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IMPACT OF ENVIRONMENTAL PROTECTION COST ON RETURN ON EQUITY OF LISTED PETROLEUM MARKETING COMPANIES IN NIGERIA.

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ABSTRACT
The objective of this paper is to evaluate the impact of environmental protection cost on the performance of petroleum marketing companies in Nigeria. Ex-post factor research Design was adopted. The design is considered most appropriate because it describes the relationship between two or more variables. The population of the study consists of all the Six (6) petroleum marketing companies quoted on the floor of the Nigerian Exchange Group (NXG) as at 31st December, 2024. A census method was adopted to sample the entire listed petroleum oil companies.
Furthermore, Panel data, spanning a period of fifteen years (15) from 2010 to 2024, was used, which was sourced from Nigerian Exchange Group Fact Book and annual accounts and reports of the sampled companies. The paper found that environmental protection cost has positive and significant effect on the financial performance of petroleum marketing companies in Nigeria. Therefore, the paper recommends that petroleum marketing companies in Nigeria should increase their participation in environmental protection, environmental remediation and pollution control to their host communities in order to maximise profitability.

Keywords: **Environmental Accounting, Return on Equity and Petroleum Marketing Companies.**

I. INTRODUCTION
It is worthy of note that: being environmentally responsible involves cost, and anything cost reduces profitability (Ahmed & Mousa, 2022). More so, it is a two-way affair: being environmentally compliant can either enhance performance or reduce profitability (Armaya'u, 2020). There are agitations in the Niger Delta for environmental reclamation based on land degradation, oil spillage, oil well blow-outs, oil ballast discharges and improper disposal of drilling mud from petroleum prospecting caused by oil-producing companies, which result in unemployment, environmental pollution and so on in their community (James & Ashamu, 2021). This has made quoted petroleum marketing companies justifiable for the study.

The Oil and gas industry greatly impacts the global economy. Abdulsalam et al (2020) mentioned that oil and gas companies are crucial in driving economic growth and carry significant responsibilities within the communities they operate. It is important to note that Nigeria is one of the world's top 10 largest producers of crude oil, with a daily production capacity of over 2 million barrels (Abdulsalam & Babangida, 2023). The oil industry recognises its interconnectedness with the environment, especially during a period of heightened awareness regarding the detrimental effects of unsustainable social and business activities on the environment.

Therefore, there is a need to examine the impact of environmental protection cost on the return on Equity of listed petroleum marketing companies in Nigeria. This study will be important to

corporate organisations to adequately provide for environmental protection in their internal policies on investments and projects which impact on the environment (EKong & Adeyemi, 2022).

Prior studies on environmental protection cost and environmental accounting disclosure in Nigeria have been exploratory and descriptive. The studies mainly focused on discussing the phenomenon (its meaning and disclosure), without examining its economic and/or financial implications (Bartolome, 2020). Thus, there is a gap between the studies on environmental protection cost and its impact on return on Equity (financial performance) in Nigeria (McWilliams & Siegel, 2000; Cormier, Magnan & Velthoven, 2005**;** Chauhan & Kalola, 2014; Ihendinihu & Onyinyechi, 2016). Most of the previous studies used ROA, ROCE and ROE to measure performance, while this paper uses ROE as a measure of financial performance. Furthermore, there are few studies that considered the cost of Environmental disclosure, the cost of environmental protection, environmental remediation and pollution control to produce Environmental Accounting. These factors have generated mixed results.

The consequences of petroleum marketing companies on the distribution and marketing of petroleum and petrochemical products are treated as paramount issues (Oyelakun, 2015). Environmental accounting is attracting academic interest, which is evident by the level of attention it has received over the years. A number of studies (Kisenyi & Gray, 1998; Elijido, 2009) concur that environmental reporting is at a low ebb in petroleum marketing companies. However, some studies have shown that environmental disclosure is high in some petroleum marketing companies (Ahmed & Mousa, 2022; James & Ashamu, 2021).

The main objective of this paper is to examine the impact of environmental protection cost on the return on Equity of listed petroleum marketing companies in the Nigerian Exchange Group (NXG).

II. LITERATURE REVIEW

2.1 Concept of Environmental Accounting

Accounting can be defined as an umbrella term that describes various means by which companies disclose information on their environmental activities to users of financial statements (Alok, Nikhil, & Bhagaban, 2020). It is also defined as those disclosures that relate to the impact company activities have on the physical or natural environment in which they operate (Wilmshurst & Frost, 2000).

2. 2.1 Environmental Accounting

Environmental accounting involves the identification, evaluating, and allocation of conventional costs, environmental costs, and social costs to processes, products, activities, or budgets. Hansen & Mowen (2000) define environmental accounting as costs associated with the creation, detection, remediation and prevention of environmental degradation. Environmental accounting can also be defined as the management of environmental and economic performance through the development and implementation of appropriate environmental- related accounting systems and practices. While this may include reporting and auditing in some companies, environmental management accounting typically involves life-cycle costing, full-cost accounting, benefits assessments, and strategic planning for environmental management (International Federation of Accountants, IFAC, 2020).

2.2.2 Environmental Regulation in Nigeria

The increasing need for implementation, adherence and enacting strong Environmental law and Regulation in Nigeria, changes as a result of an attempt in 1997 by a foreign company, acting through an agent, to dump toxic waste in the Niger Delta region. This incident shocks the Federal Government of Nigeria and highlights the porous nature of environmental Regulation in the country. This gives rise to the promulgation of Decree No.42 of 1988 by the former Federal Military Government of Nigeria. The episode brings about the need for an agency to oversee environmental protection; hence, Decree 58 of 1988 gives birth to the Federal Environmental Protection Agency (FEPA). The Decree was later amended in 1992 by Decree No. 59 of 1992, granting FEPA the responsibility for the protection of the environment, biological diversity, conservation and environmental technology and research.

2.2.3 National Environmental Standards and Regulations Enforcement Agency (NESREA):

Inappropriate and inadequate regulations for the protection of the environment constitute a major challenge to socio-economic development. The Federal Government, through NESREA, has developed the following Thirty-Three (33) Environmental Regulations, which have been published in the Federal Republic of Nigeria Official Gazette and are now in force. The Regulations are: Wetlands, River Banks and Lake Shores: Regulations, S. I. No. 26, 2009. This Regulation provides for the conservation and wise use of wetlands and their resources in Nigeria, and ensures sustainable use of wetlands for ecological and tourism purposes, and to protect wetland habitats for species of fauna and flora.

2.2.4 National Oil Spill Detection and Response Agency (NOSDRA):

NOSDRA was established by the National Assembly of the Federal Republic of Nigeria Act of 2006 as an institutional framework to coordinate the implementation of the National Oil Spill Contingency Plan (NOSCP) for Nigeria in accordance with the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC 90) to which Nigeria is a signatory. Since its establishment, the Agency has been intensely occupied with ensuring compliance with environment legislation in the Nigerian Petroleum Sector.

The Agency embarks on joint investigation visits, ensures the remediation of impacted sites and monitors oil spill drill exercises and facilities inspection. It has set up Zonal Offices in Port Harcourt, Warri, and Uyo, all in the Niger-Delta region, where much of oil exploration and production in Nigeria is carried out, and there are also zonal offices in Lagos, Kaduna, Kogi, Gombe and Akure. NOSDRA is currently liaising with relevant stakeholders in the Nigerian Oil and Gas Industry to evolve practical methods of environmental management to cope with the dynamics of the Petroleum Sector.

2.2.5 Effects of Environmental Cost on Financial Statements

Environmental cost can impact financial statements prepared on a cash basis of accounting. However, the effects on the financial statements are more limited than those under financial Statements prepared under an accrual basis (Baredugu & Mefor, 2021). According to Bela (2010), environmental costs can impact the cash flows of an entity during the reporting period. He further posited that there could be an impact where compliance reporting is included in a government financial report. As such, the entity would be required to demonstrate compliance with environmental laws and regulations.

2.2.6 Environmental Reporting

Environmental reporting is defined as the disclosure of information concerning an entity's environmental performance, and it makes organisations appear more accountable for the economic, environmental and social consequences of their activities. Environmental reporting can also be defined as a public disclosure by a firm of its environmental performance information, similar to the publication of its financial performance**.** Environmental reporting according to Beredugo & Mefor, (2021) and CIMA, (2021) is very important as it enhances the quality of decision making, requiring firms to establish a standard and set reduction targets and the realisation of the importance of changing unsustainable consumption and production patterns alongside protecting and managing Nigerian national resources; the information contained in environmental reports are necessary for accountability, comparability and probity, hence when not made available can be held synonymously with being bias, not transparent, fraudulent and liable to risk which in turn can dissuade patronages from consumers, suppliers, investors and surrounding communities.

2.3 Firm Financial Performance

Financial performance, which assesses the fulfillment of a firm's economic goals, has long been an issue of interest in managerial research. Firm financial performance relates to the various subjective measures of how well a firm uses its assets in its primary operation to generate profit. Kothari (2001) defined the value of a firm as the present value of the expected future cash flows after adjusting for risk at an appropriate rate of return. It is the success in meeting pre-defined objectives, targets and goals within a specified time target (Eyenubo, 2021). Bhatti and Qureshi (2007) put forward four different approaches in which the value of a firm has been identified in corporate finance literature. These are:

i. The financial management approach, which focuses on the evaluation of cash flows and investment levels before identifying and assessing the impact of financing sources on firm value;

ii. The capital structure approach, which studies the impact of capital structure changes on the value of the firm and how different factors directly or indirectly impact the debt and equity components of the firm's capital structure;

iii. The resource-based approach, which explains the value of the firm as an outcome of the firm's resources, and

iv. The sustainable growth approach, which is a summary of the above three approaches to firm value, considers the firm's operating performance, its investment and financing needs, the financing sources, and its financing and dividend policies for the sustainable development of the firm's resources and maximisation of firm value.

2.3.1 Measures of Financial Performance

In recent years, many studies have been conducted by researchers in order to evaluate the financial performance of companies using several financial tools of analysis or by applying statistical analysis techniques. The methods used to evaluate a company's potential and limitations with the help of the relationship between the contents of profit and loss accounts and the balance sheet are called financial analysis (Panda, 2022).

Bhatti & Quresh (2021) define financial analysis as an in-depth study of the fundamental connection between financial position and profitability. Financial analysis involves three steps: selection, relation and evaluation of financial statements. Proper and appropriate evaluation of the industry's financial performance is very crucial not only for shareholders, potential investors and other lenders, but also for the competing companies working in the same sector. For this paper, Return on Equity was used as a measure of financial performance.

2.3.2 Return on Equity Ratio: This ratio indicates the margin available for the shareholders after satisfying all other obligations and taxes as well. Return on Equity measures the degree of profitability to shareholders of the firm after expenses and taxes are paid (Van Horne & Wachowicz, 2022). It measures how much a shareholder is earning as profit after tax for each amount invested in the firm. In other words, return on Equity indicates the net earnings per equity capital invested. (Skillius & Wember, 2020). It is regarded as an indicator of evaluating managerial efficiency. It is assumed that the higher return on Equity, the better managerial performance and vice versa; however, a higher return on Equity may be a result of debt capital (Financial leverage) or as a result of higher returns on assets (Ross, s, Westerfield R, & Jordan, B, 2022). Usually, there is a higher return on the Earnings per Share Ratio: Equity for higher-growth companies. ROE is expressed as:

ROE = Net Profit after Tax / Shareholders' Equity X 100

2.4 Empirical Review

Daniel and Ambrose (2021) examine the environmental accounting and firm profitability: An Empirical Analysis of Selected Firms Listed in Bombay Stock Exchange, India. The study is to assess whether there is any significant relationship between environmental accounting and the profitability of selected firms listed in India. The data for the study were collected from annual reports and accounts of 14 randomly selected quoted companies in Bombay Stock Exchange in India. The data are analysed using multiple regression analysis. The key findings of the study show that there is an insignificant negative relationship between environmental accounting and Return on Capital Employed (ROCE) and Earnings per Share (EPS), and a significant positive relationship between environmental accounting and net profit margin and dividend per share. Hansen & Mowen (2020) examine the integration of environmental policy with business policy. The study finds that the business firm's strategy includes responding to capital and operating costs of pollution control equipment. This is caused by increasing public concerns over environmental issues, and by a recent government-led trend to incentive-based Regulation.

Wagner (2021) assesses the relationship between the independent variables (pollution abatement and other environment-related information) and the dependent variables (return on assets (ROA) and return on Equity (ROE). Strong relationship between both variables and the value is positive, thus indicating a perfect positive correlation between pollution abatement and other environment-related information and ROA. Environmental disclosure is found to have a positive and significant association with a company's financial performance. This shows that environmental disclosure is associated with the company's performance (ROA) and is accepted.

III. METHODOLOGY

3.1 Research Design

The paper adopts the Correlational Ex-post Factor Design. The design is considered most appropriate because it describes the relationship between two or more variables. The population of the study consists of all the Six (6) petroleum marketing companies quoted on the floor of the Nigerian Exchange Group (NXG) as at 31st December, 2024 (See Appendix One). Therefore, a census was adopted; as such, no sampling was used. Furthermore, the data used in this paper were extracted from the Audited Annual Financial reports and Corporate Governance Report of the Petroleum Marketing firms. These include an audited financial statement and a published sustainability report.

This paper employs multiple regression for the purpose of data analysis. The model uses Return on Equity and two explanatory variables, Environmental Protection cost (EPC), and Environmental Remediation and Pollution Control (ERPC). The model is estimated using the coefficients of the independent variables and their level of significance.

3.2 Model Specification

The model used in this paper is specified as follows:

PRF = *f* (ENVAC)

Where:

PRF = Financial Performance

ENVAC = Environmental Accounting

$ROE_{it} = \alpha + \beta_1 EPC_{it} + \beta_2 ERPC_{it} + \beta_3 FSIZC_{it} + \mu_{it}$……..... (1)

Where:

ROE = Return on Equity I at time t

EPC = Environmental Protection Cost

ERPC= Environmental Remediation and Pollution Control

FSIZ= Firm Size

μ_{it} = Total error term

β_1, β_2, β_3 represent intercept.

A priori expectation is that $\beta_1 - \beta_3 > 0$

The model is adopted from Enahoro (2020).

Decision rule; null hypothesis is rejected if the probability (p-value) is < 5% significance level, otherwise it is accepted.

IV DISCUSSION OF RESULTS

The hypothesis of this paper is tested using the following regression result:

Table 4.1: Result of the Regression Model

Dependent Variable	Financial Performance

	Fixed Effects Regression			Random Effects Regression		
Variables	**Coef.**	**St. Error**	**P-val.**	**Coef.**	**St. Error**	**P-val.**
ERPC	0.176626	0.294725	0.5504	0.056852	0.291679	0.8458
EPC	0.872469**	0.497622	0.0036	0.605030	0.417530	0.1504
FIZ	6.566663***	1.491003	0.0000	4.670947	1.405540	0.0012
Hausman Test Coef. 26.237793 P-val. 0.0000						

Source: STATA 15 Output, (2026). *=10% level of significance, **=5% level of significance, ***=1% level of significance.

4.1 Test of Hypothesis

Environmental Protection cost does not have any significant impact on the return on Equity of Petroleum marketing companies in Nigeria. Table 4.1 presents a significant p-value of 0.0036, indicating the rejection of the null hypothesis in favor of alternate hypothesis, which states that Environmental Protection Cost has a significant impact on Return on Equity of Petroleum marketing companies in Nigeria. This validates the Legitimacy theory, which offers a powerful mechanism for understanding intentional environmental disclosures made by companies, and its understanding provides a vehicle for engaging in critical public debate. The knowledge gained is used to provide better and more useful information to enforce decision making by stakeholders. In this way, society is empowered to have greater control and oversight over the way resources are allocated.

4.2 Findings

The findings of this paper were discussed in this section. Table 4.1 shows that environmental protection cost has a significant impact on the performance of the selected petroleum marketing companies in Nigeria. Therefore, the hypothesis of the paper was rejected, indicating that environmental protection cost has a positive and significant impact on petroleum marketing companies in Nigeria. This finding agrees with the study of ActiLyndon and Bingilar (2021), who affirm that environmental protection cost has a statistically significant relationship with corporate performance. Similarly, Shehu (2015) states that environmental protection cost plays a significant role in the profitability of conglomerates in Nigeria. However, this finding contradicts the findings of Enahoro (2020), who suggests that environmental protection cost does not have a significant impact on the financial performance of petroleum marketing companies. This conforms to a prior expectation because theoretically, environmental protection cost is expected to be positive and statistically significant on the financial performance of the selected petroleum marketing companies.

V. CONCLUDING REMARKS

5.1 Conclusion

Based on the findings of this paper, the study concludes that Environmental Protection cost has significant effects on return on Equity of petroleum marketing companies in Nigeria. This is due to the reason that ROE dropped in the short run with high environmental spending, while the earnings of these petroleum marketing companies remained at the lowest level and were stagnant.

5.2 Recommendations

From the conclusions reached in this paper, the following recommendations are made: Petroleum marketing companies should increase their participation in environmental protection costs to their host communities in order to guarantee a reasonable increase in financial performance.

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Appendix

Table 3.1: Population of the Study

S/N	Firm	Status of companies	Year of Incorporation	Year of Listing
1	Conoil Plc	Listed	1960	1989
2	Eternal O & G Plc	Listed	1989	1998
3	MRS Oil Nig. Plc	Listed	1969	1978
4	Total Nigeria Plc	Listed	1956	1979

5	Capital Oil Plc	Listed	1985	1990
6	Sepalat Pet. Comp Plc	Listed	2009	2013

Source: Nigerian Exchange Group (2024).