

# Green Cost Accounting and Financial Performance of Selected Upstream Companies in Nigeria

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## **ABSTRACT**

*There is a growing concern about the implications of environmental activities on the profitability of upstream companies in Nigeria. In view of the individual importance of the environment and the continued survival of business organizations, attention is focused on the interplay of sustainability of the environment and profitability of corporate organizations. The study specifically assessed the effect of environmental conservation cost on return on assets and net profit after tax of upstream companies in Nigeria. The study adopted the ex-post factor research design and data were sourced from the companies' annual audited financial reports for the period 2009 to 2018. The multiple regression technique was applied in estimating the study's parameters. Findings showed that environmental conservation cost has positive and insignificant effect on return on assets and profit after tax of upstream companies in Nigeria. The study therefore concluded that green cost accounting has positive and insignificant effect on financial performance of selected upstream companies in Nigeria. Based on the findings, it is therefore recommended that Nigerian upstream Companies should ensure proper management of environmental conservation cost to enhance their profitability.*

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**Key Words:** *Environment, Profitability, Upstream, Companies*

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## **INTRODUCTION**

### 1.1 Background to the study

The quest for sustainability has caused an emergence of many global firms enunciating various norms that guide human interaction with the environment. The increase in global environmental awareness and the campaign for sustainable economic development is redirecting the attention of firms towards environmental costs. Environmental restoration cost have been expanded to account for product design for sustainability, recycling and disassembly; process design to reduce environmental impact of operations; worker training; research and development. The various government regulations, societal pressure groups and green consumer pressure are some of the current trends and recent developments reawakening corporate attention to the strategic and competitive role of a firm's environmental responsibility to corporate performance. Many companies are increasingly interested in capturing benefits associated with environmental sustainability and stewardship

Environmental Management Systems (EMS) have emerged as a means to systematically apply business management to environmental costs to enhance a firm's long-run financial performance by developing processes and products that simultaneously improve competitive and environmental performance (Stead & Stead, 1992). However within the developing nations, the understanding is somewhat different mainly because of weak government regulations and lack of organized pressure groups and consumer awareness to influence corporate behaviour. Environmental expenditures in terms of effective organizational cost reduction are a highly viable approach toward managerial justification of Environmental Management System (EMS) expenditures.

Therefore, environmental restoration cost provides a framework for environmental responsibility and corporate financial performance. The extent to which Environmental Restoration Cost influence Financial Performance is determined by some variables, such as Environmental Conservation Costs, Fines and Penalties Cost, Social Costs and Environmental Pollution Cost. The effect of these variables on financial performance, represented here by Return on Assets and Profit After Tax, would be assessed in this study.

Most researchers in this area have explored how Environmental cost affects a firm's financial performance. Among most of the studies that assessed the nexus between Environmental cost and firm performance, some found negative relationship (Amacha & Dastane, 2017; Nobanee & Ellili, 2017; Ezejiofor *et al.*, 2016) while many found positive relationship (Clause and Pall, 2008; Beredugo & Mefor, 2012).

Okoye and Ezejiofor (2013) discovered that sustainable environmental accounting has significant impact on corporate productivity in order to enhance corporate growth. The findings of the study was uncertain, moreover, few research of this magnitude focused on those costs incurred by those entities in maintaining their environment where they operate in order to ascertain whether this affects corporate profitability, sustainability, integrity and reputation. This study consequently fills the research gap and therefore establishes an extension on exploratory assessment to determine the effect of Green Cost Accounting on financial performance of upstream companies in Nigeria.

### 1.4 Aim and objectives of the study

The broad aim of this study is to determine the Green Accounting and Financial Performance of Selected Upstream Companies in Nigeria. Other specific objectives are to:

1. Ascertain the effect of environmental conservation cost on return on assets of upstream companies in Nigeria.
2. Determine the effect environmental conservation cost on profit after tax of upstream companies in Nigeria.

### **1.5 Research questions**

Based on the above objectives, the following research questions were raised:

1. What is the effect of environmental conservation cost on return on assets of upstream companies in Nigeria?
2. What is the effect of environmental conservation cost on profit after tax of upstream companies in Nigeria.

### **1.6 Research hypotheses**

The following were the null research hypotheses formulated for the purpose of achieving the stated objectives of this study:

H<sub>01</sub>: There is no effect of environmental conservation cost on return on assets of upstream companies in Nigeria.

H<sub>02</sub>: There is no significant effect of environmental conservation cost on profit after tax of upstream companies in Nigeria.

## **METHODOLOGY**

### **3.1 Research design**

This research employed longitudinal research design. This is as a result of the fact that longitudinal research design incorporates repeated observations of the same units (companies in this study) over a period of time (2009 to 2018). This study also employed the ex-post facto research design to further actualize the objectives of the study.

### **3.2 Population of the study**

The population for this study comprises of the thirteen (13) oil and gas upstream companies in the upstream sector of the Nigerian Economy that are quoted on the Nigerian Exchange (2018). These companies includes: Ardova Plc, Capital Oil Plc, Coinoil Plc, Eternal Oil Plc, Japaul Plc, Oando Plc, Rak Unity Pet Comp Plc, Seplat Energy Plc, Total Nigeria Plc, MRS Oil Nigeria Plc, Fort Oil Plc, Mobil Plc and Amino Plc. According to data accessed from the Nigerian Stock Exchange (2018), there are thirteen (13) quoted oil and gas (upstream) companies in Nigeria that are involve in the exploration and production of petroleum products and other consumable fuel in Nigeria.

### **3.3 Sample and sampling techniques**

This study adopted the census sampling approach via judgemental sampling technique. A census study ensues if the whole population is very small or it is reasonable to include the entire population (Bryman, 2008). It is christened a census sample because data is collected on each

member of the population. The target population is thirteen (13) quoted oil and gas upstream companies in Nigeria for the period 2009 to 2018, making a total of fifty (50) observations, the study therefore used fifty (50) observations as the sample size.

### **3.4 Sources of data collection**

The secondary sources of data for this research included the following: Nigerian Stock Exchange (2018), Publications of Department of Petroleum Resources and Annual Financial Reports of the various companies under study. The management reports of the upstream companies under examination also formed the key source of data used by the researcher.

### **3.5 Instrument for data collection**

The choice of data collection instrument is fundamentally vital to the success of a research and as a result, when determining a relevant data collection method; one has to take into cognizance the difficulty of the topic, response rate, time and the targeted population. The data collected from the secondary sources were extracted from Nigerian Stock Exchange (2018), Environmental Impact Assessment Agency, Publications of Department of Petroleum Resources and Annual Financial Reports of the various companies' understudy and were summarized and tabulated and were selected in agreement with the hypotheses of the study.

### **3.6 Validity / Reliability of instrument**

Mugenda and Mugenda (1999) stated that, validity is the accuracy and meaningfulness of inferences, which are based on the research results. Put differently, validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. Therefore, validity exists if the data measure what they are supposed to measure. Consequently, the reason all people don't have the same test score is that they differ in terms of the attribute the test measures. For instrument validity, best practice in green accounting and expert advice were joint together. Based on this fact, past studies on environmental accounting carried out at the US Environmental Protection Agency were consulted. Typical is the Tellus Institute Benchmark Survey of Management Accountants on Environmental Accounting (U.S. Environmental Protection Agency: 1995). The works of Hansen and Mowen (2000: 666 – 684) and Campbell, Craven and Shrives (2003: 558-581) partially create pedestals for factor variables.

#### **3.6.2 Reliability test of the instrument**

.Reliability is the consistency of your measurement, or the extent to which an instrument measures the same way each time it is used under the same condition with the same subjects. Basically, reliability is the repeatability of your measurement. Reliability does not imply validity because whilst a scale may be measuring something consistently, it may not automatically be what it is supposed to be measuring. For this purpose, both cross-sectional analyses (within and across companies) and longitudinal (ten- year annual financial reports) survey among 5 sample upstream companies was carried out.

### **3.7 Description of variables**

From the review of literature, a firm's performance can be affected by numerous all-encompassing. Thus, it is essential to investigate the effect of Green Cost Accounting on financial performance of upstream companies in Nigeria. On this evidence therefore, return on assets and net profit after tax are used as proxies for financial performance and hence represent the dependent variables, while environmental conservation cost is proxies for green cost accounting and thus epitomise the independent variable.

### **3.7 .Model specification**

In agreement with the hypotheses earlier stated in chapter one, regression models are formulated to capture the effect of Green Cost Accounting on Financial Performance of selected upstream companies in Nigeria. A functional nexus between Green Cost Accounting and Financial Performance as rooted from the positive accounting theory is shown in the following implicit equations:

$$ROA = f(ECC, ) \quad (1)$$

$$NPAT = f(ECC,) \quad (2)$$

Where;

ROA = Return on Assets

NPAT = Net Profit After Tax

ECC = Environmental Conservation Costs

f = functional notation

The ordinary least square for the above models is stated thus:

$$ROA_{it} = \beta_{0i} + \beta_1 ECC_{it} + \varepsilon_{it} \quad (3)$$

$$NPAT_{it} = \beta_{0i} + \beta_1 ECC_{it} + \varepsilon_{it} \quad (4)$$

Where; ROA, NPAT = Dependent variables

ECC, = Independent variables

$\beta_0$  = Unknown constant to be estimated

$\beta_1 - \beta_4$  = Unknown coefficients to be estimated

i = observations

t = time

$\varepsilon$  = Stochastic error term that captures variables not included and expected to be identically distributed with zero mean and constant variance.  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 \geq 0$

### 3.8 Techniques for statistical analysis

the researcher adopted the empirical methodological framework. After the collection of data from secondary sources, the data were tabulated and statistically analysed using the Ordinary Least Square (OLS) analytical technique. All the equations were estimated using the OLS techniques. The signs of the regression coefficients are examined to see if they are in line with the economic a priori prescriptions

#### 3.8.1 Justification for choice of statistical tool

Principally, the study employed the descriptive statistics to assess the descriptive properties of the panel data collected to examine the structure of the panel data. This mainly assessed the mean, median, mode, standard deviation, mean deviation, skewness kurtosis and the Jarque-bera statistic. This aided the checking of the shape and normality of the panel distribution. The study also employed the coefficient of multiple determination ( $R^2$ ), F-ratio, the standard error of the regression (SER) and Durbin-Watson (DW) statistics.

We use  $R^2$  to measure the overall goodness of fit of the regression plane; the higher the  $R^2$ , the better the goodness of fit. To pass the “goodness of fit” test, the coefficient of determination must have a value of at least fifty percent.

### 4.1 Data presentation

The purpose of this chapter is to present a brief summary of the results of data collection processes and the analysis of the data gathered from the department of petroleum resources and the various companies’ annual reports. Green Cost Accounting variable is Environmental

Conservation Cost (ECC) and financial performance is represented by Return on Asset (ROA) and Net Profit After Tax (NPAT) of the selected upstream companies.

#### 4.2.1 Descriptive analysis

**Table 4.1:** Result of descriptive statistical analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	50	.0208	.5220636	-3.33	.48
npat	50	5139104	2.55e+07	-1.46e+08	6.56e+07
ecc	50	1.56e+08	1.25e+08	243800	4.61e+08

**Source: Output from STATA version 12**

Table 4.2 above shows the result of the descriptive analysis of the data used in this study. It shows that return on assets (ROA) has an average mean value of 2% with a standard deviation of 0.522 ranging from -3.33 as a minimum to 0.48 as maximum values. Net profit after tax (NPAT) has its mean value as 5139104 a standard deviation of 2.55 with a range from -1.46 as a minimum to 6.56 as maximum. Environmental Conservation Cost (ECC) has its mean value as 1.56%, a standard deviation of 1.25 with a range from 243800 as a minimum to 4.61million as maximum. Its minimum value is 232270 and the maximum is 6980560 with a standard deviation of 1793912.

#### 4.2.2 Correlation matrix

**Table 4.2:** Correlation matrix

variables	ROA	NPAT	ECC
ROA	1.0000		
NPAT	0.4294*	1.0000	
ECC	-0.0606	-0.0841	1.0000

**Source: Output from STATA version 12**

Table 4.2 above shows the correlation Matrix between Environmental Conservation Cost has a negative and insignificant correlation with return on assets and net profit after tax (-0.0606; -0.0841).

#### 4.3.6 Test of Hypothesis

**Table 4.3: Regression on the effect of Environmental Conservation Cost on Return on Assets of Upstream Companies in Nigeria.**

Number of obs = 50  
 R-squared = 0.0117  
 Root MSE = .54158

ROA	Coef.	Std. Err.	T	P> T	[95% Conf. Interval]	
ECC	8.42e-12	7.52e-10	0.01	0.991	-1.51e-09	1.52e-09
CONS	-.0079425	.164822	-0.05	0.962	-.339911	.324026

**Source: Output from STATA version 12**

From table 4.7 above, the result of the data regress on environmental conservation cost on return on asset shows a positive and insignificant effect of environmental conservation cost on return on assets (p-value= 0.991). It means that a 1% increase in environmental conservation cost will bring about a 8.42% increase in return on assets all other variables are held constant. Since the p-value of the independent variable is greater than 0.05, we accept the null hypothesis that “There is no significant effect of environmental conservation cost on return on asset of upstream companies in Nigeria.”

**Table 4.11: Regression on the effect of Environmental Conservation Cost on Profit After Tax of Upstream Companies in Nigeria.**

Number of obs = 50  
 R-squared = 0.0158  
 Root MSE = 2.6e+07

PAT	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
ECC	.0185036	.0366152	0.51	0.616	-.0552431	.0922504
cons	6063636	8028696	0.76	0.454	-1.01e+07	2.22e+07

**Source: Output from STATA version 12**

From table 4.11 above, the result of the data regress on effect of environmental conservation cost on profit after tax shows a positive and insignificant effect of environmental conservation cost on profit after tax of upstream companies in Nigeria (p-value= 0.616). It means that a 1% increase in environmental conservation cost will bring about a 1.85% increase in profit after tax all other variables are held constant. Since the p-value of the independent variable is greater than 0.05, we therefore accept the null hypothesis that “There is no significant effect of environmental conservation cost on profit after tax of upstream companies in Nigeria.”

#### 4.4 Discussion of findings

The study assessed the effect of Green Cost Accounting on financial performance of selected upstream companies in Nigeria.

This study showed a positive and insignificant effect of environmental conservation cost on return on assets of listed oil and gas upstream companies in Nigeria: (p-value= 0.991). It means that a 1% increase in environmental conservation cost will bring about a 8.42% increase in return on assets all other variables are held constant. This finding is in tandem with the finding of Malarvizhi and Ranjanni (2016) which reveals no significant relationship between level of environmental disclosure and firm’s financial performance. However, this finding is in disagreement with the findings of Shehu (2014) which reveals that environmental expenditure has significant effect on the performance of quoted oil companies in Nigeria.

##### **Environmental Conservation Cost on Profit After Tax of Upstream Companies in Nigeria**

In the same vain, this study showed a positive and insignificant effect of environmental conservation cost on profit after tax of upstream companies in Nigeria (p-value= 0.616). It means that a 1% increase in environmental conservation cost will bring about a 1.85% increase in profit after tax all other variables are held constant. This finding is in tandem with the finding of Enahoro (2009) which reveals that environmental operating expenditures are not charged independently of other expenditures. However, this finding is in disagreement with the finding of Okoye and Ezejiofor (2013) which discovers that sustainable environmental accounting has significant impact on corporate productivity in order to enhance corporate growth.

#### 5.1 Summary

This study was undertaken to assess the effect of Green Cost Accounting on financial performance of upstream companies in Nigeria. The study utilized the multiple regression technique to estimate the parameters of the model with a view to determining the effect of environmental conservative cost on return on assets and net profit after tax of upstream companies in Nigeria. Thus, the following major findings were made:

- (i) There is a positive but insignificant effect of environmental conservation cost on return on assets of upstream companies in Nigeria.
- (ii) There is a positive but insignificant effect of environmental conservation cost on net profit after tax of upstream companies in Nigeria

#### 5.2 Conclusion

The study assessed the effect of Green Cost Accounting on the financial performance of upstream companies in Nigeria. Based on the findings made by this study, it is concluded that



environmental conservative cost has a positive and insignificant effect on the return on assets of upstream companies in Nigeria. Based on this, the study concludes that Green cost Accounting has a positive effect on the return on assets of upstream companies in Nigeria, but mixed effect on the net profit after tax of these companies.

### 5.3 Recommendations

Having analysed the effect of Green Cost Accountings on the financial performance of upstream companies in Nigeria, the following recommendations were made:

- (i) Nigerian upstream companies should ensure proper management of environmental conservation costs to enhance their profitability. This should include, among other measures, the development of an environmental conservation cost budget as well as the facilitation of effective and efficient implementation.
- (ii) Upstream companies should have positive disposition towards environmental conservative costs practices in order to restore and guarantee stable and sustainable operation so as to enhance profitability

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