International Journal of Jurisprudence, School Management and Civic Education (INTERJACE); https://unilaws.org/interjace; E-ISSN: 3156-3880.

ENVIRONMENTAL COST AND FINANCIAL PERFORMANCE OF OIL AND GAS COMPANY IN NIGERIA

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ABSTRACT

This study evaluated the effect of environmental accounting cost on financial performance. In the study Return on Asset, and Return on Equity were used as proxies to business performance and pollution prevention cost, community development cost were used to proxies' environmental accounting cost. Relevant data to the study were collected from Nigerian stock exchange and companies annual report from 2007-2025. Multiple Regressions was used in analyzing the Model. The regression test shows that, there is a relationship among the variables. We therefore conclude that environmental accounting cost enhances business performance and therefore recommended that Environmental reporting should ensure proper Corporate Environmental Stewardship of organizational activities. Government should make Environmental Reporting in annual reports compulsory since most organizations hardly report their environmental activities in their report. Corporate organizations on their part should ensure that they comply with the environmental laws of the nation, for it will enhance their performances.

Keywords: Business performance, Return on Asset, Return on Equity, environmental accounting cost, Community Development Cost, Pollution Prevention cost.

Introduction

The oil and gas industry serves as the primary engine of the Nigerian economy, contributing substantially to federal revenue, foreign exchange reserves, export earnings, and national industrialization (Central Bank of Nigeria [CBN], 2022; National Bureau of Statistics [NBS], 2023). However, downstream, midstream, and upstream operations—ranging from seismic exploration and off/onshore drilling to refining, gas processing, and pipeline transportation—have historically generated severe ecological externalities. Issues such as frequent crude oil spills, continuous gas flaring, airborne particulate pollution, aquatic toxicity, and land degradation present persistent challenges in petroleum-producing regions (Yakubu, 2017). In response to rising regulatory pressure, international environmental standards, and host community demands, oil and gas enterprises operating in Nigeria are increasingly compelled to integrate formal environmental management frameworks into their corporate governance structures (Iheduru & Opara, 2022).

Environmental cost encompasses all capital and operational expenditures incurred by an organization to prevent, abate, control, measure, and remediate the negative ecological impacts resulting from its business operations (Hansen & Mowen, 2006; International Federation of Accountants [IFAC], 2005). Within the petroleum sector, these expenditures broadly manifest as direct oil-spill cleanup and ecological restoration, effluent waste treatment, gas re-injection and flare-reduction technology investment, routine environmental compliance monitoring, environmental impact assessment (EIA) protocols, and regulatory fines (Bassey et al., 2018). While traditional accounting perspectives treat these environmental outlays as non-productive administrative expenses that diminish short-term operating margins, contemporary Environmental Management Accounting (EMA) theory posits that systematic environmental investments yield long-term strategic advantages. Specifically, proactive environmental spending can mitigate future legal liabilities, reduce expensive community-led operational disruptions, avoid regulatory sanctions, and build corporate reputational capital (Porter & van der Linde, 1995; Deegan, 2002; Elkington, 1997).

Financial performance reflects an enterprise's capability to deploy its operational asset base efficiently to generate income, create shareholder value, and sustain commercial viability (Gitman & Zutter, 2015). In empirical accounting literature, firm financial performance is typically operationalized using accounting-based profitability metrics—such as Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), and Earnings Per Share (EPS)—as well as market-based measures like Tobin’s Q (Akenbor & Okoye, 2012; Okafor, 2018). The profitability of oil and gas firms in Nigeria remains highly sensitive to exogenous factors, including global crude oil price volatility, production volume quotas, foreign exchange fluctuations, fiscal tax regimes under the Petroleum Industry Act (PIA) 2021, and localized supply chain disruptions (Odo et al., 2021).

Consequently, the interaction between environmental cost accounting and corporate financial performance represents a vital area of empirical inquiry. In emerging markets like Nigeria, where host communities in the Niger Delta suffer severe ecological impacts from hydrocarbon extraction, the trade-off between immediate environmental expenditure and long-term financial viability is particularly contentious (Idemudia, 2010). Existing empirical findings remain inconclusive: while certain scholars contend that environmental expenditures

impair profitability by inflating operating overheads (Jeroh, 2020), others establish that robust environmental cost commitment significantly enhances financial performance by minimizing operational risks and fostering community goodwill (2004; Uwaoma & Ordu, 2016).

Given these conflicting empirical perspectives and the heightened enforcement of environmental standards under the Petroleum Industry Act (PIA) 2021, there is a clear imperative to evaluate how environmental expenditures impact firm financial metrics. Therefore, this study investigates Environmental Cost and Financial Performance of Oil and Gas Companies in Nigeria, providing empirical evidence to guide corporate managers, equity investors, regulatory bodies, standard-setters, and environmental accountants in evaluating the financial consequences of corporate environmental stewardship.

Statement of the Problem

Oil and gas business organizations operating within Nigeria engage in environmental and social compliance with the objective of mitigating host community friction, protecting asset integrity, and enhancing key financial performance metrics such as Return on Equity (ROE), Return on Assets (ROA), and Earnings Per Share (EPS) (Bassey et al., 2018; Uwuigbe et al., 2018). Regrettably, despite corporate outlays toward environmental compliance and social responsibility, petroleum-producing regions—particularly across the Niger Delta—continue to experience high incidents of youth restiveness, pipeline blockades, operational disruptions, asset sabotage, and kidnapping targeting oil workers (Idemudia, 2010; Nriagu et al., 2016).

This persistent socio-operational breakdown directly impacts multiple key stakeholders. Focal oil and gas enterprises suffer frequent operational shutdowns and revenue losses; host communities face heightened security risks and unresolved ecological degradation; investors incur diminished returns; and federal and state governments lose vital foreign exchange earnings and tax revenues needed for national development (Central Bank of Nigeria [CBN], 2022; Nwaiwu & Oluka, 2018).

If these systemic security threats, operational disruptions, and environmental compliance gaps remain unaddressed, the long-term consequences will be catastrophic for the industry. Petroleum companies face severe revenue erosion, escalating security overheads, physical asset destruction, heavy regulatory penalties, and potential divestment by foreign investors, ultimately undermining the macroeconomic stability of Nigeria (Amaeshi et al., 2006; Jeroh, 2020).

While existing empirical literature broadly explores environmental expenditures and corporate outcomes (Hassan, 2018; Ifurueze et al., 2023), significant empirical and methodological gaps persist. Prior empirical studies (e.g., Hassan, 2018; Nwaiwu & Oluka, 2018; Ifurueze et al., 2023) primarily operationalized corporate financial performance using metrics such as Net Profit Margin (NPM), Dividend Per Share (DPS), Return on Assets (ROA), and Return on Capital Employed (ROCE), leaving the explicit impact of environmental costs on Return on Equity (ROE) largely underexplored in long-term panel assessments. Furthermore, very few studies extend their scope to cover recent longitudinal data capturing modern regulatory transitions such as the Petroleum Industry Act (PIA) 2021 across an extended period.

Therefore, the specific problem this study addresses is the limited empirical evidence on how environmental costs influence corporate financial performance—specifically measured by Return on Equity (ROE), Return on Assets (ROA), and Earnings Per Share (EPS) among quoted oil and gas companies in Nigeria over an extended 19-year period (2007–2025).

Objective of the study

The general objective of this study is to examine the effects of environmental accounting costs on the performance of some quoted oil and gas company in Nigeria and the specific objective are as follows; to

1. Investigate the effect of Environmental pollution prevention cost on the Return on Asset.
2. Examine the significant effect of environmental Community development cost on Return on Asset.
3. Assess the significant relationship that exists between Environmental pollution prevention cost and the Return on Equity
4. Examine the significant effect of environmental Community development cost on Return on Equity

Research Questions

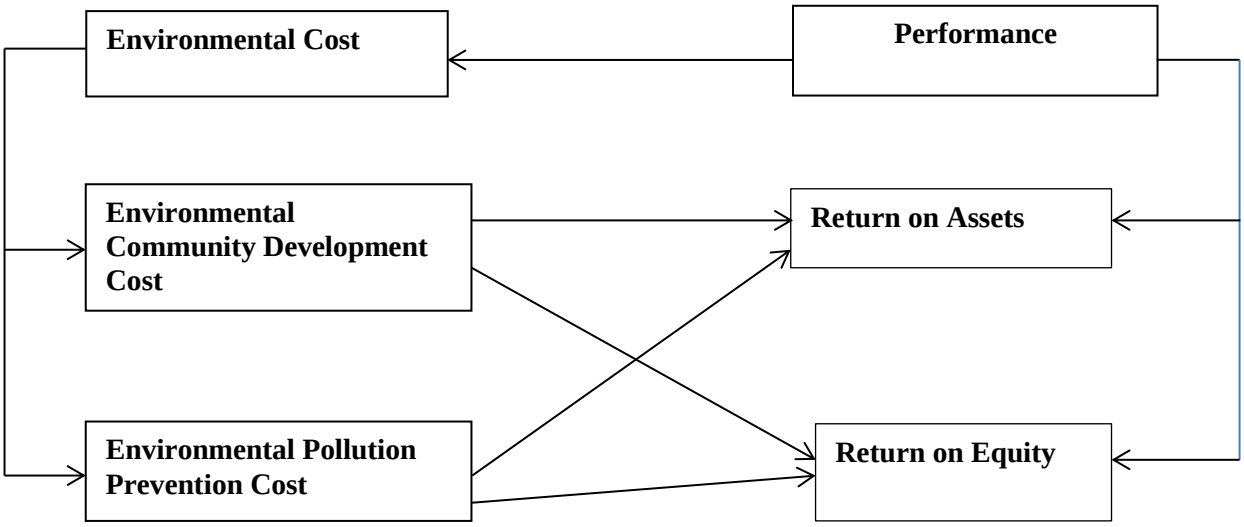
1. To what extent does Environmental pollution prevention cost effect the Return on Asset?
2. What effect has environmental Community development cost on Return on Asset?
3. What is the relationship that exists between Environmental pollution prevention cost and the Return on Equity?
4. What effect has environmental Community development cost on Return on Equity?

Research hypotheses

1. There is no effect of Environmental pollution prevention cost on the Return on Asset.
2. Environmental Community development cost has no significant effect on Return on Asset
3. There is no significant relationship that exists between Environmental pollution prevention cost and the Return on Equity
4. There is no significant effect between environmental Community development cost and Return on Equity.

Review Of Related Literature

Conceptual Review



Source: Researchers Concept 2026

Fig 2.1: Operational Conceptual Framework

Fig 2.1 showed that Environmental Accounting Cost (ENVC) is the independent variable proxied by Environmental Community Development Cost (ECDC and Environmental Pollution Prevention cost (EPPC) with while Return On Asset (ROA)and Return On Equity (ROE) are the dependent variables.

Environmental Accounting

Environmental accounting refers to the systematic identification, measurement, allocation, and reporting of environmental costs and impacts associated with an organization's economic activities (Gray et al., 1993; Bassey et al., 2018). It serves as an internal and external communication mechanism that enables firms to quantify environmental conservation expenditures alongside normal business operations, assess resultant benefits, and evaluate socio-ecological efficiency (Environmental Accounting Guidelines, 2005; Agbiogwu et al., 2016; Pramanik et al., 2007). As a strategic management tool, environmental accounting facilitates cost control, cleaner technology adoption, eco-friendly product development, optimal product pricing, and informed resource allocation decisions (Uwuigbe et al., 2018).

Environmental Cost

Environmental costs encompass all outlays incurred by an organization to prevent, control, monitor, remediate, and mitigate ecological damage resulting from operational activities (Charles et al., 2017). These expenditures include costs for pollution control, waste management, regulatory compliance, environmental restoration, and host community social development projects (Magara et al., 2015).

Community Development Cost (CDC)

Community development represents a collaborative process through which organizations support host community members to identify, prioritize, and address socio-economic challenges (Kenny, 2019). Grounded in principles of inclusion, social justice, and collective empowerment, community development initiatives aim to build local capacity, improve

public health and economic prosperity, foster self-sufficiency, and maintain a corporate social license to operate (Amaeshi et al., 2006). Within environmental accounting frameworks, **Community Development Cost** denotes expenditures incurred for infrastructure development, education, health schemes, and economic empowerment in host communities (Ifurueze et al., 2013).

Pollution Prevention Cost (PPC)

Pollution prevention costs comprise expenditures directed toward reducing or eliminating waste and pollutants at their source prior to treatment or disposal. This includes redesigning production processes to minimize toxic inputs, implementing leak detection and fugitive release controls, optimizing energy efficiency, and adopting eco-friendly operational practices (Sarkis et al., 2011). By eliminating waste streams before creation, organizations lower direct disposal costs and mitigate long-term environmental liabilities (Porter & van der Linde, 1995).

Waste Management Cost (WMC)

Waste management costs represent all financial expenditures associated with handling, collecting, transporting, treating, recycling, and safely disposing of solid, liquid, and gaseous operational waste (Hansen & Mowen, 2006). Effective waste management limits adverse impacts on human health, ecological systems, and community aesthetics while ensuring compliance with statutory environmental standards (Deegan, 2002).

Firm Financial Performance

Financial performance reflects an organization's overall financial health and operational efficiency over a specific accounting period, allowing for cross-firm and cross-industry comparisons (Ondieki, 2011). Profitability metrics assess management's effectiveness in deploying capital and asset resources to generate revenue.

Return on Assets (ROA)

Return on Assets is an accounting-based financial ratio that measures management's efficiency in generating profits from the firm's total asset base (Grant, 2019). Calculated as net income divided by total assets, a higher ROA signifies superior asset utilization and operational productivity.

Return on Equity (ROE)

Return on Equity evaluates the rate of return generated on shareholders' equity capital (Hargrave, 2019). Calculated as net income divided by total shareholders' equity (or expressed as a function of the dividend growth rate relative to retention), ROE measures how effectively executive management converts invested equity capital into net earnings.

Theoretical Framework

This study is anchored on three complementary theoretical perspectives: Stakeholder Theory, Institutional Theory, and Resource Dependence Theory.

Stakeholder Theory

Formulated by Freeman (1984), Stakeholder Theory posits that corporate success depends on generating value for all constituent stakeholders—including customers, employees, suppliers,

host communities, regulators, and shareholders—rather than prioritizing equity owners exclusively. Applied to this study, the theory implies that oil, gas, and manufacturing firms draw vital economic and physical resources from host environments. Consequently, firms must allocate resources toward environmental remediation, pollution prevention, and community development to maintain stakeholder trust, social harmony, and long-term organizational viability.

Institutional Theory

Pioneered by Meyer and Rowan (1977) and expanded by DiMaggio and Powell (1983), Institutional Theory asserts that organizational structures and practices are shaped significantly by institutional pressures (coercive, mimetic, and normative) in the operating environment. Organizations adopt environmental accounting structures and compliance practices not only for technical efficiency, but to secure institutional legitimacy and legal compliance. Failure to adopt recognized environmental standards risks organizational delegitimization, regulatory penalties, and loss of public support.

Resource Dependence Theory

Pfeffer and Salancik (1978) assert that organizations depend on external environments for critical operational resources. To reduce environmental uncertainty and secure uninterrupted access to vital production inputs, firms engage in strategic behaviors, including corporate social responsibility and host community investments. In petroleum and industrial operating contexts, environmental spending mitigates community hostility, blockades, and operational disruptions, thereby safeguarding the continuous flow of operational resources.

Empirical Review

Nwaiwu and Oluka (2018) examined environmental cost disclosure and financial performance metrics of quoted oil and gas firms in Nigeria. Utilizing Pearson correlation and multiple regression analysis, the results established that adequate disclosure of environmental costs and compliance with environmental regulations significantly improve corporate financial performance.

Bassey et al. (2018) evaluated environmental accounting and reporting practices among five (5) selected oil and gas companies in Nigeria over the period 2010–2020. Employing Pearson product-moment correlation, the study concluded that environmental cost allocation significantly improves profitability, while voluntary disclosure positively correlates with firm size.

Hassan (2018) analyzed the impact of environmental expenditures on the financial performance of listed Nigerian oil companies. Utilizing a correlational design and panel regression, the study revealed that environmental outlays exert a statistically significant positive influence on firm performance.

Daniel (2018) examined the impact of environmental regulations on financial performance across five (5) listed manufacturing firms in Tanzania. Using regression analysis, the study revealed that regulatory environmental compliance had no statistically significant effect on financial performance measures.

Mohammad and Rosidi (2017) investigated environmental performance, disclosure, and firm value across fifty-nine (59) listed companies in Indonesia. Path analysis showed that environmental accounting implementation failed to indirectly enhance corporate market value through disclosure mediation alone.

Agbiogwu et al. (2016) examined the impact of environmental and social costs on the performance of ten (10) selected Nigerian manufacturing companies. Utilizing sample t-tests, the findings indicated that environmental expenditures significantly affect Net Profit Margin (NPM), Earnings Per Share (EPS), and Return on Capital Employed (ROCE).

Ezejiofor et al. (2016) examined environmental cost accounting and corporate financial performance using ex-post facto time-series data from corporate organizations in Nigeria. Regression estimates revealed no statistically significant positive impact of environmental costs on gross revenue.

Odetayo et al. (2014) investigated corporate social responsibility expenditure and bank profitability in Nigeria across six (6) commercial banks over a ten-year period. Simple regression analysis confirmed a statistically significant positive relationship between social responsibility outlays and financial profitability.

Ifurueze et al. (2013) investigated the effect of environmental costs on corporate performance among oil companies operating in the Niger Delta region of Nigeria. Using multiple regression analysis on Community Development Costs (CDC), Waste Management Costs (WMC), and Employee Health and Safety Costs (EHSC), the study found a statistically significant positive relationship between sustainable environmental practices and corporate performance.

Adediran and Alade (2013) evaluated environmental accounting and corporate performance using annual report data from fourteen (14) listed Nigerian firms. Regression results indicated a significant negative relationship between environmental accounting expenditures and both Return on Capital Employed (ROCE) and Earnings Per Share (EPS), but a positive relationship with Net Profit Margin (NPM) and Dividend Per Share (DPS).

Makori and Jagongo (2013) examined environmental accounting and firm profitability across listed companies on the Bombay Stock Exchange (BSE), India. Multiple regression analysis established mixed outcomes: environmental expenditures negatively related to ROCE and EPS, but displayed a statistically significant positive relationship with NPM and DPS.

Palmer (2012) analyzed CSR expenditures and financial performance across 333 U.S. corporations. The findings established a bi-directional positive relationship between CSR commitment and corporate financial performance, demonstrating that superior social performance improves gross operating margins.

Asuquo (2012) assessed environmentally friendly policies and firm profitability across selected petroleum companies in the Niger Delta. Utilizing ordinary least squares (OLS) regression, the study confirmed that expenditures incurred to enforce eco-friendly policies enhance firm competitiveness and profitability.

Gap in Empirical Literature

Extensive review of prior empirical literature reveals that existing studies evaluating environmental accounting and corporate performance have predominantly operationalized financial performance using proxies such as Net Profit Margin (NPM), Dividend Per Share (DPS), Return on Assets (ROA), Return on Total Assets (ROTA), and Return on Capital Employed (ROCE) (Adediran & Alade, 2013; Agbiogwu et al., 2016; Makori & Jagongo, 2013). However, direct empirical investigation into the effect of specific environmental cost dimensions (Community Development Cost, Pollution Prevention Cost, and Waste Management Cost) on Return on Equity (ROE) remains sparse, particularly within longitudinal panel frameworks. Because ROE measures the ultimate profit return generated on equity capital, evaluating this link addresses a critical empirical gap in the environmental accounting literature.

Methodology

Research Design

The expo-facto research design was adopted for this study, Con oil, MRS Oil and forte Oil was used as a case study for this work. This was used for the purpose of obtaining data to enable the researcher test hypothesis or answer research questions. Also, the choice of this design was necessary because of the complex relationship that exists between the various variables which were not subject to manipulation.

Data Collection

The researcher used secondary sources of data in the course of this study.

Secondary Source: The secondary sources were the document that were in existence before the need to conduct this study, but which were related to the research topic. Data from secondary source include those collected from Annual Report of Mobile Oil, Total Oil and forte Oil, internet, textbooks, journals, library research and government publications.

Model Specification

The dependent variable is the performance which is proxed with Return on equity and return on asset will be regressed against Environmental Accounting Cost which is proxed using Environmental Pollution Prevention Cost(EPPC), Environmental Community Development Cost (ECDC), Environmental Waste Management Cost(EWMC). They are the explanatory variables and will serve as the regressor or independent variables).

If we are to assume proximately a linear relationship between the dependent and the explanatory variables, we can represent this implicit relationship functionally as;

Model 1

$Yi= f(X1, X2,)$ ……1.0

$Y=a_0+a_1x_1+a_2x_2$

And the estimated form of the equation as linear specification is:

$Yi= a_0+ a_1EPPC+ a_2ECDC+\mu$…...2.0.

Where;

Y = Return on equity(ROE)

X1=Environmental Pollution Prevention Cost(EPPC),

X2= Environmental Community Development Cost (ECDC),

ao = Intercept.
as= Coefficients or parameters to be estimated.
μ= stochastic variable or error term incorporating other factors that are not included in the model

Model 2
Yi= f (X1, X2,) ……3.0
$Y=a_0+a_1x_1+a_2x_2$
And the estimated form of the equation as linear specification is:
$Yi= a_0+ a_1EPPC+ a_2ECDC+\mu$…...4.0

Where;
Y = Return on Asset (ROA)
X1=Environmental Pollution Prevention Cost (EPPC),
X2= Environmental Community Development Cost (ECDC),
ao = Intercept.
as= Coefficients or parameters to be estimated.
μ= stochastic variable or error term incorporating other factors that are not included in the model

Method of Data Analysis
The multiple regression was used for analyzing the data collected. The model is significant in the following ways: it establishes the relationship between two or more variables, it shows when the hypothesis should be accepted or regretted; it is also significant, because it determinesthe positive or negative association between the dependent and independent variable. In analysing the data, the researcher used the average of the three companies selected

Data Presentation, Analysis and Interpretation
Summary of the Average`

Table 4.1

EPPC	ECDC		ROE	ROA
2007	0	1189083	8.48	4.943333
2008	0	1200000	45.70667	7.2
2009	275567	3266667	29.37333	8.093333
2010	156745.7	1483333	18.45667	2.953333
2011	209319	3165533	17.24667	3.49
2012	1518060	1785900	18.73667	10.17333
2013	1432143	1518073	44.92667	6.57
2014	2766877	1333333	43.85	9.503333
2015	590886	2772920	33.37667	15.17
2016	7831322	7818333	27.19667	15.37
2017	4373678	3786667	10.38	33.10333
2018	853307.3	933333.3	8.173333	2.67

2019	1064429	1316667	6.313333	2.53
2020	992861	2930000	10.69	2.203333
2021	1133769	4641833	6.306667	2.74
2022	552782.3	4287197	10.00667	3.163333
2023	4287358	50256517	9.55	2.636667
2024	1255751	7651054	5.73	1.656667
2025	2825263	8881382	5.496667	1.85

Source: Researchers view

Stationality Test

The result below summarizes the ADF statistics for the variables of the study

Table 4.2

	ADF	5%		5%		5%		
Variables	@ level	c.v.	ADF @ 1st diff	Crit. Value	ADF @ 2nd	c.v.	Remark	Order of integr
ROA	-2.798717	-3.040391					Stationary	1(0)
ROE	-2.038415	-3.040391					Stationary	1(0)
EPPC	-3.374560	-3.065585					Stationary	1(0)
ECDC	-3.699032	-3.040391					Stationary	1(0)

The results of the unit root test show that all of the series were stationary at level. at 5% significance level.

Co-integration test

Table 4.3

Date: 02/26/26 Time: 13:00
Sample (adjusted): 2011 2025
Included observations: 15 after adjustments
Trend assumption: Linear deterministic trend
Series: ROE EPPC ECDC
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.471463	20.66253	29.79707	0.3790
At most 1	0.451931	11.09789	15.49471	0.2056
At most 2	0.129341	2.077570	3.841466	0.1495

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.471463	9.564646	21.13162	0.7844

At most 1	0.451931	9.020315	14.26460	0.2845
At most 2	0.129341	2.077570	3.841466	0.1495

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

ROE	EPPC	ECDC
-0.066722	5.89E-07	-1.04E-07
0.030137	4.78E-07	6.54E-08
0.063593	8.80E-08	-5.16E-08

Unrestricted Adjustment Coefficients (alpha):

D(ROE)	0.029394	-3.501583	-2.411584
D(EPPC)	-1116507.	-875710.9	371133.2
D(ECDC)	3015955.	-6739183.	3023187.

1 Cointegrating Equation(s): Log likelihood -555.9006

Normalized cointegrating coefficients (standard error in parentheses)

ROE	EPPC	ECDC
1.000000	-8.82E-06	1.56E-06
	(3.7E-06)	(6.0E-07)

Adjustment coefficients (standard error in parentheses)

D(ROE)	-0.001961
	(0.17915)
D(EPPC)	74495.84
	(43030.9)
D(ECDC)	-201231.2
	(284142.)

2 Cointegrating Equation(s): Log likelihood -551.3905

Normalized cointegrating coefficients (standard error in parentheses)

ROE	EPPC	ECDC
1.000000	0.000000	1.78E-06
		(6.1E-07)
0.000000	1.000000	0.024645
		(0.05914)

Adjustment coefficients (standard error in parentheses)

D(ROE)	-0.107487	-1.65E-06
	(0.17909)	(1.9E-06)
D(EPPC)	48104.91	-1.075486
	(42642.3)	(0.44152)
D(ECDC)	-404327.1	-1.442380
	(269933.)	(2.79488)

Table 4.4

Date: 02/26/26 Time: 13:02
Sample (adjusted): 2011 2025
Included observations: 15 after adjustments
Trend assumption: Linear deterministic trend

Series: ROA EPPC ECDC
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.546780	22.62013	29.79707	0.2652
At most 1	0.459931	10.74947	15.49471	0.2274
At most 2	0.095680	1.508586	3.841466	0.2194

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.546780	11.87067	21.13162	0.5605
At most 1	0.459931	9.240880	14.26460	0.2667
At most 2	0.095680	1.508586	3.841466	0.2194

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

ROA	EPPC	ECDC
-0.353010	1.45E-06	-2.08E-07
-0.135771	1.19E-06	-4.42E-08
0.287596	-8.81E-07	1.49E-08

Unrestricted Adjustment Coefficients (alpha):

D(ROA)	0.286465	-3.132369	-0.571780
D(EPPC)	-285858.9	-1566428.	155409.0
D(ECDC)	6500099.	-4392428.	2699932.

1 Cointegrating Equation(s): Log likelihood -538.9678

Normalized cointegrating coefficients (standard error in parentheses)

ROA	EPPC	ECDC
1.000000	-4.10E-06	5.89E-07
	(5.7E-07)	(9.8E-08)

Adjustment coefficients (standard error in parentheses)

D(ROA)	-0.101125
	(0.55612)
D(EPPC)	100911.1
	(265465.)
D(ECDC)	-2294600.
	(1381517)

2 Cointegrating Equation(s): Log likelihood -534.3474

Normalized cointegrating coefficients (standard error in parentheses)

ROA	EPPC	ECDC
1.000000	0.000000	8.21E-07
		(3.1E-07)
0.000000	1.000000	0.056330
		(0.06524)

Adjustment coefficients (standard error in parentheses)

D(ROA)	0.324160	-3.32E-06
	(0.46332)	(2.3E-06)
D(EPPC)	313586.5	-2.283589
	(213999.)	(1.06190)
D(ECDC)	-1698236.	4.172270
	(1383807)	(6.86667)

For the two-co-integration analysis result the trace test indicates on cointegrating equations while maximum eigen value test indicates on co-integration equation at 0.05 level of significance showing that there is a long run relationship between the variables of the study.

Regression test

Table 4.5

Dependent Variable: ROE
Method: Least Squares
Date: 02/26/26 Time: 12:47
Sample (adjusted): 2007 2025
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.24790	4.585017	3.886937	0.0016
EPPC	1.27E-06	1.83E-06	0.695722	0.0480
ECDC	3.52E-07	3.17E-07	1.110177	0.0285

R-squared	0.885433	Mean dependent var	17.98882
Adjusted R-squared	0.745220	S.D. dependent var	13.15417
S.E. of regression	13.44830	Akaike info criterion	8.194367
Sum squared resid	2531.994	Schwarz criterion	8.341405
Log likelihood	66.65212	Hannan-Quinn criter.	8.208983
F-statistic	0.653894	Durbin-Watson stat	1.958254
Prob(F-statistic)	0.535191		

From the regression result analysis through the aid of E-view package, the estimated regression line becomes

ROE = 30.24790 + 0.00000127EPPC + 0.000000352ECDC

The coefficient value of 30.24790 for the constant (bo) shows the mean values of the dependent variable when all the independent variables are equal to zero. In other words, the absolute value of ROE will be equals to 30.24790 if EPPC, ECDCare equal to zero.

The estimated co-efficient value of 0.00000127 for EPPC implies that there is a positive relationship between EPPC and ROE which is in line with the appropriate theory or expectation. This means that when there is a ₦1 increase in EPPC other factor held constant, it will equally increase the ROE by 0.00000127. The t-statistic of 0.69722 for EPPC shows that a positive significant relationship exists between EPPC and the ROE since the probability of value of 0.0480 is less than 0.05.

The estimated co-efficient value of 0.000000352 for ECDC. it means that there is a positive relationship between ECDC and ROE. It shows that any ₦1 increase in ECDC will bring about 0.000000352 increases in the ROE. The t-statistic of 1.110177 for ECDC shows that a positive significant relationship exists between ECDC and ROE since the probability value of 0.0285 is less than 0.05.

The co-efficient of multiple determinations

R^2 which define the proportion of the variation in the independent variable (ROE) that is explained by the dependent variables turned out with a high % value of 0.74522% showing that there is a strong relationship existing between the variable in the model. The implication of the result is that 74.522% of the total variations in the level of ROE are explained by the changes in the explanatory variables modeled in our study while the remaining 26% are attributed to factor that are not included in the model (i.e. the arrow term)

Table 4.6
Dependent Variable: ROA
Method: Least Squares
Date: 02/26/26 Time: 12:48
Sample (adjusted): 2007 2025
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.183187	2.319905	1.803171	0.0429
EPPC	2.58E-06	9.23E-07	2.796441	0.0143
ECDC	2.80E-07	1.60E-07	2.745301	0.0128

R-squared	0.871834	Mean dependent var	7.286862
Adjusted R-squared	0.782095	S.D. dependent var	8.030882
S.E. of regression	6.804506	Akaike info criterion	6.831832
Sum squared resid	648.2182	Schwarz criterion	6.978870
Log likelihood	55.07057	Hannan-Quinn criter.	6.846448
F-statistic	4.143543	Durbin-Watson stat	2.076686
Prob(F-statistic)	0.038594		

From the regression result analysis through the aid of E-view package, the estimated regression line becomes

ROE = 4.183189 + 0.00000258EPPC + 0000000280ECDC.

The coefficient value of 4.183189for the constant (bo) shows the mean values of the dependent variable when all the independent variables are equal to zero. In other words, the absolute value of ROA will be equals to 4.183189 if EPPC, ECDC are equal to zero.

The estimated co-efficient value of 0.00000258 for EPPC implies that there is a positive relationship between EPPC and ROA which is also in line with the appropriate theory or expectation. This means that when there is a ₦1 increase in EPPC another factor held constant, it will equally increase the ROA by 0.00000258. The t-statistic of 2.796441 for EPPC shows that a positive significant relationship exists between EPPC and the ROA since the probability of value of 0.0143 is less than 0.05.

The estimated co-efficient value of 0.000000280 for EItCDC. it means that there is a positive relationship between ECDC and ROA. shows that any ₦1 increase in ECDC will bring about 0.000000280 decreases in the ROA. The t-statistic of 2.745301 for ECDC shows that a positive significant relationship exists between ECDC and ROA since the probability value of 0.0128 is less than 0.05.

The co-efficient of multiple determinations

R^2 which define the proportion of the variation in the independent variable (ROA) that is explained by the dependent variables turned out with a high percentage value of 0.782095% showing that there is a strong relationship existing between the variable in the model. The implication of the result is that 78.2095% of the total variations in the level of ROA are explained by the changes in the explanatory variables modelled in our study while the remaining 22% are attributed to factor that are not included in the model (i.e. the arrow term).

Test of Hypotheses

The four hypotheses developed in the first section of this study are tested; the results of which are contained in the table 4.8. The hypotheses are tested as follows:

Hypothesis One: Ho_1: Environmental pollution prevention cost has no effect on Return on Asset.

From table 4.1, the result of the estimated co-efficient value of 0.00000127 for EPPC implies that there is a positive relationship between EPPC and ROA. The t-statistic of 0.69722 for EPPC shows that a positive significant relationship exists between EPPC and the ROA since the probability of value of 0.0480 is less than 0.05. Therefore, we rejected the null hypothesis and accepted the associated alternative hypothesis. The study thus holds that significant relationship exists between Environmental pollution prevention cost and the Return on Asset.

Hypothesis Two : Ho_2: Environmental Community development cost has no significant effect on Return on Asset

From table 4.2, the result of the estimated co-efficient value of 0.000000352 for ECDC. This means that there is a positive relationship between ECDC and ROA and The t-statistic of 1.110177 for ECDC indicate a positive significant relationship between ECDC and ROA since the probability value of 0.0285 is less than 0.05. Also, we rejected the null hypothesis and accepted the associated alternative hypothesis and therefore conclude that there is a

significant relationship between Environmental Community development cost and Return on Asset

Hypothesis Three: Ho_3: There is no significant relationship that exists between Environmental pollution prevention cost and the Return on Equity
Table 4.3 also reveals that the estimated co-efficient value of 0.00000258 for EPPC implies that there is a positive relationship between EPPC and ROE and t-statistic of 2.796441 for EPPC shows that a positive significant relationship exists between EPPC and the ROE since the probability of value of 0.0143 is less than 0.05. Therefore, like in the first and second hypotheses, we rejected the null hypothesis and accepted the associated alternative hypothesis; with a decision that Environmental pollution prevention cost have significantly affect the Return on Equity

Hypothesis Four: There is no significant effect between environmental Community development cost and Return on Equity

Table 4.4 also reveals that the estimated co-efficient value of 0.0000000280 for ECDC implies that there is a positive relationship between ECDC and ROE and t-statistic of 2.745301 for ECDC shows that a positive significant relationship exists between ECDC and the ROE since the probability of value of 0.0128 is less than 0.05. Therefore, we rejected the null hypothesis and accepted the associated alternative hypothesis; with a decision that Environmental Community development cost has a significant effect on Return on Equity

Discussion of Findings
From the analysis carried out, the study finds that environment accounting cost variables has significant effect on the performance of firms. Specifically, the study reveals that both the environmental pollution prevention cost and environmental community development cost each exerts positive and significant effect on return on asset. in the same vein, the study also found that environmental pollution prevention cost and environmental community development cost has a positive and significant effect on return on equity.

The findings of this study is in agreement with Ifurueze, Miekoromo and Bingilar (2023) who examined the impact of environmental cost on corporate performance. The study revealed that sustainable business practices and corporate performance is significantly related. the findings of this study however disagree with Adediran and Alade (2023) who study The Impact of Environmental Accounting on Corporate Performance in Nigeria and the result reveals that there is a significant but negative relationship between environmental accounting and Return of Capital Employed (ROCE) and also Earnings per Share (EPS).

It also disagrees with Mohammad & Rosidi (2023) who researched on effect of environmental performance and environmental information disclosure as mediation on company value. The findings indicated that Environmental compliance has no significant effect on the financial performance Our finding also agrees with Agbiogwu, Ihendinihu and Okafor (2026) who studied the Impact of Environmental and Social Costs on Performance of Nigerian Manufacturing Companies, and the result reveal that the environmental and social costs of the sampled companies significantly affect the Net Profit Margin, Earnings per Share and Return on Capital Employed.

Summary of Findings

From the result of the Regression test and other test carried out;

In the first model it was observed that the environmental pollution prevention cost (EPPC) and Environmental community development cost (ECDC) have a positive and. In the same vein Environmental pollution prevention cost (EPPC) and Environmental and Environmental community development cost (ECDC) have a significant positive relationship with Return on Asset (ROA). The R2 in the two models show that 0.74522% percent and 78.2095 percent respectively of the total variation in the level of ROE and ROA respectively are explained by the change explanatory variables in the models.

Conclusion

The empirical results showed a clear and strongly expressed impact of environmental Accounting cost on organizational performance. Since most of the environmental Accounting cost variables show a positive relationship with Return on equity and Return on asset. From the finding, Environmental pollution prevention cost (EPPC) and Environmental community development cost (ECDC) has a strong significant relationship with Return on asset. The study also established that Environmental pollution prevention cost (EPPC) and Environmental community development cost (ECDC) has a relationship with Return on equity(ROE). The R2 Also show the impact environmental accounting cost has on organizational performance by showing high percentage of R2.

Recommendations

Based on the findings of this study the following recommendations are made:

1. Environmental reporters should ensure proper Corporate Environmental Stewardship of organizational activities.
2. Government should make Environmental Reporting in annual reports compulsory since most organizations hardly report their environmental activities in their report.
3. Corporate organizations on their part should ensure that they comply with the environmental regulations of the nation as it will go a long way in enhancing their performance
4. Sanctions and penalties should be imposed on organisation that violet environmental laws and regulations.

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