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Environmental Accounting and Financial Performance Nexus of Nigerian Stock Exchange Listed Oil and Gas Sector Companies

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Abstract
This study investigated the environmental accounting and financial performance nexus of listed oil and gas sector companies in Nigeria. The specific objectives of the study were to examine the relationship between environmental accounting and the return on assets of oil and gas companies. It also examined the relationship between environmental accounting and return on capital employed of oil and gas companies; and the relationship between environmental accounting and net profit margin of oil and gas companies. Three hypotheses were formulated in line with the stated objectives of the study. The study obtained data through the published financial reports of the selected companies and analyzed using the multiple regression technique based on OLS with the aid of SPSS version 20. From the analytical output, the study found that there is a significant relationship between environmental accounting and return on the asset; similarly, it also found that there is a significant relationship between environmental accounting and return on capital employed. It also revealed that there is no significant relationship between environmental accounting and net profit margin. The study recommended that there should be a unified reporting standard on environmental practices as it increases the control and measurement of performance.

Keywords: *Environmental Accounting, Financial Performance, ROA, ROCE, NPM.*

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I. Introduction

In general, oil and gas operations are characterized by large capital investment due to the demand for oil and gas products, it is expected to obtain greater profits from operations. However, despite its capital-intensive nature (it attracts stakeholders, including investors), the proceeds from the sales of oil are always mega compared with other businesses in any oil-rich country (Effiong, 2010; Nkwoju, 2021). When the environment is affected, the livelihoods of humans will also be affected. The company's response to environmental liabilities is under the subtle influence of environmental and social factors, and in a broader context, the company's performance indicators have been reconfigured to form an overall picture of the entity's performance. This has led to a demand from various stakeholders to measure the company's environmental practices and the subsequent public disclosure of such information is growing (Charles, John-Akamelu, & Umeoduagu, 2017).

In 2017, Nigeria Launches a $1 Billion Ogoniland Clean-up and Restoration Programme, the implementation were based on the recommendations on the impact of oil exploitation in Ogoniland in the 2011 UN Environmental Report commissioned by the Nigerian government. The report found that soil and groundwater throughout Ogoniland were severely and extensively contaminated. In most areas, contaminated drinking water and carcinogens pose a serious threat to public health. The delta ecosystems such as the mangroves have been destroyed. The report also found that neither the oil industry nor the government's institutional control measures have been fully implemented. The report proposes to establish a restoration agency that authorizes the cleanup of Ogoniland and the restoration of the ecosystem. The report also recommended the establishment of an Ogoniland Environmental Recovery Fund with an initial capital of $1 billion to cover clean-up costs (UN Environment's Environmental Assessment of Ogoniland). Effion (2010) pointed out the general situation of Niger Delta and pointed out that although the Petroleum Company operating in the Niger Delta makes huge profits, the people of the area live without basic services. This has led to an increase in violent activities planned by community organizations that hope to attract the attention of the international community to the plight of the people in the area. The region clean-up is vital as it will help create new livelihoods, build livelihoods and change the lives of millions of people within the region. Ogoniland environmental restoration is likely to be the world's longest oil cleanup activity in the world. Specialists proffer that it may take up to 25 years for the ecosystem to fully recover.

From the foregoing, environmental accounting has received emphasis globally from scholars and public entities. Several studies show that most of the studies centered on developed countries and in Nigeria few studies focused on the subject matter. Overall, the results of investigative reports on environmental accounting disclosures and financial performance have mixed results. Some studies report a positive correlation, while other studies report a negative correlation, which may be due to differences in the study sector or study period. However, there is very little literature on the impact of environmental accounting and corporate performance in Nigeria. The study is intended to fill these gaps identified.

The research contributes to the existing literature by exploring the environmental accounting and financial performance of oil and gas companies in Nigeria.

Objectives of the Study

The main objective of this study is to investigate the environmental accounting and financial performance of selected oil and gas companies in Nigeria. The specific objectives are;

1. To examine the influence of environmental accounting on return on assets of selected oil and gas companies in Nigeria
2. To investigate the effect of environmental accounting on return on capital employed of selected oil and gas companies in Nigeria
3. To determine the impact of environmental accounting on the net profit margin of selected oil and gas companies in Nigeria

Research Questions

The study attempts to answer the following questions:

1. What extent do environmental accounting influences return on asset of selected oil and gas companies in Nigeria?
2. What relationship exists between environmental accounting and the return on capital employed of selected oil and gas companies in Nigeria?
3. What extent does environmental accounting impact the net profit margin of selected oil and gas companies in Nigeria?

Research Hypotheses

The following hypotheses were formulated in null form:

Ho_1: Environmental Accounting does not have a significant effect on the return on assets of selected oil and gas companies in Nigeria.

Ho_2: Environmental Accounting does not have a significant effect on the return on capital employed of selected oil and gas companies in Nigeria.

Ho_3: Environmental Accounting does not have a significant effect on the net profit margin of selected oil and gas companies in Nigeria.

II. Review Of Related Literature

Conceptual Clarification

Environmental Accounting

Environmental accounting covers information related to all aspects of the environment which includes costs related to the environment, the environmental benefits of the product, and the details of sustainable operations (Irish times, 2000 cited in Ikpor Ituma & Okezie, 2019).

Seetharaman, Mohamed, and Saravanan (2007) posited that environmental accounting is used to evaluate all environmental costs associated with activities and/or products. They also emphasized that environmental accounting can be used to track an organization's environmental performance more measurably. The key monitoring areas are air emissions, wastewater emissions, soil pollution, and boundary noise levels. The work of Ikpor Ituma & Okezie, (2019) pointed to the two major environmental accounting approaches which are: The physical approach and the monetary approach.

First of all, the United Nations recommends the use of physical methods. A comprehensive guide should be prepared to describe the available resources in a country according to their conditions and uses (such as agriculture, desert land, etc.). According to this approach, environmental operations are expressed in physical terms, the current balance of resources, and the increase and decrease of that resource. According to this method (Ahamed, 2002) added that no monetary value is assigned.

Hamid (2002) postulated that the monetary approach appeared that the physical approach was because the physical law could not meet the requirements of environmental accounting. Physical methods are very important to obtain physical information about resources which helps to prepare environmental statistics and is considered the first step in the monetary approach. Despite the difficulties associated with the monetary approach, it has generated a lot of interest, data that will allow people to understand the gains and losses associated with environmental operations and obtain environmentally adjusted economic indicators.

Stakeholder environmental accounting is an environmental accounting system that is part of the financial statement report. This is also called environmental financial accounting. The essence of environmental accounting here is to provide relevant environmental information for reports based on stakeholders. This is done by collecting and reporting to stakeholders the direct and indirect impacts of the organization's activities on the environment. The information so provided is part of the financial accounting information to be published in the annual accounts, or part of the information in the independent annual sustainability report (Iliemena, 2020).

Shareholders and potential shareholders make investment or divestment decisions based on the information published in the annual financial report (Iliemena & Okolocha, 2019). The stakeholders of the organization include investors, employees, lenders, suppliers, governments, local communities, shareholders, and management. The Global Reporting Initiative provides reporting standards and guidelines and requires environmental accounting information;

Material

- Materials used by weight or volume
- Percentage of materials used that are recycled input materials

Energy

- Energy consumption within the organization
- Energy consumption outside of the organization
- Energy intensity
- Reduction of energy consumption
- Reductions in energy requirements of products and services

Compliance

- Monetary value of significant fines and a total number of non-monetary sanctions for non-compliance with environmental laws and regulations

Financial Performance

Return on Assets (ROA)

Return on assets gives management insight into how to effectively use your assets to generate income. This is a measure of the profitability of a company about its total assets. It is calculated by dividing the company's annual income by its total assets. The calculation method is as follows: return on assets (ROA) = net income (EBIT) / total assets (expressed as a percentage). The rate of return on assets tells us what returns are generated from invested capital (assets). The return on assets of publicly traded companies can vary greatly and is highly dependent on the industry (Ikpor, Ituma & Okezie, 2019).

Return on Capital Employed (ROCE)

Return on capital used is expressed as a percentage, which can reveal the industry in which the company operates management skills, and sometimes the general business environment. Therefore, these indicate the efficiency and profitability of the capital investment of the company. It is one of the most important operating ratios and can be used to assess business profitability. As a general rule of thumb, running a company with a high return on equity can be a very profitable business. The return on capital employed is calculated as follows: Return on Capital Employed (ROCE) = PBIT (net income) / capital Employed where: capital Employed = total assets-current liabilities = equity + non-current liabilities.

Net Profit Margin

Net Profit Margin is a financial index used to calculate the percentage of profit a business generates from its total revenue. It measures the amount of net profit a business receives for every naira of revenue. Net profit margin equals net profit (also called net income) divided by total income, expressed as a percentage. The Net Profit Margin is calculated as follows: NPM = Net Profit / Revenue X 100.

Theoretical Foundation

The study hinges on stakeholder theory

The basic proposition of stakeholder theory is that the success of a business depends on the successful management of all relationships between the company and its stakeholders. The term stakeholder was originally introduced by the Stanford Research Institute (SRI) which refers to those groups that would cease to exist without their support organization (Freeman, 1983). The Freeman Stakeholder theory states that managers must satisfy the various components that can affect company results (eg, employees, customers, suppliers, local communities, etc.). Stakeholder theory proposes a higher level of environmental awareness and creates the need for companies to expand their corporate plans to include non-traditional stakeholders, such as groups of regulatory adversaries, to adapt to changing societal needs (Trotman, 1999). The main focus of stakeholder theory in environmental accounting is to resolve the elements of environmental costs and valuations and their inclusion in the financial statements.

Legitimacy Theory

Tilling (2004) posited that legitimacy theory provides a powerful mechanism for understanding voluntary social and environmental disclosures made by companies, and this understanding will provide a tool to participate in critical public debates. The problem with the legitimacy theory that helps to understand the general and specific theory of accounting disclosure is that the term has a rather vague occasion. Legitimacy is a general view that the behavior of an entity is desirable, or appropriate in some socially constructed norms, values , and systems of definition (Suchman, 1995).

Empirical Review

Iliemena (2020) examined the effect of environmental accounting practices on the corporate performance of listed oil and gas companies in Nigeria from 2012-2018 using the ex-post facto research design. The data were obtained from the Nigerian Stock Exchange fact book of the sampled firms. The data gathered were analyzed using the simple regression model and the study found that environmental accounting practices had a positive and significant influence on both turnover and Return on capital employed; similarly, the study revealed that net profit had positive and statistically insignificant. The author concluded that environmental accounting had a significant positive impact on the corporate performance of practicing companies. The study recommended that corporate organizations should extend their management accounting and financial reporting systems to environmental accounting as a way of ensuring long-run corporate sustainability.

Ikpor, Ituma & Okezie (2019) explored the environmental degradation costs in the annual reports on the sustainable financial performance of ten petroleum companies operating in the Niger – Delta part of Nigeria from (1970- 2017). The data were analyzed using the ordinary least square regression method. The study found that environmental operating costs and environmental prevention costs had a negative and significant influence on the performance of petroleum firms in Nigeria.

Polycarp (2019) investigated the environmental accounting and financial performance of oil and gas companies in Nigeria using the questionnaires as a source of data collection. The results of this study show that the lack of environmental disclosure and reporting standards has significantly affected the uniformity of environmental-related information disclosure and reported in the financial statements. Therefore, organizations that voluntarily disclose their environmental activities enjoy a high degree of competitiveness. Even so, such disclosures are still guided by social responsibility and the commitment of an entity that is a strong environmental pollutant. Therefore, the study recommended that the government’s mandatory environmental reporting in the annual report, because most organizations hardly report their environmental activities in the report.

Iliemena and Ijeoma (2019) investigated the sustainability report on the financial performance of twenty-four (24) listed manufacturing companies in Nigeria for the period from 2012 to 2018. The three hypotheses formulated were tested by regression analysis at a significance level of 5%. The results show that environmental disclosure does not have a significant impact on return on capital used (ROCE). Similarly, Amedu, Iliemena, and Umaigba (2019) explored the value relevance of the three dimensions of the sustainability report information, and it was found that the environmental sustainability report is the result of environmental accounting and has nothing to do with value relevance.

The study carried out in Pakistan, Ahmad, Waseer, Hussain and, Ammara (2018) explored the association between environmental accounting and non-financial firms’ performance of firms listed in PSE using companies’ annual data from 2006-2016. The data gathered were analyzed using the regression analysis technique (REM). From the analytical output, the result found a significant positive relationship between environmental accounting and a firm's size. Also, earnings per share (EPS) and return on capital employed (ROCE) were statistically insignificant.

Eboh and Chukwuka (2018) carried out empirical research on the impact of green business practices on the organizational performance of selected Nigerian manufacturing companies using statistical formulas from Cochran (1977). The study population was 5,705 respondents were selected from the managerial, middle, and lower-level cadres of selected manufacturing firms, 10 manufacturing firms were selected using simple random sampling techniques, with a sample size of 543 respondents. The data were analyzed using linear regression analysis to test hypotheses. The survey results show that green business initiatives have had a significant positive impact on the productivity of selected manufacturing companies, indicating that the implementation of green business practices, principles, and processes will bring very positive results, which will be evident in the organization and the environment reflects.

Charles, John-Akamelu & Umeoduagu (2017) explored the association of environmental accounting disclosures and financial performance of food and beverage companies in Nigeria. The study obtained the data through secondary sources and analyzed using Pearson's correlation statistical technique and multiple regression model with the aid of SPSS version 20.00. They found that environmental accounting disclosures had a significant relationship with return on equity; also, the study found that environmental accounting disclosure had a negative association with return on capital employed and net profit margin of selected companies. They suggested that firms should have unified reporting and disclosure standards of environmental practices.

Adediran & Alade (2013) explored the environmental accounting and corporate performance of fourteen selected firms in Nigeria. They obtained their data from the published financial report and were analyzed using multiple regression analysis. From the analysis, the study found that there is a significant 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. The study suggested that government should give a tax credit to companies that comply with its environmental laws, and they further suggested that strict measures be implemented for environmental reporting in Nigeria in other to enhance corporate performance.

III. Methodology

The study employed the ex-post facto research design. The population of the study is made up of oil and gas companies that are listed on the Nigerian Stock Exchange as of December 2020. The listed oil and gas companies are; 11 Plc, Ardova Plc (Forte oil), Conoil, Eternaoil, Japaul Gold & Ventures Plc, MRS (Texaco Chevron), Oando, Caverton offshore support group, RAK Unity Petroleum company, Seplat Petroleum Development, Capital Oil, Total Nigeria Plc were 12 companies as at December 2020. The purposive random sampling was adopted to pick companies and extract data from their published financial statements from 2012-2019. The sample of the study consisted of 8 companies out of 12 listed firms. The study eliminated Caverton Offshore Support Group, RAK Unity Pet. Company, Seplat Petroleum Development, Capital oil. The collected data were analyzed using multiple linear regression analysis of panel data for the years 2012 to 2019.

Model Specification

The study adopted a model applied by other researchers such as Iliemena (2020). The model is as follows

FP = f (MAA, ENA, ECA) + et

This model is restated in statistical form as follows:

$ROA = b0 + b_1MAA + b_2ENA + b_3ECA + et$……………... . . . . (1)

$ROCE = b0 + b_1MAA + b_2ENA + b_3ECA + et$……………... . . . . (2)

$NPM = b0 + b_1MAA + b_2ENA + b_3ECA + et$……………... . . . . (3)

Where:

MAA = Material Accounting,

ENA = Energy Accounting,

ECA = Environmental Compliance Accounting,

ROA = Return on Asset

ROCE = Return on Capital Employed

NPM = Net Profit Margin

IV. Analysis And Discussion Of Findings

Ho_1: Environmental Accounting does not have a significant effect on return on assets.

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	3954.140	3	1318.047	2.450	.070[b]
1	Residual	40891.262	76	538.043		
	Total	44845.402	79			

a. Dependent Variable: ROA

b. Predictors: (Constant), ECA, MAA, ENA

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.637	6.336		2.626	.001

MAA	-9.945	5.493	-.199	-1.811	.074
ENA	-.346	5.380	-.007	-.064	.949
ECA	-10.612	5.457	-.214	-1.945	.056

a. Dependent Variable: ROA

The general linear equation is given as follows

ROA = 16.637 + -9.945MAA + -.346ENA + -10.612ECA.

The result revealed that environmental accounting increases, return on asset increases which indicated positive influence at the significant level of 0.01 less than 0.5. The regression model predicts a statistically significant relationship between the dependent variable and the independent variable at 0.070. We, therefore, reject the null hypothesis and conclude that environmental accounting has a significant effect on return on assets.

The study is consistent with the findings of (Adediran & Alade 2013; Charles, John-Akamelu, & Umeoduagu, 2017) that found that environmental accounting had a significant relationship with return on asset.

Ho_2: Environmental Accounting does not have a significant effect on return on capital employed.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	25550.070	3	8516.690	2.244	.090[b]
	Residual	288478.623	76	3795.771		
	Total	314028.692	79			

a. Dependent Variable: ROCE
b. Predictors: (Constant), ECA, MAA, ENA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	60.428	16.830		3.591	.001
	MAA	-19.408	14.589	-.146	-1.330	.187
	ENA	-10.391	14.290	-.080	-.727	.469
	ECA	-28.642	14.495	-.218	-1.976	.052

a. Dependent Variable: ROCE

The linear equation is given as follows

ROCE = 60.428 + -19. 408MAA + -10.391ENA + -28.642ECA

From the analytical output, the result revealed an increase in the environmental accounting unit of coefficients, the result further shows that return on capital employed (ROCE) had a positive influence on environmental accounting at the significant level of 0.01 less than 0.5%.

We, therefore, reject the null hypothesis and conclude that environmental accounting has a significant effect on return on capital employed.

The findings are in tandem with the study of (Ikpor, Ituma, & Okezie, 2019) and the study is inconsistent with the findings of (Adediran & Alade 2013; Charles, John-Akamelu, & Umeoduagu, 2017; Iliemena, 2020).

Ho_3: Environmental Accounting does not have a significant effect on net profit margin.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2455143.918	3	818381.306	2.027	.117[b]
	Residual	30685553.421	76	403757.282		
	Total	33140697.340	79			

a. Dependent Variable: NPM
b. Predictors: (Constant), ECA, MAA, ENA

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	283.878	173.574		1.635	.106
	MAA	-248.503	150.465	-.183	-1.652	.103
	ENA	134.533	147.382	.101	.913	.364
	ECA	-246.036	149.491	-.182	-1.646	.104

a. Dependent Variable: NPM

NPM = 283.878 + -248.503MAA + 134.533ENA + -246.036ECA

This shows that for every unit increase in environmental accounting, Net profit margin (NPM) decreases by -248.503 of MAA, an increase of 134.533 of ENA, and a decrease of -246.036 of ECA. The study reveals that the influence of environmental accounting was seen to be statistically insignificant at 10%.

We, therefore, accept the null hypothesis and conclude that environmental accounting has no significant influence on net profit margin.

The result is consistent with the study carried out by (Charles, John-Akamelu, & Umeoduagu, 2017) found that environmental accounting disclosure does not correlate with Net profit Margin which implies that NPM is not influenced even the companies does not report their environmental practices. The findings are consistent with Adeniran and Alade, 2013; Iliemena, 2020) show that environmental accounting has a positive and significant relationship with Net Profit Margin.

V. Conclusion

Environmental accounting is costs incurred in the course of reporting environmental issues such as material accounting, energy accounting, and compliance with environmental law. The study investigated the environmental accounting and financial performance of oil and gas firms in Nigeria from 2012-2019. The study found that environmental accounting has a significant relationship with return on asset and return on capital employed. The study further revealed that environmental accounting does not have a significant relationship with net profit margin. Large companies tend to report more environmental information in their annual reports than medium-sized companies; although there is a significant relationship between environmental accounting and company performance, most of the oil and gas firm disclosures are often more qualitative than quantitative. The study recommended that there should be a unified reporting standard on environmental practices as it increases the control and measurement of performance. Also, the government should provide tax credits to organizations that comply with its environmental laws and should enforce environmental reporting in Nigeria to improve the performance of the organization.

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