JOURNAL OF GLOBAL ACCOUNTING
11(1) February, 2025.
ISSN (Online): 1597–7641; ISSN (Print): 1597-8273
https://journals.unizik.edu.ng/joga

DOES ENVIRONMENTAL COST INFLUENCE FINANCIAL PERFORMANCE IN NIGERIA? EVIDENCE FROM LISTED DOWNSTREAM OIL AND GAS FIRMS

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CITATION: Salihu, M.A., Olanisebe, M.B. & Rabiu, N.B. (2025). Does environmental cost influence financial performance in Nigeria? Evidence from listed downstream oil and gas firms, *Journal of Global Accounting*, 11(1), 97 - 114. Available:https://journals.unizik.edu.ng/joga

ABSTRACT

This study examined the impact of environmental cost on financial performance of listed downstream oil and gas companies in Nigeria. Correlational research design was employed for the study. Data were extracted from the financial statements of six listed downstream oil and gas companies in Nigeria for a period of ten years (2014-2023). The hypotheses formulated for the study was tested using multiple regressions analysis. The study shows that waste community development cost has significant impact on financial performance while waste management costs and employee health and safety costs have insignificant impact on financial performance of listed downstream oil and gas companies in Nigeria. The study concludes that community development cost is one environmental accounting determinant that influences financial performance of the companies under study. Therefore, the study recommended that the management should incorporate community development initiatives into their overall business strategy, recognizing that investing in local communities can enhance brand reputation as well as customer loyalty, ultimately leading to improved financial performance. More so, there is need to allocate more resources towards renewable energy projects to reduce reliance on fossil fuels, mitigate environmental impact, and enhance long-term financial sustainability.

Key words: *Downstream Oil & Gas, Environmental cost, Performance,*

1. INTRODUCTION

In today's competitive landscape, stakeholders increasingly demand transparency and accountability regarding the financial health of organizations. Financial performance is a fundamental indicator of a company's success, reflecting its ability to generate profit and create value for shareholders. Key metrics such as return on equity, profit margins, and earnings per share are commonly used to assess financial health. However, traditional financial performance measures often overlook the broader impact of a company's operations

on the environment, which can have significant long-term implications for sustainability and stakeholder trust. As businesses face increasing pressure from stakeholders to demonstrate not just profitability but also responsible practices, the integration of environmental considerations into financial assessments has become paramount (Ezonfade et al., 2024). However, traditional financial metrics often fail to capture the full spectrum of a firm's performance, particularly in relation to environmental impacts and sustainability practices. Environmental accounting has emerged as a vital tool for organizations seeking to integrate ecological considerations into their financial reporting and decision-making processes. This approach involves the recognition, measurement, and reporting of environmental costs and benefits, enabling firms to assess their environmental performance alongside financial outcomes. By incorporating environmental factors, companies can gain insights into potential risks and opportunities that may affect their long-term viability and profitability (Adebisi & Rangu, 2024). This approach involves identifying, measuring, and disclosing environmental costs and liabilities, thus providing a more comprehensive view of a firm's performance.

By adopting environmental accounting practices, companies can better manage their resources, reduce waste, and mitigate risks associated with environmental regulations and reputational damage. Such practices not only enhance transparency but also foster a culture of sustainability within organizations. Environmental accounting is an emerging field of study that links traditional accounting with environmental preservation and protection. Running the business has a direct or indirect impact on the environment that should be accounted for. Economic and business activities have roles in the depletion of natural resources, and business organizations have come under increased pressure to address these (Ezonfade et al., 2024). Through environmental accounting, firms are encouraged to have better management by keeping in mind the interests of all stakeholders, particularly focusing on the effects management decisions will have on the environment. Entities, therefore, have the control to and are influenced by reporting for environmental accounting. According to Enahoro (2009), corporate negligence and avoidance of environmental costing leave gaps in financial information reporting; hence, there is no completeness and correctness of fair view to users of financial information, such as shareholders and potential financial investors. Simply viewing profitability in terms of accounting standards is not enough. As interest in environmental accounting and reporting has rapidly grown, especially in the field of mining and oil extraction, its connection with a company's profitability is inevitably being deliberated. Stakeholders within and outside the company have different views and concerns

in this subject. This also puts into question the management's response to environmental accounting. Additionally, disclosing environmental costs can attract socially responsible investors favoring companies demonstrating robust environmental practices, fostering long-term stock price stability (Monday & Nancy, 2017). Investors and stakeholders increasingly acknowledge the significance of environmental compliance cost disclosure in evaluating financial performance, with studies indicating a positive correlation between such disclosure and financial outcomes. For instance, Harvard Business School research suggests that companies voluntarily disclosing greenhouse gas emissions tend to enjoy higher market valuations.

In Nigeria, there have been several instances of oil spills and other environmental incidents caused by the activities of oil and gas companies. These incidents have had significant impacts on local communities, including damage to crops and fishing grounds, loss of livelihoods, and health problems caused by exposure to pollutants. In response, there have been increasing calls for greater transparency and accountability from the oil and gas industry, including through the disclosure of environmental information (Farooq et al., 2021). The interplay between environmental accounting and financial performance is becoming increasingly recognized in the academic literature. Studies have shown that effective environmental accounting can lead to improved financial outcomes by identifying cost-saving opportunities and enhancing operational efficiencies (Ezonfade et al., 2024; Adebisi & Rangu, 2024). For instance, organizations that actively manage their environmental impacts are often better positioned to respond to regulatory changes and market demands, ultimately leading to enhanced financial performance. Environmental accounting is topical matter, and of great interest to many stakeholders. Local and global literature address various aspect of environmental accounting and mostly focused on impact of environmental accounting on firm's survival, dividend policy, capital structure, financial performance and / or firm value, like the studies of Adebisi and Rangu (2024), Egedegu et al. (2024), Hassan and Onsiro (2024), Ahakiri et al. (2024), Etale and Tiemo (2022) and Ihenyen and Ikegima (2022) who examined the impact of environmental accounting on financial performance locally and internationally respectively. Although, various authors have documented mixed results over-time in their findings. Generally, review of related literatures has revealed that studies that empirically examined the relationship between environmental accounting and financial performance either at global or domestic level are still scarce. In Nigeria, not much attention has been given on the subject matter especially from the empirical point of view except for

JOURNAL OF GLOBAL ACCOUNTING
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ISSN (Online): 1597–7641; ISSN (Print): 1597-8273
https://journals.unizik.edu.ng/joga

the work of Adebisi and Rangu (2024), Egedegu et al. (2024), Etale and Tiemo (2022) and Ihenyen and Ikegima (2022) from which this study takes shape.

In similar vein, there is lack of empirical evidence on the relationship between environmental costs and financial performance with reference to Nigerian oil industry despite the strategic role it plays in Nigerian economy. Previous studies on how environmental accounting influence financial performance, like that of Adebisi and Rangu (2024), Egedegu et al. (2024), Ihenyen et al. (2022), Etale et al. (2022) and Iheduru and Chukwuma (2019) were carried out using other industries expect Hassan and Onsiro (2024) and Ahakiri et al. (2024) who used oil and gas companies. Not much of a particular industry was studied in isolation for the sake of its peculiarity. Having gone through the empirical works of some researchers from which this study takes a shape, it is discovered that the downstream oil and gas companies has not been adequately addressed with respect to environmental accounting as it affects financial performance. This study therefore focuses on a single industry using listed downstream oil and gas companies. Despite some studies on the link between environmental costs with financial performance in other countries, limited research exists on the dynamic effect of the relationship in the Nigerian oil and gas sector. The mixed findings from previous studies make it crucial to investigate how environmental costs affect profitability in the distinct context of Nigerian oil and gas sector. The oil and gas company in Nigeria is a vast industry that holds much potential for investors and the government in particular. Therefore, this study will attempt to fill the gaps in literature by examine the impact of environmental costs on profitability of listed oil and gas firms in Nigeria. The research finding would be of benefit to executives and managers particularly those of listed downstream oil and gas companies in Nigeria who saddled with responsibility of making decision by integrating environmental accounting practices into their financial strategies. This can lead to improved efficiency, cost savings, and overall financial performance.

1.1 Objectives

The broad objective of this study is to assess the effect of environmental costs on financial performance among listed downstream oil and gas companies in Nigeria. The specific objectives are to:

1. determine the effect of waste management costs on financial performance of listed downstream oil and gas companies in Nigeria.

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2. ascertain the effect of waste community development cost financial performance of listed downstream oil and gas companies in Nigeria.
3. investigate the extent to which Employee health and safety costs affect financial performance of listed downstream oil and gas companies in Nigeria.

1.2 Hypotheses

H_{o1}: Waste management costs have no significant effect on financial performance of listed downstream oil and gas companies in Nigeria.

H_{o2}: Waste community development cost has no significant effect on financial performance of listed downstream oil and gas companies in Nigeria.

H_{o3}: Employee health and safety costs have no significant effect on financial performance of listed downstream oil and gas companies in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Environmental Costs

In the modern society, the expectations of businesses go well beyond maximization of shareholder value; they also include consideration for the well-being of employees and the environment (Deegan, 2016). Environmental costs play a pivotal role in shaping the financial performance of companies like oil and gas, particularly in industries where environmental impacts are significant. These costs are incurred to rectify damages caused by operations, such as pollution or habitat destruction, and can have both short-term and long-term effects on financial performance. The extant literatures of corporate finance and previous empirical studies in the area have advanced series of arguments as to how environmental accounting influenced financial performance. These environmental accounting include; waste management costs, waste community development cost and employee health and safety costs.

Many studies have substantiated the connection between environmental accounting and financial performance (Adebisi & Rangu, 2024 and Egedegu et al., 2024). These literatures revealed two extreme positions as regards the effect of environmental cost on financial performance. The first position was those that concluded that there is a positive impact of environmental cost on financial performance. Those in this category advocates argue that environmental costs positively influences financial performance by enhancing operational efficiency, improving company reputation, and fostering customer loyalty. This suggested that when firm adopting environmentally responsible practices and integrating that into their

accounting systems, organizations can identify cost-saving opportunities, mitigate risks, and differentiate themselves in the market and this will enhance their reputation, attract environmentally-conscious consumers, and ultimately increase profitability.

This position is supported by the stakeholder theory, which posits that businesses must consider the interests of all stakeholders, including the environment. By adopting environmental accounting, firms can improve stakeholder relationships, leading to potential financial benefits. Additionally, the Resource-Based View (RBV) suggests that environmentally sustainable practices can be a source of competitive advantage, as they may lead to innovation, cost savings, and differentiation in the marketplace. More so, organizational legitimacy theory suggests that organizations seek to align their operations with societal values and norms to gain acceptance and support from stakeholders, adopting environmental accounting, firms can demonstrate their commitment to sustainability, enhancing their legitimacy in the eyes of stakeholders. According to Akuchi and Egbunike (2023), organizational legitimacy is established when an organization's objectives, outcome, and operational approaches align with the prevailing societal norms and values. This is an indication that legitimacy can lead to improved financial performance through better market positioning and access to resources. This is in line with result of Adebisi and Rangu (2024), Egedegu et al. (2024) and Agboola and Oroge (2019) who documented positive and significant impact of environmental cost on financial performance and also consistent with position of stakeholder, Resource-Based View (RBV) and legitimacy theories. Furthermore, the positive significant relationship between environmental cost and financial performance are further substantiated by Hassan and Onsiro (2024) who assessed impact of environmental accounting expenses on financial performance of cement manufacturing firms in Coast region in Kenya over the 2018-2022 periods. Similarly, Soudagar (2024) used data from five BSE-listed companies to reach the same conclusion that environmental cost can be a determinant of financial performance. Other studies that concluded that environmental cost has positive and significant on financial performance include; Hassan and Onsiro (2024), Ahakiri et al. (2024), Ihenyen and Ikegima (2022) and Iheduru and Chukwuma (2019)

The second positions are those that documented neutral or negative impact of environmental cost on financial performance. They critics argue that environmental cost may not yield immediate financial benefits and could even have a negative impact on financial performance due to the costs associated with implementing these practices. They contend that the resources devoted to environmental cost may detract from core business activities or lead to increased

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https://journals.unizik.edu.ng/joga

operational costs without a corresponding financial return. This position can be backed by the short-termism theory of Jensen in 2001, which emphasizes the tendency of managers to focus on immediate financial results rather than long-term sustainability initiatives. This perspective highlights that the initial costs of implementing environmental costs may lead to a short-term decrease in financial performance (Fan et al., 2024). Additionally, the behavioral theory of the firm of Cyert and March in 1963, suggests that organizations may resist changes in accounting practices due to inertia or risk aversion, potentially leading to a lack of financial improvement even when environmental cost strategy is adopted. This assumption was in the line with result of Ilelaboye and Alade (2022), Uzoh (2022), Anselm and Janefrances (2020), Iliemena (2020), Nwaimo (2020), Ikpor et al. (2019) and Okezie et al. (2019) who concluded that environmental cost does not influence financial performance and this is consistent with position of short-termism theory. These two extreme positions reflect the ongoing debate in the literature regarding the relationship between environmental costs and financial performance, with varying implications for practice and policy. Therefore, it can be stated effective in engaging environmental costs activities do increase firm financial performance.

2.1.2 Conceptual framework

Moreover, based on the hypotheses formulated in this study, the conceptual framework of this study shows how environmental accounting influence financial performance diagrammatically, in Figure 1.

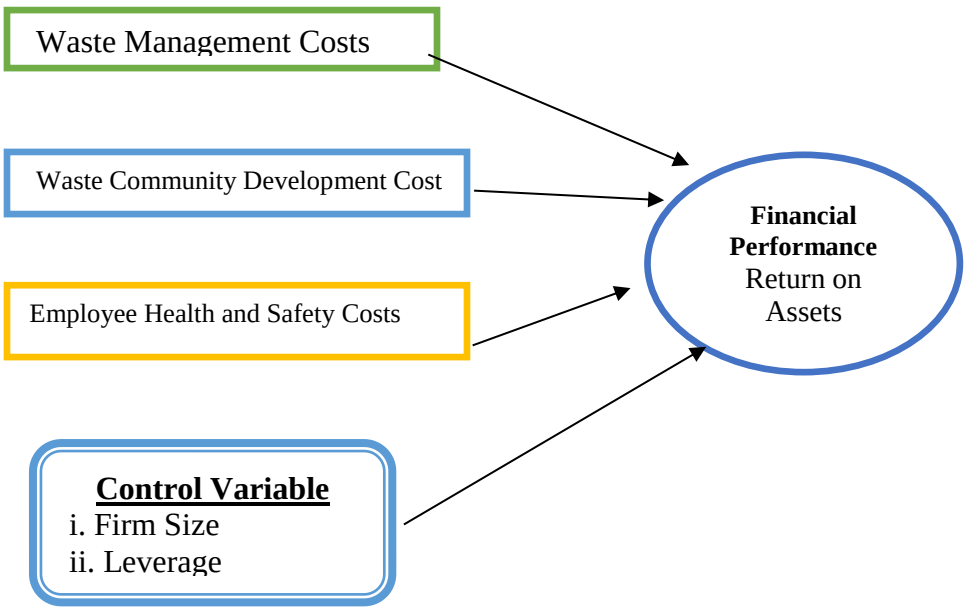

Figure 1: Conceptual Framework of the Study

Source: Developed by Researcher from the Literature Reviewed (2025)

JOURNAL OF GLOBAL ACCOUNTING
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ISSN (Online): 1597–7641; ISSN (Print): 1597-8273
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A conceptual framework is a schematic presentation of the variables under investigation. In this study the relationship between the dependent variable financial performance and the independent variable environmental costs is summarized as shown in Figure 1 above. The study uses three environmental cost proxies: waste management costs, waste community development cost and employee health and safety costs as independent variables. The dependent variable is financial performance proxy by Return on Assets.

3. MATERIALS AND METHOD

The study examined the influence of environmental accounting in the determination of financial performance of listed downstream oil and gas firms in Nigeria over a ten years period from 2014 to 2023. For the purpose of this study, correlational research design is employed to determine the influence of explanatory variables on the dependent variable of the study. The population of this study comprised eight (8) downstream oil and gas companies listed on the Nigerian Exchange Group (NGX) Limited as at 31st December, 2023. Table 1 presents the population of this study.

Table 1: Population of the Study

S/N.	Firms	Year of Listing	Incorporated
1	Capital Oil Plc.	1990	1985
2	Conoil Plc.	1991	1970
3	Eterna Plc.	1979	1989
4	Japaul Gold & Ventures Plc.	2005	1994
5	Mrs Oil Nigeria Plc.	1978	1969
6	Oando Plc.	1992	1969
7	Seplat Energy Plc.	2014	2009
8	Total Energies Marketing Nigeria Plc.	1979	1956

Source: Nigerian Exchange Group Website as at 31st December, 2023

For a company to qualify as sample for the study, the following criteria were established: (i) the firm must have been in operation for the whole periods of study (2014 to 2023), (ii) the firm must remain quoted without being delisted between the periods covered. As a result of these two filters, the number of the companies in the population was reduced to six (6) out of the eight (8) listed on the NGX. Capital oil Plc and Oando Plc do not meet the second criteria because their annual financial reports were not complete as the period of gathering the data.

JOURNAL OF GLOBAL ACCOUNTING
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https://journals.unizik.edu.ng/joga

These companies were excluded from the population of this study. Therefore, Table 2 below presents the study sample.

Table 2: Samples Size

S/N.	Firms	Year of Listing	Incorporated
1	Capital Oil Plc.	1990	1985
2	Eterna Plc.	1979	1989
3	Japaul Gold & Ventures Plc.	2005	1994
4	Mrs Oil Nigeria Plc.	1978	1969
5	Seplat Energy Plc.	2014	2009
6	Total Energies Marketing Nigeria Plc.	1979	1956

Source: Extracted from Table 1

Multiple regressions were used to analyze the relationship between environmental costs and financial performance. The data of the study is panel (that is a combination of cross sectional and time series). The regression was therefore run in a panel manner; hence, various options of panel data regression were run. These include Ordinary Least Square and General Least Square (random effect and fixed effect) regressions. Hausman specification test was run to determine the choice between fixed and random effect regression. In addition, heteroskedastic panels corrected standard errors was also conducted as a rule when the hausman specification value is below or equal to 5% level of significant and there is a present of homoskedastic in panel data. Therefore, the result is reported using Panels Corrected Standard Errors (PCSEs). More so, summary of the variables and their measurements are presented in Table 3.

Table 3 Variables and their Measurements

Variable	Abbreviation	Measurement	Source
Return on Assets	ROA	Earnings Tax /Total Assets.	Egedegu et al. (2024), Hassan and Onsiro (2024), Akuchi and Egbunike (2023), Okulenu et al. (2024), Soudagar (2024), Ihenyen and Ikegima (2022) and Nwaimo (2020).

Waste Management Costs	WMC	Natural Log (waste management costs).	Hassan and Onsiro (2024), Okulenu et al. (2024), Ihenyen and Ikegima (2022) and Chinedu et al. (2019).
Waste Community Development Cost	WCDC	Natural Log (waste community development cost).	Okulenu et al. (2024), Ihenyen and Ikegima (2022), Nwaimo (2020) and Chinedu et al. (2019).
Employee Health and Safety Costs	EHSC	Natural Log (employee health and safety costs).	Egedegu et al. (2024), Okulenu et al. (2024), Ihenyen and Ikegima (2022), Oshiole et al. (2020) and Chinedu et al. (2019).
Firm Size	FZ	Natural Log (Total Assets)	Ahakiri et al. (2024), Muotoo and Odum (2024) and Etale and Tiemo (2021).
Leverage	LEV	Total Liabilities/Total Assets	Ahakiri et al. (2024), Muotoo and Odum (2024) and Vitolla et al. (2020).

Source: Author (2025)

A multiple regression models were used to determine impact of environmental costs on financial performance. Data for the variables were extracted from the published annual report and accounts of the sample companies. The functional relationships among the variables are defined as:

Financial Performance = f(Environmental Costs and Control Variables).

ROA = f(WMC, WCDC, EHSC, FZ and LEV)…….....Eqn 1.

From the above equations, the study proposes two models to test the hypotheses of the study.

The study adopted a model used by Egedegu et al. (2024), Hassan and Onsiro (2024), Okulenu et al. (2024), and Soudagar (2024) which are modified to include firm size and leverage.

$ROA = a + \beta_1 WMC_{it} + \beta_2 WCDC_{it} + \beta_3 EHSC_{it} + \beta_4 FZ_{it} + \beta_5 LEV_{it} + \varepsilon$……Eqn 2.

JOURNAL OF GLOBAL ACCOUNTING
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https://journals.unizik.edu.ng/joga

Where:

ROA_{it} is the return on assets for firm i in period t.

WMC_{it} is the waste management costs for firm i in period t.

$WCDC_{it}$ is the waste community development cost for firm i in period t.

$EHSC_{it}$ is the employee health and safety costs for firm i in period t.

FZ_{it} is the size of firm for firm i in period t.

LEV_{it} is the leverage for firm i in period t.

$\beta_1 - \beta_6$ represent the coefficient of the explanatory variables.

i denote the number of firm in the panel.

t denote the time period of the panel data.

ε is the error term.

4. RESULT AND DISCUSSIONS

This section presents and discusses the results of the tests conducted on the data collected for the study. The results are presented using tables. It follows with descriptive statistics and then correlation matrix. This is where the analysis of the results to tests the hypothesis of the study is conducted.

4.1 Descriptive Statistics

Table 4 presents descriptive statistics of the variables of the study. The mean, standard deviation, minimum and maximum have been use to describe the data.

Table 4 Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
ROA (%)	60	0.0194	0.1752	-0.9941	0.1948
WMC	60	8.9091	0.5849	7.0945	9.7293
WCDC	60	8.8861	0.3324	8.2425	9.5307
EHSC	60	8.7488	0.8065	6.2253	9.9452
FZ	60	10.7387	0.2674	9.9431	11.4883
LEV	60	0.1899	0.1715	0.0600	0.7969

Source: Authors' Compilation using Stata 14.2, (2025).

The Table 4 shows that average value of return on assets as 0.0194 (2%), with minimum and maximum values of -0.9941 (99%) and 0.1948 (19%) respectively. This shows that there is a variation in return on assets of sampled downstream oil and gas companies as portrayed by

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https://journals.unizik.edu.ng/joga

the standard deviation of 0.1752 (18%), which is means that there is no much wide value. Similarly, Table 4 also indicates an average value of waste management costs as 8.9091, with minimum and maximum values of 7.0945 and 9.7293 respectively. This shows that there is a high variation in waste management costs of listed downstream oil and gas companies as portrayed by the standard deviation of 0.5849.

The mean value of waste community development cost is 8.8861, with minimum and maximum values of 8.2425 and 9.5307 respectively. This shows that there is a high variation in waste community development cost of listed downstream oil and gas companies as portrayed by the standard deviation of 0.3324. In the same vein, Table 4 indicates an average value of employee health and safety costs as 8.7488, with minimum and maximum values of 6.2253 and 9.9452 respectively. This shows that there is a high variation in employee health and safety costs of listed downstream oil and gas companies as portrayed by the standard deviation of 0.8065.

Meanwhile, firm size has a mean value of 10.7387 with a standard deviation of 0.2674. The figures reported is a pointer that the sampled firms invested heavily in total assets perhaps to enable them generate more profit. The minimum and maximum is 9.9431 and 11.4883 respectively. The financial leverage of the sampled firms in Nigeria on the other hand, stands at an average of 0.1899 (19%) with standard deviation of 0.1715 (17%) which implies that the firms which constitute the sample firms are lowly geared. However, some of the firms are highly geared at 0.7969 (80%) debt to assets based on the maximum while some has ratio of debt to total assets as low as 0.0600 (6%).

4.1.1 Correlation Results

The correlation matrix as presented in Table 5 shows the associated link between explanatory variables and the explained variables. The correlation measures the strength and direction of relationship between all pair of variables of the study.

Table 5: Correlation Matrix

Variables	ROA	WMC	WCDC	EHSC	FZ	LEV	VIF
ROA	1.0000						
WMC	-0.1350	1.0000					1.53
WCDC	0.1184	-0.0259	1.0000				1.11
EHSC	-0.3102	-0.0093	-0.0405	1.0000			1.42
FZ	0.4589	-0.5038	-0.1959	-0.4359	1.0000		2.00

JOURNAL OF GLOBAL ACCOUNTING
11(1) February, 2025.
ISSN (Online): 1597–7641; ISSN (Print): 1597-8273
https://journals.unizik.edu.ng/joga

LEV	-0.4676	0.0375	-0.0805	0.1621	-0.1020	1.0000	1.04

Source: Authors' Compilation using Stata 14.2, (2025).

From Table 5, the values of the correlation coefficient vary from -1 to 1. The sign of the correlation coefficient indicates the bearing of the relationship whether positive or negative, the complete values of the correlation coefficient indicates the strength, with larger values indicating stronger relationships. The correlation coefficients on the main diagonal are 1.0000, because each variable has an absolute positive linear relationship with itself. The correlation coefficient of all the independent variables and dependent variable (Return on Assets) are positive correlated as shown in Table 5, WCDC (0.1184) and FZ (0.4589) with exception of WMC (-0.1350), EHSC (-0.1350) and LEV (-0.4676) have negative coefficients far from zero which indicates that, decrease/increase in those variables lead to increase/decrease in the financial performance (ROA) of listed downstream oil and gas companies in Nigeria. Meanwhile, to determine the presence of Collinearity problem, a Variance Inflation Factor (VIF) Tolerance test was carried out, the results of which provided evidence of the absence of Collinearity. This is because the results of the VIF test ranges from a minimum of 1.04 to a maximum of 2.00, which suggests absence of Multicolleanirity in the model. This is because, all the VIF values are less than 10 and the mean VIF is just 1.42.

4.1.2 Regression Analysis

This subsection presents the regression result of effect of environmental costs on financial performance. Table 6 presents the Regression with Driscoll-Kraay standard errors result for the model. The regression analysis is used to assess the effect of environmental costs on financial performance of the listed downstream oil and gas companies in Nigeria. This is determined and estimated using panel data techniques.

Table 6 Regression of Results

	Coef.	**Std. Err.**	**Z**	**P>/Z/**
WMC	0.0457	0.0314	1.45	0.146
WCDC	0.1021	0.0374	2.73	0.006
EHSC	-0.0009	0.0212	-0.04	0. 966
FZ	0.3477	0.1154	3.01	0.003
LEV	-0.4116	0.1593	-2.58	0.010
_CONS.	-4.9428	1.7395	-2.84	0.004
R-squared	0.4356			

JOURNAL OF GLOBAL ACCOUNTING
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Number of Obs.	60	
Wald $chi^2(5)$	22.62	
Prob > chi^2	0.0004	
Hettest	0.000	
Hausman Test	Prob>chi2 =	0.0006

Source: Authors' Compilation using Stata 14.2, (2025).

From Table 6, the multiple linear regressions equation becomes $ROA_{it} = -4.9428 + 0.0457WMC_{it} + 0.1021WCDC_{it} - 0.0009EHSC_{it} + 0.3477FZ_{it} - 0.4116LEV_{it} + e_{it}$. Drawing from Table 6, the p-value indicates fitness and reliability of the model to show statistically significant relationship between explanatory and dependent variables. Hence, the p-value of (0.0004) provides evidence that the model was fit. The cumulative R^2 is 44% (0.4356), which gives cumulative effect of explanatory variables jointly on the dependent variable. This means that 44% of the total variation in financial performance of listed downstream oil and gas companies in Nigeria is caused by environmental accounting, firm size and leverage while the remaining 56% of the total variation in the financial performance is caused by other variables not included in the model. More so, Table 6 also shows the regression result of the dependent variable (ROA) and independent variables (environmental costs variable, firm size and leverage). The result from Hausman conducted was (0.0006) found to be significant, meaning that the result of fixed effects is more preferable. Hence, FE result was selected and subjected it to others tests while panels corrected standard errors result was used as presented in Table 6.

4.2 Test of Hypotheses

4.2.1 Hypothesis One

H_{o1}: Waste management costs have no significant effect on financial performance of listed downstream oil and gas companies in Nigeria.

The regression result in Table 6 shows that waste management costs has positive and insignificant impact on financial performance of listed downstream oil and gas companies in Nigeria with a coefficient value of 0.0457 and p-value of 0.146. Hence failing to reject the hypothesis one of the study, which states that waste management costs does not have significant impact on financial performance of listed downstream oil and gas companies in Nigeria. This finding is consistent with Cheska et al. (2022), Ihenyen and Ikegima (2022) and Iliemena (2020) who established that waste management costs has significant impact on

financial performance but contradicting the findings by Adebisi and Rangu (2024) and Oshiole et al. (2020).

4.2.2 Hypothesis Two

H_{o2}: Waste community development cost has no significant effect on financial performance of listed downstream oil and gas companies in Nigeria.

Waste community development cost has significant and positive impact on financial performance of listed downstream oil and gas companies in Nigeria with a coefficient value of 0.1021 and p-value of 0.006. Thus, fail to accept the null hypothesis two of the study, which state that waste community development cost does not have significant impact on financial performance of listed downstream oil and gas companies in Nigeria. This finding is in line with the studies conducted by Egedegu et al. (2024), Hassan and Onsiro (2024), Ahakiri et al. (2024) and Agboola and Oroge (2019) but inconsistent with the results documented by Oyerogba et al. (2023), Ihenyen and Ikegima (2022) and Ayu et al. (2020) who documented that waste community development cost does not have significant impact on financial performance.

Hypothesis Three

H_{o3}: Employee health and safety costs have no significant effect on financial performance of listed downstream oil and gas companies in Nigeria.

The regression result in Table 6 shows that employee health and safety costs has negative and insignificant impact on financial performance of listed downstream oil and gas companies in Nigeria with a coefficient value of 0.0009 and p-value of 0.966. Hence failing to reject the hypothesis three of the study, which states that employee health and safety costs does not have significant impact on financial performance of listed downstream oil and gas companies in Nigeria. This finding is consistent with Soudagar (2024), Romandhon et al. (2024) and Uzoh (2022) who established that employee health and safety costs has significant impact on financial performance but contradicting the findings by Ilelaboye and Alade (2022) and Obiora et al. (2022).

In summary, the formulated hypotheses of the study can now either be rejected or fail to be rejected. Table 7 provides the summary of the test of the hypothesis.

JOURNAL OF GLOBAL ACCOUNTING
11(1) February, 2025.
ISSN (Online): 1597–7641; ISSN (Print): 1597-8273
https://journals.unizik.edu.ng/joga

Table 7 Summary of the Tested Hypotheses

Hypotheses		Coef.	Std. Err.	Z	P>/z/	Decision
WMC —>ROA	1	0.0457	0.0314	1.45	0.146	Supported
WCDC —>ROA	2	0.1021	0.0374	2.73	0.006	Not supported
EHSC —>ROA	3	-0.0009	0.0212	-0.04	0. 966	Supported

Source: Researcher's Compilation, 2025

Based on the hypotheses stated earlier in this study, the results suggested that hypothesis two is not supported while hypothesis one and three were supported as shown in Table 7.

5. CONCLUSION AND RECOMMENDATIONS

In conclusion, the study has provided empirical evidence on the importance of three environmental costs waste management costs, waste community development cost and employee health and safety costs in explaining and predicting financial performance of listed downstream oil and gas firms of Nigeria during the period under study. Conclusively, it can be argued and established that, as far as the environmental accounting variables in downstream oil and gas in Nigeria is concerned, it can be concluded that one of the environmental costs indices employed in this study (waste community development cost), this variable construct determined financial performance in the sampled firms in Nigeria. It is therefore recommended that management should prioritize the implementation of effective waste management strategies and allocate appropriate resources towards community development initiatives. By doing so, companies can not only mitigate operational risks and enhance their corporate social responsibility reputation but also foster goodwill among local communities. More so, policymakers should create incentives for companies that invest in environmentally sustainable waste management solutions and community development projects, such as tax breaks or grants, to encourage greater corporate social responsibility.

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