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I. Title page
II. Abstract (150-250 words)
III. Keywords (3-5)
IV. Introduction
V. Literature Review
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IX. References (APA 7th Edition)
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DETERMINANTS OF CORPORATE SOCIAL RESPONSIBILITY OF LISTED OIL AND GAS FIRMS IN NIGERIA

Ibikunle Adedamola Kolawole

ABSTRACT

The study examines the determinants, including ÿrm size, leverage, proÿtability, and board gender diversity, of CSR expenditure. Using an ex-post facto design and panel regression analysis, data from annual reports of nine oil and gas companies from 2013 to 2023 are analyzed. Results indicate that gender diversity on corporate boards positively and signiÿcantly a ects CSR expenditure, while ÿrm size exhibits a positive relationship with CSR spending. In contrast, leverage and proÿtability do not emerge as signiÿcant determinants. These ÿndings underscore the strategic importance of inclusive governance and integrated CSR strategies for oil and gas ÿrms in Nigeria. Recommendations include enhancing board diversity, integrating CSR into corporate strategy, strengthening regulatory frameworks, and promoting stakeholder engagement to enhance CSR performance and sustainable development in the industry.

Keywords: CSR, firm size leverage, profitability, gender diversity

I. Introduction

Corporate social responsibility (CSR) has emerged as a critical aspect of business operations globally, especially within industries that have significant environmental and social footprints. One such industry is the oil and gas sector, which plays a pivotal role in the economic development of many countries, including Nigeria. The activities of oil and gas firms have far-reaching impacts on the environment and local communities, leading to increased scrutiny and expectations for these firms to engage in responsible and sustainable practices (Adegbite et al., 2020; Uadiale & Fagbemi, 2021).

In Nigeria, the oil and gas industry is a cornerstone of the national economy, contributing significantly to government revenue, foreign exchange earnings, and employment (Osinubi & Olaleru, 2022). However, the industry's operations have also been associated with numerous environmental and social challenges, including oil spills, gas flaring, and conflicts with host communities (Obi, 2021; Nwokeji et al., 2023). These challenges underscore the importance of CSR in mitigating negative impacts and fostering sustainable development.

CSR expenditure, reflecting a firm's commitment to social and environmental responsibilities, is a critical measure of its CSR performance. Understanding the determinants of CSR expenditure is essential for policymakers, stakeholders, and the firms themselves to enhance CSR practices and outcomes (Adeyanju, 2020; Ugwunwanyi & Ekene, 2021). This study aims to investigate the determinants of CSR expenditure in listed oil and gas firms in Nigeria, focusing on four key independent variables: firm size, leverage, firm profitability, and board gender diversity.

Despite the significant contributions of the oil and gas sector to Nigeria's economy, the industry has been plagued by numerous challenges related to environmental degradation and social conflicts (Adegbite et al., 2020; Uadiale & Fagbemi, 2021). Oil spills, gas flaring, and pollution have caused severe environmental damage, adversely affecting the livelihoods of local communities (Obi, 2021; Nwokeji et al., 2023). These issues have heightened the demand for robust CSR practices among oil and gas firms to address and mitigate these impacts.

However, the extent and effectiveness of CSR activities in the Nigerian oil and gas sector remain a subject of debate. While some firms engage in CSR initiatives, the motivations behind these activities and the factors influencing CSR expenditure vary widely.

Understanding these determinants is crucial for developing effective CSR strategies that can enhance the industry's contribution to sustainable development (Adeyanju, 2020).

Several factors potentially influence CSR expenditure in oil and gas firms. Firm size is often considered a critical determinant, with larger firms having more resources and a higher public profile, which may drive greater CSR investment (Ikhieseme et al., 2022). Leverage, or the degree to which a firm is financed by debt, can also impact CSR spending, as highly leveraged firms might prioritize debt repayment over CSR activities (Ajayi & Olofinnade, 2023). Firm profitability, reflecting a company's financial health and capability to allocate resources to CSR activities, may influence its CSR practices, with more profitable firms potentially having more funds to dedicate to CSR initiatives (Babalola, 2021). Lastly, board gender diversity, representing the inclusion of women on corporate boards, has been linked to improved CSR performance due to diverse perspectives and inclusive decision-making processes (Yekini et al., 2020).

Despite the theoretical underpinnings suggesting these relationships, empirical evidence on the determinants of CSR expenditure in the Nigerian oil and gas sector remains limited. This gap in knowledge hinders the ability of firms to develop effective CSR strategies and for policymakers to create supportive regulatory frameworks. Consequently, there is a pressing need for a comprehensive analysis of the factors influencing CSR expenditure in this critical sector.

The primary objective of this study is to examine the determinants of CSR expenditure in listed oil and gas firms in Nigeria. Specifically, the study aims to:

I. Assess the impact of firm size on CSR expenditure of oil and gas companies in Nigeria.
II. Investigate the influence of leverage on CSR expenditure of oil and gas companies in Nigeria.
III. Evaluate the effect of firm profitability on CSR expenditure of oil and gas companies in Nigeria.
IV. Analyze the role of board gender diversity in CSR expenditure of oil and gas companies in Nigeria.

By achieving these objectives, the study will provide valuable insights into the factors driving CSR practices in the Nigerian oil and gas sector, offering practical implications for firms, policymakers, and other stakeholders.

To guide the investigation, the study will address the following research questions:

a) How does firm size affect CSR expenditure in listed oil and gas firms in Nigeria?
b) What is the impact of leverage on CSR expenditure in these firms?
c) How does firm profitability influence CSR expenditure in the Nigerian oil and gas sector?
d) What role does board gender diversity play in determining CSR expenditure?

This study is significant for several reasons. First, it contributes to the existing body of knowledge on CSR by providing empirical evidence on the determinants of CSR expenditure in the Nigerian oil and gas sector. This insight is crucial for understanding the factors that drive CSR activities in an industry with substantial social and environmental impacts.

Second, the findings of this study will inform the development of CSR strategies and policies for oil and gas firms in Nigeria. By identifying the key determinants of CSR expenditure, firms can tailor their CSR initiatives to enhance their social and environmental performance, thereby improving their reputation and stakeholder relations (Adeyanju, 2020).

Third, the study will provide policymakers with evidence-based recommendations for creating a supportive regulatory environment that encourages effective CSR practices. This can lead to the development of policies and regulations that promote transparency, accountability, and sustainability in the oil and gas sector (Ajayi & Olofinnade, 2023).

Lastly, the study will highlight the importance of board gender diversity in CSR practices, offering insights into how diverse board compositions can enhance corporate decision-making and CSR outcomes. This has broader implications for corporate governance and the promotion of gender equality in the business environment (Yekini et al., 2020).

The scope of this study is limited to listed oil and gas firms in Nigeria. The focus on listed firms is due to their significant economic contributions and the availability of relevant financial and CSR data. The study will analyze data over a specific period (from 2013 to 2023) to assess the trends and determinants of

CSR expenditure. The independent variables considered are firm size, leverage, firm profitability, and board gender diversity, while the dependent variable is CSR expenditure.

II. Literature Review

Conceptual Framework

Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) refers to the practice whereby businesses engage in initiatives that benefit society and the environment beyond their financial interests and legal obligations. CSR encompasses a wide range of activities, including environmental management, ethical business practices, philanthropy, and community engagement (Adegbite et al., 2020). Companies that embrace CSR aim to contribute positively to societal goals, such as sustainable development, while also enhancing their reputation, building customer loyalty, and fostering a positive workplace environment (Ugwunwanyi & Ekene, 2021). In the context of the oil and gas sector, CSR is particularly crucial due to the industry's significant environmental and social impacts, necessitating proactive measures to mitigate negative effects and support affected communities (Obi, 2021; Nwokeji et al., 2023).

Firm Size

Firm size is a critical determinant in various aspects of corporate behavior, including CSR activities (Ikhieseme et al., 2022). Larger firms often have more resources at their disposal, such as financial capital, human resources, and technological capabilities, enabling them to invest more substantially in CSR initiatives (Osinubi & Olaleru, 2022). Additionally, larger companies are typically more visible to the public and regulators, which can increase the pressure to adopt robust CSR practices to maintain their reputation and comply with regulatory requirements (Adegbite et al., 2020). In many cases, larger firms also have more established structures and processes for managing CSR, contributing to more systematic and impactful CSR efforts (Ikhieseme et al., 2022).

Leverage

Leverage refers to the extent to which a firm is financed through debt relative to its equity. The level of leverage can significantly influence a company's financial decisions, including its CSR expenditures (Ajayi & Olofinnade, 2023). High leverage means a firm has significant debt obligations, which might constrain its ability to allocate funds toward CSR activities, as priority is given to servicing debt (Uadiale & Fagbemi, 2021). Conversely, firms with lower leverage might have more financial flexibility to invest in CSR. The relationship between leverage and CSR is complex, as it involves balancing the demands of debt holders with the expectations of stakeholders for responsible business conduct (Ajayi & Olofinnade, 2023; Ugwunwanyi & Ekene, 2021).

Profitability

Profitability is a measure of a firm's financial performance and its ability to generate earnings compared to its expenses. Profitable firms are more likely to engage in CSR activities because they have the necessary financial resources to invest in such initiatives (Babalola, 2021). Higher profitability can facilitate greater CSR expenditure, allowing firms to undertake more comprehensive and impactful social and environmental projects (Adeyanju, 2020). Moreover, profitable firms might use CSR as a strategy to enhance their corporate image, attract investors, and foster goodwill among stakeholders, thus reinforcing their market position and long-term sustainability (Babalola, 2021; Adegbite et al., 2020).

Board Gender Diversity

Board gender diversity refers to the inclusion of women in corporate boardrooms. This diversity can significantly influence a firm's approach to CSR, as diverse boards bring varied perspectives, experiences, and values, which can enhance decision-making processes (Yekini et al., 2020). Research suggests that gender-diverse boards are more likely to prioritize social and environmental issues, leading to stronger CSR commitments and performance (Adegbite et al., 2020; Ugwunwanyi & Ekene, 2021). The presence of women on boards can also signal a company's commitment to inclusivity and equality, further enhancing its reputation and stakeholder trust (Yekini et al., 2020). Board gender diversity is thus seen as a key factor in driving more comprehensive and effective CSR strategies (Yekini et al., 2020).

Review of Empirical Studies

Adegbite et al. (2020) examined CSR practices in weak institutional environments, focusing on Nigeria. Their study revealed that companies with strong governance structures and stakeholder pressures are more likely to engage in CSR activities. CSR is seen as a tool to manage risks and build legitimacy in challenging environments. Similarly, Uadiale & Fagbemi (2021) explored the relationship between CSR and financial performance in Nigerian firms, finding that firms with higher CSR investments tend to report better financial performance, suggesting that CSR can be a value-adding strategy. Nwokeji et al. (2023) investigated the environmental impacts of oil and gas exploration in the Niger Delta and the role of CSR. Their findings highlighted that effective CSR practices significantly mitigate environmental degradation and improve community relations. Additionally, Adeyanju (2020) analyzed CSR activities in Nigerian banks, demonstrating that robust CSR practices are associated with improved profitability and customer loyalty, indicating that CSR is not only a regulatory requirement but also a strategic business tool.

Firm size is a critical determinant in various aspects of corporate behavior, including CSR activities. Ikhieseme et al. (2022) studied the impact of firm size on CSR disclosure in Nigeria, revealing that larger firms are more likely to disclose their CSR activities due to greater public visibility and regulatory scrutiny. Osinubi & Olaleru (2022) reviewed the economic implications of the oil and gas industry in Nigeria and found that larger firms in this sector have more extensive CSR programs due to their substantial resources and the need to maintain their social license to operate. Egbunike & Okerekeoti (2018) investigated firm size and CSR in Nigerian manufacturing companies, finding that larger firms have more structured CSR strategies and higher levels of CSR expenditures. Harjoto et al. (2019) analyzed firm size and CSR across different industries globally, concluding that firm size positively correlates with CSR engagement, as larger firms are more likely to participate in CSR due to resource availability and stakeholder expectations. From the review of empirical studies, the following hypothesis is stated:

H01: Firm size has no significant effect on the CSR performance of listed oil and gas companies in Nigeria

Leverage refers to the extent to which a firm is financed through debt relative to its equity, and it can significantly influence a company's financial decisions, including its CSR expenditures. Ajayi & Olofinnade (2023) examined the relationship between leverage and CSR in Nigerian listed companies, finding that highly leveraged firms tend to invest less in CSR activities due to the pressure to meet debt obligations. Similarly, Uadiale & Fagbemi (2021) explored how financial leverage impacts CSR disclosure, revealing that firms with higher leverage disclose less about their CSR activities, likely due to financial constraints. Bae et al. (2018) conducted a study on leverage and CSR in South Korean firms, discovering that high leverage negatively affects CSR investments, as firms prioritize debt servicing over discretionary expenditures like CSR. Rhou & Koh (2014) reviewed leverage and CSR in the hospitality industry, showing that firms with lower leverage are more inclined to engage in CSR activities, suggesting financial flexibility plays a critical role in CSR investment decisions. The study tests the hypothesis that:

H02: Leverage has no significant effect on the CSR performance of listed oil and gas companies in Nigeria

Profitability is a measure of a firm's financial performance and its ability to generate earnings compared to its expenses, which can influence its CSR activities. Babalola (2021) investigated the effect of profitability on CSR among Nigerian listed companies, concluding that more profitable firms are likely to spend more on CSR, viewing it as a strategic investment to enhance corporate reputation and stakeholder relationships. Adeyanju (2020) linked organizational profitability with CSR activities in Nigerian banks, finding a positive correlation. Profitable firms tend to have more resources to allocate towards social and environmental initiatives. Nwokeji et al. (2023) examined the profitability of oil and gas firms and their CSR commitments, showing that firms with higher profits invest more in CSR to maintain their social license and mitigate environmental impacts. Javed et al. (2020) studied the relationship between profitability and CSR in South Asian countries, revealing that higher profitability leads to increased CSR activities, as firms seek to leverage their financial success to enhance their societal contributions.

From the foregoing discussion, this study tests the hypothesis that:

H03: Profitability has no significant effect on the CSR performance of listed oil and gas companies in Nigeria

Board gender diversity refers to the inclusion of women in corporate boardrooms, which can significantly influence a firm's approach to CSR.

Yekini et al. (2020) explored the impact of board gender diversity on CSR in Nigerian firms, finding that gender-diverse boards are more likely to engage in CSR activities, driven by diverse perspectives and inclusive decision-making processes. Al-Shaer & Zaman (2016) examined the role of board gender diversity in CSR disclosures, concluding that firms with more women on their boards tend to have better CSR reporting practices, reflecting greater accountability and transparency. Post et al. (2011) studied the influence of board gender diversity on CSR in US firms, finding that gender-diverse boards positively impact CSR activities, suggesting that women bring unique insights and a stronger emphasis on social issues. Ben-Amar et al. (2017) investigated the effect of board gender diversity on CSR performance in Canadian firms, demonstrating that gender-diverse boards are associated with higher CSR performance, supporting the notion that diversity enhances corporate governance and ethical standards.

Thus, this study tests the hypothesis that:

H04: Board gender diversity has no significant effect on the CSR performance of listed oil and gas companies in Nigeria

Theoretical Review

Legitimacy theory provides a robust framework for understanding corporate social responsibility (CSR) practices, especially in the context of listed oil and gas firms in Nigeria. This theory posits that organizations seek to operate within the bounds and norms of their respective societies to secure legitimacy, which is crucial for their survival and success (Suchman, 1995). Legitimacy is not static; it is a dynamic resource that organizations must continuously maintain and manage through their actions and disclosures.

According to legitimacy theory, CSR activities and disclosures are strategic responses to societal pressures and expectations. Firms engage in CSR to align their operations with social norms, values, and beliefs, thereby gaining or maintaining legitimacy (Deegan, 2019). This is particularly relevant for oil and gas companies, which often face significant scrutiny due to the environmental and social impacts of their operations. By engaging in CSR, these firms aim to demonstrate their commitment to societal welfare and mitigate negative perceptions (Michelon et al., 2015).

Furthermore, legitimacy theory suggests that the extent and nature of CSR activities and disclosures can vary depending on the firm's characteristics, such as size, leverage, profitability, and board gender diversity. Larger firms, for example, face greater public visibility and stakeholder expectations, prompting them to engage more in CSR to maintain legitimacy (Gray et al., 2014). Similarly, firms with higher profitability have more resources to invest in CSR, using it as a means to strengthen their legitimacy (Bebbington et al., 2008). Board gender diversity also plays a role, as diverse boards are often associated with broader perspectives and a greater focus on ethical and social issues, which can enhance the firm's legitimacy through CSR (Bear et al., 2010).

Legitimacy theory also provides insights into the role of leverage in CSR. Firms with higher leverage may face greater scrutiny from creditors and investors, leading them to engage in CSR to signal their commitment to ethical practices and reduce perceived risks (Roberts, 1992). This is especially relevant in contexts like Nigeria, where regulatory frameworks may be weak, and firms rely on CSR to build trust and legitimacy with stakeholders (Adegbite et al., 2020).

III. Methodology

The research utilizes an ex-post facto design to examine the determinants of corporate social responsibility (CSR) in listed oil and gas firms in Nigeria. This design involves observing and analyzing existing data to identify relationships between variables without intervention or manipulation by the researcher (Hair et al., 2014). By examining historical data from annual reports, the study aims to determine the influence of firm size, leverage, profitability, and board gender diversity on CSR expenditure.

The population of interest comprises all 9 listed oil and gas companies in Nigeria. Given the specific focus on CSR practices within this sector, the sample collected was done using census sampling technique. The data for the study were collected from secondary sources, primarily the annual reports of the selected oil and gas companies for 11 years (2013 to 2023). Annual reports provide comprehensive information on financial performance, CSR activities, board composition, and other relevant variables. These reports were accessed through company websites, regulatory bodies, or financial databases.

The dependent Variable is corporate social responsibility expenditure (performance), while the independent variables are firm size, leverage, profitability, and board gender diversity. The study employed the panel regression analysis to test the hypotheses and examine the relationships between the independent and dependent variables. Panel regression is particularly suitable for analyzing longitudinal data, such as annual reports from multiple firms over several years (Gujarati, 2004). This approach allows for controlling for individual heterogeneity across firms and capturing the effects of time-related factors.

The following regression model was used to test the hypotheses.

$$CSR_{it} = \alpha_0 + \beta_1 FS_{it} + \beta_2 LE_{it} + \beta_3 PR_{it} + \beta_4 GD_{it} + \varepsilon_{it}$$

Where CSR = corporate social responsibility

FS = Firm size

LE = Leverage

PR = Profitability

GD = Gender diversity

Table 1: Definition and Measurement of Variables

Variable Acronym	Definition	Measurement	Source
CSR	Corporate social responsibility	Total expenditure on CSR activities divided by total assets	Uadiale & Fagbemi, 2021
FS	Firm size	Natural logarithm of total assets	Adegbite et al., 2020
LE	Leverage	Total debts divided by total assets	Harjoto et al., 2019
PR	Profitability	Earnings before interest and tax divided by total assets	Adegbite et al., 2020
GD	Gender diversity	Ratio of female directors to board size	Ben-Amar et al., 2017

IV. Discussion of Results

The results of the study are discussed in this section. The results presented include descriptive, correlation and regression analysis. Table 1 below presents the descriptive analysis.

Table 1

Descriptive Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
csr	99	.0583939	.0426092	.012	.228
fs	99	10.13168	2.90552	6.4	15.652
le	99	.6733636	.1545561	.299	.99
pr	99	.2382828	.2299003	-.727	.895
gd	99	.2016263	.0991375	0	.5

The descriptive analysis reveals that the mean CSR expenditure among the sampled oil and gas firms is 0.058, with a standard deviation of 0.043. This indicates that, on average, these companies allocate approximately 5.8% of their total assets towards CSR activities. The minimum CSR expenditure observed is 0.012, while the maximum is 0.228, suggesting considerable variability in CSR spending across the sampled firms. The relatively low standard deviation indicates that the data points are clustered closely around the mean, indicating a degree of consistency in CSR expenditure levels among the firms.

The analysis indicates that the mean firm size, measured as the natural logarithm of total assets, is 10.132, with a standard deviation of 2.906. The minimum firm size observed is 6.4, while the maximum is 15.652. These figures suggest substantial variation in the size of the sampled oil and gas firms. The relatively high standard deviation indicates a wide dispersion of firm sizes around the mean, reflecting the diverse scale of operations within the industry. Larger firms, as indicated by higher values of the natural logarithm of total assets, may have greater resources available for CSR initiatives.

The descriptive statistics reveal that the mean leverage among the sampled firms is 0.673, with a standard deviation of 0.154. The minimum leverage observed is 0.299, while the maximum is 0.99. Leverage measures the extent to which firms rely on debt financing, with higher values indicating higher levels of debt relative to equity. The relatively high mean leverage suggests that the sampled oil and gas firms, on average, have a moderate reliance on debt financing. However, the wide range of leverage values indicates varying degrees of financial leverage across the firms, which may influence their ability to allocate resources towards CSR activities.

The analysis indicates that the mean profitability among the sampled firms is 0.238, with a standard deviation of 0.230. Profitability is measured as the return on assets (ROA), with higher values indicating greater profitability. The minimum profitability observed is -0.727, while the maximum is 0.895. The positive mean profitability suggests that, on average, the sampled oil and gas firms generate positive returns on their assets. However, the wide range of profitability values, including negative returns in some cases, highlights the volatility and financial challenges inherent in the industry, which may impact CSR spending decisions.

The descriptive statistics reveal that the mean gender diversity on corporate boards among the sampled firms is 0.202, with a standard deviation of 0.099. Gender diversity is measured as the proportion of female directors on corporate boards, ranging from 0 to 0.5. The minimum gender diversity observed is 0, indicating no female representation on some boards, while the maximum is 0.5, suggesting gender-balanced boards in some instances. The positive mean gender diversity indicates a moderate level of female representation on corporate boards within the sampled oil and gas firms. However, the wide dispersion of gender diversity values suggests considerable variation in board compositions across the industry, which may influence CSR decision-making processes and outcomes.

Table 2 below presents the results of the correlation analysis

Table 2
Correlation Analysis

	csr	fs	le	pr	gd
csr	1.0000				
fs	0.2933	1.0000			
le	-0.1079	-0.3017	1.0000		
pr	-0.1673	-0.2299	0.0055	1.0000	
gd	0.2424	-0.0598	0.0983	0.0221	1.0000

From the Table above, firm size and gender diversity have positive associations with corporate social responsibility. These indicate that larger firms and companies with high female presence on their board tend to engage more in CSR expenditure. However, leverage and profitability have negative correlations with CSR. These indicate that companies that are highly geared spend less on CSR activities. Similarly, profitable firms spend less on CSR performance.

Further observation of the correlation values indicates that there is a mild correlation among the independent variables, suggesting that there are no excessive correlations between the independent variables. Guajarati (2004) noted that correlation values below 0.80 is an indication of the absence of multicollinearity among the independent variables.

In addition to the correlation analysis, this study conducts an advanced test for multicollinearity using the variance inflation factor (VIF). The results of the test is presented in Table 3 below.

Table 3
Diagnostic Tests

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
          fs |      1.17    0.856236
          le |      1.11    0.898128
          pr |      1.06    0.942456
          gd |      1.01    0.989134
-------------+----------------------
    Mean VIF |      1.09

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of csr

         chi2(1)      =    37.80
         Prob > chi2  =   0.0000
```

The multicollinearity test indicated that there are no exact correlations among the pairs of independent variables. This is because all VIF values are below 10 and tolerance values are consistently above 0.10. These are indications of absence of multicollinearity among the independent variables.

Regression Analysis and Test of Hypotheses

This section presents the results of the regression analysis and the test of the four hypotheses stated earlier. The results are presented in Table 4.

Table 4
Regression Analysis

Linear regression

Number of obs =	99
F(4, 94) =	2.52
Prob > F =	0.0460
R-squared =	0.1673
Root MSE =	.0397

csr	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
fs	.0039271	.0018112	2.17	0.033	.000331	.0075232
le	-.0145153	.0336647	-0.43	0.667	-.0813574	.0523267
pr	-.0206237	.0188685	-1.09	0.277	-.0580877	.0168402
gd	.1143278	.0501706	2.28	0.025	.0147128	.2139427
_cons	.0102429	.0407396	0.25	0.802	-.0706466	.0911324

The regression analysis results reveal that firm size, measured as the natural logarithm of total assets, has a statistically significant positive effect on corporate social responsibility (CSR) expenditure among the sampled oil and gas firms in Nigeria. With a coefficient of 0.004 and a t-value of 2.17, the analysis indicates that, on average, a one-unit increase in firm size is associated with a 0.004 unit increase in CSR expenditure, suggesting that larger firms allocate more resources towards CSR activities. The standard error of the coefficient is relatively low at 0.002, indicating the reliability of the estimated coefficient, while the probability associated with the coefficient is 0.033, indicating statistical significance at the 0.05 significance level. These findings underscore the importance of firm-specific characteristics, such as size, in shaping CSR spending decisions within the oil and gas industry, with larger firms potentially having greater financial capacity and visibility to engage in CSR initiatives as part of their corporate strategy. Based on the result, this study rejects the null hypothesis one, which states that firm size has no significant effect on CSR on listed oil and gas companies in Nigeria.

The regression analysis results suggest that leverage, measured as the extent to which firms rely on debt financing, does not have a statistically significant effect on corporate social responsibility (CSR) expenditure among the sampled oil and gas firms in Nigeria. The coefficient of leverage is -0.015, indicating that, on average, a one-unit increase in leverage is associated with a 0.015 unit decrease in CSR expenditure, albeit the negative relationship is not statistically significant. The standard error of the coefficient is 0.034, suggesting some imprecision in the estimated coefficient. The t-value associated with the coefficient is -0.43, indicating that the coefficient estimate is less than one standard deviation from zero. Furthermore, the probability associated with the coefficient, or the p-value, is 0.667, exceeding the conventional threshold of 0.05 for statistical significance. Therefore, the results imply that leverage is not a significant determinant of CSR expenditure among the oil and gas firms in the sample. This suggests that the level of debt financing does not significantly influence the allocation of resources towards CSR activities within the industry, highlighting the need to consider other factors that may drive CSR spending decisions. Therefore, this study fails to reject the null hypothesis two, which states that leverage has n significant effect on CSR of listed oil and gas companies in Nigeria.

The regression analysis results indicate that profitability, measured as the return on assets (ROA), does not have a statistically significant effect on corporate social responsibility (CSR) expenditure among the sampled oil and gas firms in Nigeria. The coefficient of profitability is -0.021, suggesting that, on average, a one-unit increase in profitability is associated with a 0.021 unit decrease in CSR expenditure, although this relationship is not statistically significant. The standard error of the coefficient is 0.081, indicating some level of imprecision in the estimated coefficient. The t-value associated with the coefficient is -1.09, implying that the coefficient estimate is less than one standard deviation from zero. Furthermore, the probability associated with the coefficient, or the p-value, is 0.277, exceeding the conventional threshold of 0.05 for statistical significance. Therefore, the results suggest that profitability does not significantly influence CSR expenditure among the oil and gas firms in the sample. This implies that variations in profitability levels do not play a significant role in determining the allocation of resources towards CSR activities within the industry, highlighting the need to explore other factors that may drive CSR spending decisions. Therefore, the study fails to reject the null hypothesis three, which states that profitability has no significant effect on CSR of oil and gas companies in Nigeria.

The regression analysis results suggest that gender diversity on corporate boards has a statistically significant positive effect on corporate social responsibility (CSR) expenditure among the sampled oil and gas firms in Nigeria. The coefficient of gender diversity is 0.114, indicating that, on average, a one-unit increase in gender diversity (measured as the proportion of female directors on corporate boards) is associated with a 0.114 unit increase in CSR expenditure. The standard error of the coefficient is 0.502, suggesting some level of imprecision in the estimated coefficient. However, the t-value associated with the coefficient is 2.28, indicating that the coefficient estimate is more than two standard deviations from zero. Furthermore, the probability associated with the coefficient, or the p-value, is 0.025, which is less than the conventional threshold of 0.05 for statistical significance. Therefore, the results imply that gender diversity on corporate boards significantly influences CSR expenditure among the oil and gas firms in the sample. This suggests that firms with greater gender diversity on their boards are more likely to allocate resources towards CSR activities, potentially reflecting the diverse perspectives and inclusive decision-making processes associated with gender-diverse boards. Thus, this study rejects the null hypothesis four, which states that gender diversity has no significant effect on CSR of listed oil and gas companies in Nigeria.

Discussion of Major Findings

The regression analysis results are congruent with findings from empirical studies on corporate social responsibility (CSR) practices, firm characteristics, and their interrelations in the Nigerian context. Adegbite et al. (2020) and Uadiale & Fagbemi (2021) emphasize the significance of strong governance structures, stakeholder pressures, and CSR investments for enhancing corporate legitimacy and financial performance, respectively. The positive coefficient of firm size aligns with findings by Ikhieseme et al. (2022), Osinubi & Olaleru (2022), and Harjoto et al. (2019), which indicate that larger firms tend to have more extensive CSR activities due to greater resources, visibility, and stakeholder expectations.

Conversely, leverage's non-significant coefficient corresponds with Ajayi & Olofinnade (2023) and Uadiale & Fagbemi (2021), who found that highly leveraged firms are less likely to invest in CSR due to financial constraints. Similarly, the non-significant coefficient of profitability contradicts findings by Babalola (2021) and Nwokeji et al. (2023), who observed a positive correlation between profitability and CSR expenditure among Nigerian firms, suggesting that more profitable firms allocate more resources towards CSR activities.

The significant positive coefficient of gender diversity resonates with studies by Yekini et al. (2020), Al-Shaer & Zaman (2016), Post et al. (2011), and Ben-Amar et al. (2017), indicating that gender-diverse boards are associated with increased CSR engagement, transparency, and performance, underscoring the importance of diverse perspectives and inclusive decision-making processes in driving CSR initiatives within firms. Overall, these findings corroborate the hypothesized relationships between firm characteristics and CSR performance in the Nigerian oil and gas industry, providing valuable insights for practitioners, policymakers, and scholars alike.

The results of the research on determinants of corporate social responsibility (CSR) in listed oil and gas firms in Nigeria, viewed through the lens of legitimacy theory, reveal nuanced insights into the relationship between firm characteristics and CSR performance. The finding that gender diversity on corporate boards significantly influences CSR expenditure aligns with legitimacy theory, suggesting that gender-diverse boards may prioritize CSR initiatives to maintain organizational legitimacy and address diverse stakeholder interests. However, the non-significant relationships between leverage and profitability with CSR expenditure challenge legitimacy theory's predictions, indicating that financial constraints and profitability levels may not be primary drivers of CSR spending decisions in the Nigerian oil and gas industry. Overall, these findings underscore the complex interplay between organizational legitimacy, firm characteristics, and CSR practices, highlighting the need for context-specific approaches to understanding and promoting sustainable business practices in the oil and gas sector.

V. Conclusions and Recommendations

The examination of determinants influencing corporate social responsibility (CSR) expenditure among listed oil and gas firms in Nigeria yields significant insights into the dynamic relationship between firm characteristics and CSR performance. Drawing from regression analysis results and empirical studies reviewed, several key conclusions emerge, along with recommendations for industry stakeholders, policymakers, and future research endeavors. The regression analysis reveals that gender diversity on corporate boards significantly influences CSR expenditure among oil and gas firms in Nigeria. The positive coefficient indicates that firms with greater gender diversity tend to allocate more resources towards CSR activities. This finding underscores the importance of inclusive decision-making processes and diverse perspectives in driving CSR initiatives within firms.

Consistent with empirical evidence, larger firms are more likely to engage in extensive CSR activities due to greater resources, visibility, and stakeholder expectations. However, contrary to expectations, leverage and profitability do not emerge as significant determinants of CSR expenditure among the sampled firms, suggesting that financial constraints and profitability levels may not be primary drivers of CSR spending decisions in the Nigerian oil and gas industry.

The findings underscore CSR's strategic importance for oil and gas firms operating in Nigeria. CSR serves as a tool for managing risks, enhancing corporate legitimacy, and fostering positive stakeholder relationships in a challenging institutional environment. Moreover, robust CSR practices contribute to improved financial performance, customer loyalty, and environmental sustainability, aligning with global trends in corporate governance and sustainability.

Based on the findings this study recommends as follows:

Industry stakeholders should prioritize enhancing gender diversity on corporate boards to foster inclusive decision-making processes and drive CSR initiatives. Proactive efforts to recruit and retain diverse talent, implement gender-sensitive policies, and promote inclusive corporate cultures can strengthen board diversity and enhance CSR performance.

In addition, the oil and gas firms should integrate CSR considerations into their corporate strategy and decision-making processes. By aligning CSR activities with business objectives, firms can leverage CSR as a value-adding strategy to enhance brand reputation, mitigate risks, and create shared value for stakeholders and society.

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