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Corporate Social Responsibility Disclosures and Sustainable Financial Performance of Listed Oil and Gas Companies in Nigeria

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Abstract: **Objective**: This research examines the effect of aspects of corporate social responsibility disclosure on the performance of publicly traded oil and gas companies in Nigeria. It investigates the extent to which disclosures related to waste management, greenhouse gas emissions, and staff welfare impact performance. **Prior Work** shows that companies that disclose their CSR practices are more positioned for better performance. However, there are others that contradict this assertion. This paper explores the impact of CSR disclosure on sustainable financial performance in Nigeria. **Approach:** An ex post facto research design was adopted. Focus was on eight oil and gas firms publicly traded on the Nigerian Exchange Group (NGX) as at 31/12/2023. Data were collected from their financial statements from 2014 to 2023 and analysed using panel regression analysis. **Results** indicate that waste management disclosures and greenhouse gas emissions negative and statistically insignificant, whereas employee welfare disclosure was positive and statistically significant. **Implications and Value:** The findings from this study has implication for employers in the oil and gas companies in Nigeria to increase their disclosure on employee welfare. It also extends existing knowledge by providing empirical evidence for other aspects of CSR disclosures which could be relevant to researchers.

Keywords: CSR; Financial performance; Sustainability; Waste Management; Employee Welfare

JEL Classification: G30, G39, M14

1. Introduction

The concept of environmental sustainability has progressed from being merely a corporate responsibility concern to becoming an imperative that is strategically important for business. As the challenges of environmental degradation, climate change, and resource scarcity became more pronounced, regulatory bodies, investors, and consumers are being prompted to demand greater

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transparency regarding a company's environmental performance and commitment to mitigating these challenges. Corporate social responsibility disclosure are regarded as a valuable tool for companies to communicate their environmental performance to stakeholders. By disclosing their environmental accounting practices, businesses can improve their image and reputation (Yang et al., 2020). Corporate Social Responsibility (CSR) disclosure has many implications on the disclosing companies. This includes differentiating a company in the market and give it a competitive edge. Companies that prioritise CSR understand that their long-term success is interconnected with well-being of the society and the planet. By investing in sustainable practices and social initiatives, companies can contribute to a more sustainable future. Strong corporate social responsibility (CSR) performance can attract institutional investors and increase analyst forecast accuracy (Dhaliwal et al., 2011).

Additionally, Almagtari et al. (2020) claimed that environmentally conscious businesses typically maximise their resources for the good of all parties involved. According to Hassan and Lahyani (2020), businesses with the support of the public and customers are more likely to perform better and generate strong returns on investment. Igbokoyi et al. (2021) found that environmental disclosure significantly impacted return on assets because businesses that are sensitive to population growth and the need for a clean environment and efficient waste management are essential to their survival.

Businesses are now judged on their coordinated efforts to protect the environment in order to achieve long-term sustainable development as a sign of their intention and dedication to the next generation, rather than their economic viability (Sekerez, 2017). As a result, businesses are expected to disclose their environmental safety initiatives. It has been discovered that environmental reporting lowers business risks related to fluctuating energy and commodity prices as well as physical risks related to climate change (Environmental Reporting Guidelines, 2019). According to the guidelines, waste generation and disposal are costly; therefore, efforts should be made to reduce waste generation in order to improve environmental reputation and increase long-term financial benefits.

Large corporations often pursue their goals and objectives with little regard for the environment in which they operate, resulting in industrial development and environmental load that is detrimental to both society and the environment. Given that the majority of economic activity draws resources from forests, soils, seas, and waterways, certain economic developments carry risks to environmental resources (Dyduch & Krasodomska, 2017). Untreated or partially treated industrial wastes are carelessly dumped into open drains, lagoons, and streams, posing obvious risks to the environment and the economy of the country.

Stakeholder theory states that companies that prioritise stakeholder relationships should be able to maintain a competitive edge over those that do not, which explains why companies with higher levels of corporate social responsibility (CSR) typically perform better (Salvi et al., 2019). Financial resources, which result in a lower capital cost for the company, can provide a competitive advantage. A company's sustainability depends on its disclosure of corporate social responsibility, but it is especially important for oil and gas companies, which have made significant contributions to Nigeria's economic growth. However, some of these businesses do not demonstrate their dedication to the social impact of their operations by implementing environmental sustainability measures. They claim that this might not add up to their bottom lines. However, previous research has shown that companies that disclose their CSR practices can improve their reputation, gain a competitive edge, and lessen information asymmetry by letting investors know they are not at risk of negative social and environmental effects.

From the analyses of previous studies, which have yielded heterogeneous outcomes; thus, suggesting the presence of incongruent findings. While a subset of investigations (Akpan & Nkanta, 2023; Eke et al., 2023; Aderobake et al., 2023; Onyebuenyi & Ofoegbu 2002; Giami & Iwo 2021; Okeke et al., 2021; Mohammad & Aisa 2020; Gabrielle & Arianto 2019; Okpako et al., 2014) have identified a positive and statistically significant relationship, others (Akpan et al., 2024; Akpan & James 2024; Etut et al., 2024; Adegbie et al., 2023; Nwanwu 2022; Igbekoyi et al., 2021; Oti & Mbuogar 2018; Nyirenda et al., 2018) have presented findings that contradict this assertion. This study explores whether corporate social responsibility (CSR) disclosure impacts sustainable financial performance in Nigeria. The main objective of this research is to examine how different aspects of corporate social responsibility disclosure affect the performance of publicly traded oil and gas companies in Nigeria. Specifically, the study aims to identify the extent to which disclosures related to waste management, greenhouse gas emissions, and staff welfare impact these firms' performances. A significant aspect of the research is using an advanced model that builds on existing knowledge. Accordingly, this investigation seeks to address the following questions: What kind of relationship exists between CSR disclosure indicators and the sustainable financial performance of publicly listed oil and gas companies in Nigeria?

2. Literature Review and Hypotheses Development

2.1. Financial Performance

Evaluating an entity's growth, profitability, sustainability, and efficient asset utilization is referred to as financial performance. Indicators of this include profitability measures like earnings per share; liquidity and solvency ratios; gearing metrics; and financial efficiency gauges such as return on equity (ROE), asset turnover, and return on assets (IASB, 2010). Grimsley (2018) describes financial performance as the organisation's ability to generate revenue using resources from its core business activities. Reviewing a company's financial performance over time offers insights into its overall fiscal health. Corporate success mirrors a company's financial outcomes by demonstrating how well it utilizes available resources for profit generation. This aspect allows management to update shareholders regarding company profits and expansion endeavors (Olasupo & Akinselure, 2017). Financial performance reflects the extent that organisational goals have been financially achieved according to Solomon (2020).

2.2. Waste Management Disclosure

The open reporting of a company's waste management procedures and guidelines is known as waste management disclosure. Businesses can demonstrate their commitment to reducing waste, recycling, and minimising environmental impact by sharing their waste management strategies (Nwachkwu et al., 2020). By revealing these practices, companies showcase their dedication to environmental sustainability, the principles of a circular economy, and responsible handling of waste. Akpan and Nkanta (2023) highlight that effective waste management is crucial due to its implications for human health and environmental preservation. It remains a global issue, especially in developing countries where inadequate infrastructure and insufficient financial resources hinder investment in advanced waste management technologies. With much of the current disposal involving open dumping methods (Harts & Ahuja, 2016), this represents an urgent challenge facing our world today.

2.3. Greenhouse Gas Emission Disclosure

The disclosure of greenhouse gas emissions is a crucial component of corporate sustainability reporting, as it shows a company's commitment to lessening its environmental effect and promoting a more sustainable future. Information about activities pertaining to greenhouse gases—substances that trap heat in the Earth's atmosphere and cause climate change and global warming—must be shared. According to Samuel and Akpan (2022), when companies disclose details regarding their greenhouse gas emissions and the strategies they employ for management, fund providers gain insight into both risks and opportunities associated with investing in these firms. Consequently, investors can adjust investment costs up or down based on their level of risk exposure. Giving investors access to a company's greenhouse gas emissions can demonstrate its dedication to sustainability and environmental responsibility, which could improve investor perceptions and boost the company's performance. Komolafe et al. (2021) assert that disclosure of greenhouse gas emissions gives investors vital information to evaluate the companies' risk appetite, empowering them to make well-informed investment choices.

2.4. Staff Welfare Disclosure

Staff welfare disclosure is a vital internal component of corporate social responsibility (CRS) that entails corporations voluntarily disclosing information about their policies and practices that affect the welfare of their staff (Adu-Gyamfi et al., 2021) . Details about employee compensation, benefits, working conditions, training and development opportunities, and other aspect of employment may be included. Organizations demonstrate a commitment to promoting a healthy work environment and ensuring the general welfare of their personnel by openly communicating these characteristics (Verma & Kumar, 2014). It demonstrates the fact that humans are important contributors to the success of the company as well as the most relevant and critical resources (Akpan & James, 2024). Staff welfare disclosure indicates to investors that the company is committed to providing a safe and effective work environment, which raises expectations for increased productivity and performance. According to research by Roberts and Dowling (2002), companies that prioritize the welfare of their workers and are socially conscious are better able to draw in and keep talent as well as inspire workers, which boosts output and improves financial performance.

2.5. Theoretical Review

In 1984, Edward Freeman introduced the stakeholder theory, which suggests that a company should create value for all entities involved in its operations rather than focusing solely on shareholders. This framework guides organizational management and business ethics by considering employees, suppliers, local communities, creditors, and other stakeholders affected by corporate activities. Stakeholder theory integrates moral principles into management practices through considerations of social responsibility, market economics, and social contract theory. It emphasizes that corporate decisions impact numerous parties whose interests need protection (Antonelli et al., 2016). Instead of prioritizing shareholder wealth alone as a company's main objective according to this view, it's essential to maximize overall stakeholder welfare instead. Antonelli et al., describe stakeholders broadly as individuals or organizations interacting with businesses making their input integral when analyzing various facets of viable engagement beyond mere financial results is emphasized since acknowledging diverse interests provides wider insights within annual reports. Additionally, fostering comprehensive organizational strategies becomes central to underlining distinct concerns across differing groups, enhancing strategic vision accordingly.

2.6. Review of Prior Empirical Studies

Ime et al. (2024) evaluated how the cost of capital for pharmaceutical companies in Nigeria that were listed between 2013 and 2022 was affected by CSR disclosures. Using an ex-post facto research design, the study used statistical analysis with SPSS version 20 and examined secondary data using ordinary least square regression. Findings revealed that disclosures related to staff welfare and support for Indigenous ventures significantly reduced the weighted average cost of capital among these companies, whereas environmental responsibility disclosures had a minimal but positive effect.

The relationship between cost of equity and environmental disclosure among Nigerian listed consumer goods companies was investigated by Akpan et al. (2024). They collected panel data from 18 Nigerian consumer goods firms over the period from 2013 to 2022 for their analysis, utilizing an ex post facto research design. The researchers employed panel multiple regression analysis on this dataset using E-views version 10.0 as their statistical tool. Their findings revealed that greenhouse gas emission disclosures have a minimal negative effect on these companies' cost of equity (COE). In contrast, both environmental risk disclosures and waste management disclosures were found to significantly reduce COE in these companies.

Akpan and James (2024) examined the connection between the weighted cost of capital for Nigerian consumer goods companies and their corporate social responsibility disclosures. According to the study's findings, among Nigerian consumer goods companies that are listed, philanthropic responsibility disclosure significantly and negatively affects the weighted average cost of capital, environmental responsibility disclosure has a non-statistically significant impact, and community responsibility disclosures have no discernible impact.

Obiora et al. (2024) examined the relationship between the financial performance of oil and gas companies listed on the Nigerian Exchange Group (NGX) and their environmental accountability disclosures. Waste management disclosure was used to operationalize the assessment of environmental responsibility disclosure, and financial performance was measured by return on equity, return on capital employed, and return on sales margin. An ex-post facto design was used for the study. Six (6) of the ten (10) oil and gas companies listed in Nigeria that made up the study population were carefully chosen as the sample size using a purposive sampling technique. The sampled companies' annual reports and accounts, which covered the years 2013-2022, served as the source of secondary data. Regression analysis using ordinary least squares was used to assess the hypotheses. The findings showed that waste management disclosure had a positive, statistically significant impact. The listed oil and gas companies' return on equity and return on capital employed, however, were barely impacted. Additionally, waste management disclosure seemed to have a negative impact on the return on sales margin of Nigerian listed oil and gas companies, though this effect was judged statistically insignificant.

Etuk et al. (2024) explored the connection between listed Nigerian consumer goods companies' financial performance and their environmental waste management disclosures. Twenty of these businesses that are listed on the Nigerian Exchange Group (NGX) were the subject of the study. 17 of these companies were chosen for examination using secondary data taken from their financial statements using a simple purposive sampling technique. Panel least square regression analysis was used to test the hypotheses. The results showed that the financial performance of these publicly traded Nigerian consumer goods companies is significantly impacted negatively by environmental waste management.

In order to evaluate the importance of environmental information for investors, Bonetti et al. (2023) used the Fukushima nuclear accident as a natural experiment. They investigated the relationship between cost of capital and environmental disclosure and discovered that firms that disclosed their carbon emissions saw a less noticeable rise in cost of capital than those that did not.

Adegbe et al. (2023) looked into the connection between environmental disclosure and return on assets in Nigerian manufacturing firms. For their study, they used an ex-post facto research design. The Nigeria Exchange Group (NGX) listed 66 manufacturing companies as of December 31, 2021. Purposeful sampling was used to select 29 manufacturing companies. The validated data came from the selected manufacturing companies' published financial statements for the 16-year period from 2006 to 2021. According to the study's findings, there is no correlation between environmental disclosure and the return on assets of Nigerian manufacturing firms.

Akpan and Nkanta (2023) conducted a study using samples from consumer goods companies listed on the Nigerian Exchange Group between 2012 and 2021 to examine how green accounting practices affect shareholder value in Nigeria. Their findings revealed that disclosures related to biodiversity and compliance with environmental regulations significantly enhance shareholder value. Additionally, they found that information about water use and effluents positively influences the added value for shareholders of listed consumer goods firms.

The impact of employee welfare on the financial performance of Nigerian publicly traded manufacturing companies was examined by Eke et al. in 2023. During the study period, which ran from 2015 to 2021, they used secondary data from the annual reports and accounts of seven chosen listed manufacturing companies. Their results, which were obtained using an ex post facto research design, showed a strong positive correlation between these Nigerian manufacturing companies' financial success and employee welfare.

Aderobake et al. (2023) investigated the effects of effluents, waste management, and community project reporting on the audit quality of companies listed in Nigeria. Purposive sampling was used to calculate the study's sample size, which was centred on a population of ninety-five (95) businesses. The E-view statistical package was used to analyze financial statement data using the ordinary least squares method as part of an ex post facto research design. The results showed that the audit quality of non-financial companies listed on the Nigerian Exchange Group (NGX) is significantly impacted by waste management procedures and disclosures pertaining to community projects.

The effect of waste management expenses on the financial results of Nigerian oil and gas firms that were listed between 2011 and 2018 was assessed by Nwanwu (2022). Ten oil and gas companies listed on the Nigerian Exchange Group (NGX) made up the population of the study, which used an ex post facto design. For analyzing data and testing hypotheses, methods like descriptive statistics, regression analysis, and correlation coefficients were applied under a regression model framework. Results indicated that while waste management expenses had only a slight adverse effect, it was still significantly detrimental to these companies' financial performance.

The effect of environmental sustainability disclosure on the financial performance of oil and gas companies in Nigeria, Namibia, and Kenya was studied by Onyebuenyi and Ofoegbu (2022) between 2011 and 2019. Their research revealed that disclosing information about hazardous waste and affluent individuals had a statistically significant influence on earnings per share.

Giami and Iwo's (2021) study examined the relationship between listed pharmaceutical manufacturing companies' financial performance and the cost of employee welfare. The firms under review's publicly available financial statements provided secondary data. Both descriptive and inferential statistical techniques, such as ANOVA and the correlation coefficient, were used in the data analysis. Linear regression was used to test hypotheses using SPSS version 22. The study found a statistically significant positive correlation between return on assets, sales volume growth, and employee welfare costs.

The impact of revealing carbon emissions on the economic value added of oil and gas companies listed on the Nigerian stock exchange in 2018 and 2019 was investigated by Okeke et al. (2021). They applied the panel least squares method to analyze secondary source data. To assess its variables, the study used a number of analytical tests, such as the Hausman test, causality test, fixed effect model, and random effect model. The results showed that while firm size has a small positive impact on economic value added, firm revenue growth and carbon emission disclosure have a large and positive impact on economic value added.

Igbekoyi et al. (2021) investigated the relationship among a group of manufacturing companies in Nigeria between financial performance, return on assets, and environmental reporting. Using an ex post facto research design, they chose one company that was listed in Nigeria between 2008 and 2018 for their investigation. Of the 67 manufacturing companies in the population, 23 were included in the sample. According to their findings, financial performance and environmental sustainability reporting were negatively and insignificantly impacted by environmental reporting.

In their 2020 study, Mohammad and Aisa examined the impact of carbon emissions disclosure on firm value across different industry types in Indonesia. They employed the Carbon Disclosure Project (CDP) questionnaire to evaluate carbon emissions disclosure through content analysis. Firm value was measured using Tobin's Q, while companies were categorized into high-profile and low-profile industries for assessment purposes. The research utilized multiple linear regression analysis alongside an environmental management performance rating program, focusing on 43 companies listed on the Indonesian stock exchange from 2014 to 2018. Their findings revealed that disclosing carbon emissions positively and significantly affects firm value; furthermore, this effect can be amplified depending on whether a company belongs to a specific industry profile.

Gabrielle and Arianto (2019) investigated how firm value is affected by disclosure of greenhouse gas emissions and environmental performance. The study concentrated on businesses that were listed between 2014 and 2017 on the Indonesia Stock Exchange, particularly those that were taking part in the Republic of Indonesia's Ministry of Environment's environmental management performance rating assessment program. Annual reports and accounts provided secondary data. E-view was used to analyse panel data using a moderated regression analysis method. The findings showed that emission disclosures and environmental performance both greatly increase firm value.

In their 2018 study, Oti and Mbu-Ogar explored the link between return on assets performance for selected listed oil and gas companies in Nigeria with environmental and social disclosures. They utilized time series data over five decades sourced from the Central Bank of Nigeria. Employing ordinary least square regression analysis, they grounded their research within stakeholder theory and legitimacy theory to illustrate how oil-and-gas sector performance is related to the corporate need for environmental disclosure among societal groups. Their findings revealed that waste management disclosure positively influenced firm performance in Nigerian listed oil and gas companies; however, disclosing information about employee health safety or community development did not show any significant impact on these firms' performances.

Nyirenda et al. (2018) conducted a study to investigate how environmental management practices impact the financial performance of a mining company in South Africa, using the Johannesburg Stock Exchange's (JSE) Socially Responsible Index (SRI) for green steel as their metric. The results indicated that there is no significant relationship between these environmental management techniques and financial performance.

Royet (2016) investigated the impact of environmental disclosures on dividend payments among manufacturing companies listed in France using a multiple regression test tool. Businesses' dividend payments and environmental remediation disclosures were found to be positively and significantly correlated by the study. Similar relationships were also found when evaluating environmental disclosures pertaining to employees' health and safety.

Okpako et al. (2014) examined the link between firm performance and employee welfare disclosure in a study involving seven selected companies from the manufacturing construction industry. They assessed firm performance using return on equity, while staff welfare disclosure was represented by expenses related to training and development, as well as welfare, safety, and health measures. The research employed multiple regression analysis which revealed that disclosing information about employee welfare significantly influences business performance.

A study by Makori and Jagongo (2013) investigated how environmental accounting affected the profitability of businesses. The study concentrated on a few companies that were listed on the Bombay Stock Exchange in India. The financial statements and annual reports of 14 randomly chosen public companies from this stock exchange were the source of the data. Data analysis using multiple regression models showed that environmental accounting practices were strongly positively correlated with both net profit margin and dividend per share (DPS). On the other hand, a significant inverse relationship between earnings per share (EPS) and return on capital employed (ROCE) was also noted.

2.7. Based on the information provided earlier, this study has formulated the following null hypotheses:

Ho_1: Waste management disclosure have no significant effect on sustainable financial performance of listed oil and gas companies in Nigeria.

Ho_2: Greenhouse gas emission disclosures have no significant effect on sustainable financial performance of listed oil and gas companies in Nigeria.

Ho_3: There is no significant relationship between staff welfare disclosure and sustainable financial performance in the Nigeria oil and gas companies.

3. Methodology

The study focused on eight publicly traded oil and gas companies in the Nigerian Exchange Group (NGX) as of December 31, 2023. It used an ex post facto methodological framework. All of these entities were included in the study's sample using a purposive sampling technique. It included all oil and gas companies that regularly sent their financial statements and annual reports to NGX. This study's timeframe was 2014-2023, relevant secondary data were extracted from the financial statements and annual reports of the companies. The hypotheses were tested using panel regression analysis, also known as panel ordinary least squares.

3.1. Model Specification

This study establishes an econometric model to investigate the relationship between dependent and independent variables, aiming to assess how waste management disclosure, greenhouse gas emission disclosure, and staff welfare disclosure influence sustainable financial performance. It achieves this by utilising theoretical literature and previously reviewed empirical studies. The model is presented thus:

ROA = F (WMD, GGED, SWD) ---------------------------- (1)

The explicit formula of the model is stated as follows:

$ROA= \beta_0 + \beta_1 WMD_{it}+ \beta_2 GGED_{it}+\beta_3 SWD_{it}+ \mu_{it}$ ------------------ (2)

Where:

ROA= Return on Assets

WMD= Waste Management Disclosure

GGED= Greenhouse Gas Emission Disclosure

SWD= Staff Welfare Disclosure

μ = Error (Stochastic term)

3.2. Operationalisation of Study Variables

Table 1. Variable Definition and Measurement

Variables	Symbol	Measurement	Source(s)	Apriori Sign
Dependent:				
Sustainable financial performance: Return on Assets	ROA	Total assets divided by profit before interest and taxes	Irom et al., (2018)	+
Independent:				
Waste Management Disclosure	WMD	For businesses that reveal waste management information, the score is "1"; otherwise, it is 0.	Global Reporting Initiative (GRI, 2021)	+
Greenhouse Gas Emission Disclosure	GGED	Measured as "1" for businesses that report greenhouse gas emissions, and 0 otherwise.	Global Reporting Initiative (GRI, 2021)	+

Staff Welfare Disclosure	SWD	Measured as a 1" for businesses that report on employee welfare and a "0" otherwise.	Global Reporting Initiative (GRI, 2021)	+

Source: Author's Compilation, 2025.

4. Results and Discussion

4.1. Descriptive Statistics Analysis

Table 2. Descriptive Statistics Results

Variables	Mean	Std. Dev	Min	Max	Obs
ROA	1.44	23.68	-17.36	176.27	80
WMD	0.12	0.32	0	1	80
GGED	0.14	0.35	0	1	80
SWD	0.94	0.25	0	1	80

Source: Author's Compilation, 2025 (STATA Output)

The descriptive statistics that provide the attributes of the variable data set are displayed in Table 2. A proxy for sustainable financial performance was return on assets (ROA), which has a mean of 1.44, a standard deviation of 23.68, a minimum of -71.36, and a maximum of 176.27. Waste management, green gas emission, and employee welfare disclosures, which served as proxies for the independent variable corporate social responsibility, have respective means of 0.12, 0.14, and 0.94 and standard deviations of 0.32, 0.35, and 0.25.

4.2. Data Normality Test

Table 3.

Variables	W	V	Z	Prob.
ROA	0.428	37.998	7.953	0.000
WMD	0.850	9.978	5.029	0.000
GGED	0.883	7.813	4.495	0.000
SWD	0.669	22.046	6.763	0.000

Normality Test (Shapiro-Wilk)

Source: Author's Compilation, 2025 (STATA Output)

Using Shapiro-Wilk, Table 3 displays the variables' normality. All of the variables are not normally distributed, as indicated by the probability values of the independent and dependent variables being less than 0.05 at the significance level.

Table 4. Correlation Matrix (Spearman rank correlation)

Variables	ROA	WND	GGED	SWD
ROA	1.000			
WMD	0.1528	1.000		
GGED	-0.0860	-0.0330	1.000	
SWD	0.2585	0.0959	0.1076	1.000

Source: Author's Compilation, 2025 (STATA Output)

The Spearman rank correlation matrix between the dependent and independent variables is displayed in Table 4. Green gas emissions have a negative (-0.0860) correlation with return on assets, whereas waste management and employee welfare disclosures was positive (0.1528 and 0.2585). There is no indication of a multicollinearity issue when examining the overall relationship between all the variables.

Table 5. Multicollinearity Test (Variance Inflation Factor)

	VIF	1/VIF
SWD	1.02	0.978
GGED	1.01	0.986
WMD	1.01	0.988
Mean	1.02	

Source: Author's Compilation, 2025 (STATA Output)

The results of the multicollinearity test using the variance inflation factor are displayed in Table 5. All of the variables' VIFs and means are less than 10, indicating that there is no multicollinearity issue with the variables. This also supports the findings of the correlation matrix in Table 4. As a result, there is no multicollinearity issue with the variables.

4.3. Regression Analysis

Table 6. Panel Regression Analysis (Panel Ordinary Least Square POLS)

	Coff.	T	P value
WMD	-0.35	-0.04	0.966
GGED	-3.39	-0.45	0.652
SWD	31.50	2.95	0.004
R2			0.107
F Stat.			2.93
Prob.			0.039
Breusch and Pagan Lagrangian multiplier test for random effect			
Chi2			0.00
Prob.			0.476
Breusch-Pagan / Cook-Weisberg test for Heteroskedacity			
Chi^2			0.49
Prob.			0.485
Wooldridge test for autocorrelation			
F. Stat.			4.33
Prob			0.067

Source: Author's Compilation, 2025 (STATA Output)

Table 6 presents the panel regression analysis along with pre- and post-estimation tests for the model. To decide between using a random effect model or a panel ordinary least squares (OLS) model, we performed the Breusch and Pagan Lagrangian multiplier test for random effects. The results showed a chi-squared value of 0.00 with a p-value of 0.476, indicating that panel OLS was appropriate. As such, we used the panel ordinary least squares method for estimating our model.

The outcomes of the diagnostic test using the Breusch-Pagan/Cook-Weisberg test, reveal a chi-squared value of 0.49 with a p-value of 0.485; this exceeds the significance threshold of 0.05 and implies that heteroskedasticity is not an issue in the model. Furthermore, results from the estimated Wooldridge test for autocorrelation indicate an F-statistic of 4.33 and a corresponding p-value of 0.067, suggesting there is no concern regarding autocorrelation in the residuals.

Waste management disclosure (WMD) has a negative (-0.35) and negligible (0.966) impact on sustainable performance (return on assets), according to the Panel Ordinary Least Squares result. Similarly, the return on assets for green gas emission disclosure is negative (-3.39) and insignificant (0.652), whereas the return on assets for staff welfare disclosure is positive (31.50) and significant (0.004). This suggests that the performance of the oil and gas companies listed on the Nigeria Exchange Group will improve if staff welfare disclosure is increased. The value of R^2 is 0.107, implying that the independent variables can account for about 11% of the variation in the dependent variable. Additionally, the model is well-fitting, as indicated by the F stat's value of 2.93 with p value of 0.039, both of which are below the 0.05 level of significance.

The result of this analysis shows that waste management disclosure has negative and statistically insignificant effect on return on assets. This is consistent with the results of studies by Adegbe et al. (2023) and Obiora et al. (2024). On the other hand, Aderobake et al. (2023) reported that performance is greatly impacted by disclosing information about waste management and community projects.

Adegbe et al. (2023) found that greenhouse gas emissions have a negative and statistically insignificant impact on return on assets. This contrasts with the study by Gabrielle and Ariant (2019), which identified a statistically significant effect of these emissions. In agreement with Okpaka et al. (2014), Giami and Iwo (2021), and Eke et al. (2023)—who each observed positive, statistically significant effects of employee welfare performance—staff welfare disclosure also shows a positive, statistically significant influence on sustainable performance measured by return on assets. However, this contradicts findings from Ime et al. (2024) and Oti and Mbu-Ogar (2018), both indicating detrimental impacts instead.

5. Conclusion

The purpose of this study is to investigate the relationship between corporate social responsibility disclosures and the long-term viability of Nigerian publicly traded oil and gas firms. The results of the analysis showed that while staff welfare disclosures have a positive and statistically significant impact on return on assets, waste management and greenhouse gas emissions disclosures have a negative and statistically insignificant effect. We conclude that enhancing sustainable performance in the oil and gas industry requires staff welfare disclosures. Furthermore, it is still beneficial to keep waste management and greenhouse gas emission disclosures in the governance framework even though they have a negative and statistically insignificant impact on return on assets.

5.1. Recommendation

Drawing from this study we recommend that oil and gas companies should raise their staff welfare disclosure because of the notable beneficial effects. Businesses should give top priority to improving their environmental accounting disclosure in a number of areas, such as waste management, greenhouse gas emissions, and employee welfare disclosures. In order to promote accountability and transparency in environmental management, it is necessary to set up efficient reporting system that accurately collects and convey environmental performance metrics to stakeholders. Along with attaining commercial success, oil and gas companies should give top priority to their environmental obligations. To guarantee sustainability, they must endeavour to strike a balance between business performance and environmental pledges.

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