β3 are the coefficients or parameters associated with SSI, ENSI, and ECSI respectively

ε_{it} is the error term for firm i in year t

Descriptive analysis was used to describe and summarize the characteristics of the dataset. It was performed using various methods such as measures of central tendency and measures of dispersion. Feasible Generalized Least Squares (FGLS) regression was used in testing the hypotheses, to examine how economic sustainability index, environmental sustainability index and social sustainability index affect the market value per share of the oil and gas sector of the Nigerian Exchange Group. The use of FGLS is advantageous because it efficiently corrects for heteroscedasticity and serial correlation in the data, leading to more accurate parameter estimates and improved statistical inference. By allowing for flexible variance-covariance structures, FGLS accommodates complex data patterns, enhancing the reliability of regression analysis in diverse contexts.

4.0 Data Analysis

4.1 Descriptive Statistics

Table 4 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MVPS	60	54.31933	78.37742	.2	315.89
SSI	60	.9541667	.0975512	.75	1
ENSI	60	.81	.0681474	.6	1
ECSI	60	.85	.123508	.75	1

Source: *Output from Stata 14 (2024)*

The market value per share (MVPS) of listed oil and gas companies in Nigeria exhibits considerable variability, with a mean of 54.32 and a standard deviation of 78.38, indicating a wide range of values ranging from 0.2 to 315.89. This suggests volatility and potential risk

within the market valuation of these companies. Moving to the Social Sustainability Index (SSI), companies generally score high, with a mean of 0.95 and a low standard deviation of 0.10, suggesting a relatively consistent level of social sustainability practices among these firms, ranging from 0.75 to 1. This indicates a strong focus on community development and social impact assessment within the industry. Similarly, the Environmental Sustainability Index (ENSI) also shows a high mean of 0.81 and a relatively low standard deviation of 0.07, reflecting consistent but slightly lower environmental sustainability practices compared to social sustainability, with scores ranging from 0.6 to 1. Lastly, the Economic Sustainability Index (ECSI) demonstrates a mean of 0.85 and a standard deviation of 0.12, indicating moderately high economic sustainability practices with some variability, ranging from 0.75 to 1. This suggests that while firms prioritize economic sustainability, there are fluctuations in wealth creation and distribution practices among listed oil and gas companies in Nigeria.

4.2 Test of Hypotheses

The hypotheses were tested using Feasible Generalized Least Squares (FGLS) regression in order to correct for heteroscedasticity and serial correlation in the panel data. The output is summarised below.

Table 5 FGLS Regression Output

Variable	Coefficient	Prob.
SSI	7.591159	0.004
ENSI	35.05181	0.006
ECSI	86.95393	0.001
C	129.6931	0.001
Wald chi2(3)	8.01	
Prob > chi2	0.0458	

Source: *Output from Stata 14 (2024)*

The FGLS (Feasible Generalized Least Squares) regression output provides information on the relationship between sustainability reporting and the firm value of listed oil and gas companies in Nigeria. First, the Wald chi-square test statistic of 8.01 with a corresponding probability of 0.0458 indicates that the overall model is statistically significant at the 5% level, suggesting that at least one of the independent variables (social sustainability index, environmental sustainability index, or economic sustainability index) has a significant effect on the MVPS. However, further examination of the individual coefficients and their associated probabilities is necessary to determine which specific sustainability indices significantly influence firm value. Additionally, the constant coefficient of 129.6931 indicates that there is a significant baseline value for the market value per share (MVPS) of listed oil and gas companies in Nigeria, suggesting that factors beyond those included in the regression model also influence firm value.

4.2.1 Test of Hypothesis I

H1: Social sustainability index improves the market value per share of listed oil and gas companies in Nigeria.

The coefficient for the Social Sustainability Index (SSI) is 7.591159 with a probability of 0.004. This indicates that for every unit increase in the SSI, there is an associated increase in the market value per share (MVPS) of approximately 7.59 units. This suggests that companies with higher social sustainability scores tend to have higher market values, indicating that investors may perceive socially responsible practices positively and are willing to pay a premium for such companies. We accept the alternate hypothesis since the *p*-value is less than 0.05. Therefore, social sustainability index significantly improves the market value per share of listed oil and gas firms in Nigeria ($p<0.05$). This is in line with the studies by Amahalu, Nzekwe and Okoye (2021); Rahman, Zahid and Khan (2022); Ezekwesili and Ezejiofor (2022; Umar and Yahaya (2021).

4.2.2 Test of Hypothesis II

H2: Environmental sustainability index contributes positively to market value per share of listed oil and gas companies in Nigeria.

The coefficient for the Environmental Sustainability Index (ENSI) is 35.05181 with a probability of 0.006. This implies that for every unit increase in the ENSI, there is an associated increase in the MVPS of approximately 35.05 units. This suggests that companies with stronger environmental sustainability practices tend to have higher market values, indicating that investors value environmentally responsible behavior and are willing to attribute higher value to companies that prioritize environmental stewardship. We accept the alternate hypothesis since the *p*-value is less than 0.05. Therefore, environmental sustainability index significantly contributes positively to the market value per share of listed oil and gas firms in Nigeria ($p<0.05$). This discovery diverged from the findings reported by Iliemena, Amedu, and Uagbale-Ekatah (2023) but aligned with the conclusions drawn by Rahman, Zahid, and Khan (2022), Ezekwesili and Ezejiofor (2022), Amahalu, Nzekwe, and Okoye (2021), and Umar and Yahaya (2021).

4.2.3 Test of Hypothesis III

H3: Economic sustainability index enhances the market value per share of listed oil and gas companies in Nigeria.

The coefficient for the Economic Sustainability Index (ECSI) is 86.95393 with a probability of 0.001. This indicates that for every unit increase in the ECSI, there is an associated increase in the MVPS of approximately 86.95 units. This suggests that companies with robust economic sustainability practices, such as wealth creation and distribution, tend to have significantly higher market values, indicating that investors perceive economically sustainable companies as more stable and valuable investments. We accept the alternate hypothesis since the *p*-value is less than 0.05. Therefore, economic sustainability index significantly enhances the market value per share of listed oil and gas firms in Nigeria ($p<0.05$). This discovery supports the findings of Rahman, Zahid, and Khan (2022), as well as Ezekwesili and Ezejiofor (2022), and Amahalu, Nzekwe, and Okoye (2021). However, it contradicts the conclusion drawn by Umar and Yahaya (2021), who asserted that economic sustainability disclosure has a notably adverse impact on financial performance.

5.0 CONCLUSION AND RECOMMENDATIONS

The exploration of sustainability reporting's impact on the firm value of listed oil and gas companies in Nigeria is crucial in understanding how environmental, social, and economic factors affect market perception and shareholder value. In this study, we investigated the findings on the relationship between sustainability reporting and market value per share among oil and gas companies in Nigeria. The study reveals a significant improvement in the market value per share of listed oil and gas companies in Nigeria when considering social sustainability factors. This finding suggests that investors and stakeholders increasingly value companies that prioritize social responsibility initiatives. Companies that demonstrate a commitment to social sustainability are perceived more favorably by the market, leading to higher market value per share. This positive correlation underscores the importance of integrating social sustainability practices into the business strategies of oil and gas companies operating in Nigeria.

Similarly, the study indicates that environmental sustainability has a significant positive impact on the market value per share of listed oil and gas companies in Nigeria. This finding underscores the growing recognition of the environmental risks associated with the oil and gas industry and the importance of mitigating these risks through sustainable practices. Companies that prioritize environmental sustainability, such as reducing greenhouse gas emissions, minimizing pollution, and adopting renewable energy sources, are perceived as more resilient and responsible by investors. Consequently, these companies enjoy higher market value per share as investors anticipate long-term profitability and reduced regulatory risks.

The study also highlights the positive influence of economic sustainability on the market value per share of listed oil and gas companies in Nigeria. Economic sustainability factors, such as sound corporate governance, efficient resource allocation, and financial transparency, contribute significantly to enhancing shareholder value. Companies that prioritize economic sustainability are better equipped to navigate market uncertainties, attract investment capital, and maintain stakeholder trust. Consequently, these companies are rewarded with higher market value per share as investors perceive them as more stable and capable of generating sustainable returns over time.

The regression results suggest that all three dimensions of sustainability reporting—social, environmental, and economic—positively contribute to the firm value of listed oil and gas companies in Nigeria. This underscores the importance of sustainability reporting in enhancing the market perception and value of these companies, thereby highlighting the potential benefits of adopting comprehensive sustainability practices for both financial performance and stakeholder engagement. By prioritizing sustainability practices, oil and gas companies can not only mitigate risks and improve operational efficiency but also enhance shareholder value and contribute to long-term sustainable development. We recommend that:

1) The board of directors and executives of listed oil and gas companies in Nigeria should prioritize social sustainability initiatives and integrate them into their business strategy to enhance firm value and foster long-term stakeholder relationships.

2) Environmental Management Teams and Regulatory Bodies in Nigeria should implement and enforce stringent environmental sustainability standards and regulations for oil and gas

companies to ensure responsible resource extraction and mitigate environmental risks, ultimately enhancing firm value and safeguarding ecosystems.

3) The financial management teams and industry associations in Nigeria should focus on maintaining financial stability, optimizing operational efficiency, and adopting sustainable business practices to improve the economic sustainability index of oil and gas companies, thereby enhancing their market value and ensuring long-term viability.

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