Environmental Costs and Performance of Listed Service Companies In Nigeria

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Abstract

This study examined the relationship between environmental costs and performance measuresof listed service companies in Nigeria. Research questions and hypotheses were developed in line with the specific objectives of this study. The ex-post facto research design was adopted and the theoretical framework of this study was anchored on stakeholder's theory. Secondary data with respect to the dependent and independent variables were obtained for a period of 10 years spanning from 2009-2018. The data obtained were analyzed using descriptive and inferential statistical techniques. Based on the test of hypotheses, it was found that environmental costs have significant relationship with the performance measures of firms. Specifically, it was observed among others that the level of environmental costs was significantly affected by return on assets (ROA), return on equity (ROE) and earnings per share (EPS). On the basis of the findings, it was recommended among others that the management of firms should ensure full disclosure by reporting environmental related costs in their financial statements irrespective of the performance recorded in any given year. Additionally, as a matter of fact, the accounting regulatory framework should consider developing environmental disclosure index in order to facilitate the disclosure of environmental related costs by firms.

Keywords*: Environmental costs, Return on Assets, Return on Equity, Earnings per shares, Performance Measures.*

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1. Introduction

Corporate entities operate in a very dynamic business environment which has so far resulted to high level competition among firms in related industries or businesses. This has created renewed challenges for the management of firms who are now confronted with the task of discovering means of gaining competitive advantage over their competitors.Given the perceived importance of the business environment to the overall success of firms, several environmental rules and regulations have evolved within and outside organizations and across countries and jurisdictions. There has been increased global concern on the natural environment within which firms operate. These concerns are partly due to the perceived threats posed by the presumed harm on the host communities and the environmental challenges caused by the activities of companies (Akrout and Othman 2016; Adinehzadeh, Jaffar, Shukor and Abdul Rahman, 2018). No doubt , the magnitude and

increase in ecological concerns boarding firms, has further sparked a growing number of studies designed to ascertain the level of damages and environmental hazards which the entire ecosystem and firm are exposed to due to the varying activities of corporate organizations (Buysse and Verbeke, 2003; Kassins and Vafeas, 2006). The need for modern organizations to be environmentally responsible can no longer be over emphasized. This is why topical issues that have been debated in the accounting domain center on the level and nature of environmental practices of firm with emphasis on the need for corporate entities to be more environmental accountable in all ramification (Delmas and Toffel, 2008). To date, while the focus of most prior studies on environmental costs have been on the drivers of environmental reporting or the disclosure practices of listed firms, with much focus on the manufacturing sector (JO and Harjoto 2012; Michelon and Parbonetti 2012; Ali and Attan, 2013; Ashafoke and Ilaboya, 2027), much efforts have not been tailored at unveiling the bi-directional relationship between environmental costs among firms and measures of corporate performance of firms. This situation ignited the interest of this current study which has been designed to ascertain the link between environmental costs and performance measures of listed service firms in Nigeria.

Statement of the Problem

Studies have so far examined the relationship between environmental and social cost accounting and corporate performance in both developed and developing countries. Some of these studies (Egbunike and Okoro, 2018; Ingram and Frazier, 2010; Freedman and Jaggi, 2012; and Makori and Jagongo, 2013) assessed the connection between environmental accounting and corporate performance with the measures of corporate governance.

Interestingly, despite the much clamored importance of environmental

Reporting among firms (Klassen and McLaughlin, 1996; Delmas and Toffel, 2008; Cortez and Cudia, 2011; Makori and Jagongo, 2013; Jeroh and Okoro, 2016). It is sad to observe that while the concept of environmental cost has received wide attention in the accounting literature in developed and developed and developing economies (Delmas and Toffel, 2008), research evidence from prior studies have continuously produced mixed outcomes. For instance, while findings from the study of Makori and Jagongo (2013) suggest that the relationship between environmental cost and performance indices like earnings is significant but negative; Jeroh and Okoro (2013) averred that environment costs have positive with firm performance. Additionally, most studies on environmental costs and environmental accounting in Nigeria and beyond have focused mainly on sectors like oil and gas, manufacturing, industrial goods and the like (Uwuigbe, 2012; Jeroh and Okoro, 2016; Ashafoke and Ilaboya, 2017) with little concern on the financial and service sectors. In this vein, Esira, Ikechukwu and Ikechukwu (2014) found that there is a significant relationship between environmental costs and the profitability of oil and gas firms in Nigeria. Similarly, by obtaining data from the manufacturing sector, Nham, Tran and Nguyen (2012) found that since pollution control does not enhance or destabilize the financial attainment of firms, environmental performance of firm recorded a negative association with their respective financial performances.

While concerns have been ascertaining the extent to which environmental costs affects firms and their performance indices, concerns have not been tailored at finding out the possible effect which the performance of firm may have on the level of disclosing environmental issues. There is there a gap in literature as to the need for continuous research into this area, especially as regulatory requirements for the improvement in reporting practices of firms is currently experiencing a dramatic turnaround. This thrust of this study is to take a generalized approach that will fill the above research gaps by ascertaining the level of association between environmental costs and selected performance measures by obtaining data from listed service firms (financial) in Nigeria.

objectives of the Study The broad objective of this study is to investigate the relationship b environmental costs and performance of listed financial service companies in Nigeria. The specific objectives are to:

1. Determine the relation between environmental costs and Return On Assets (ROA) of listed service companies in Nigeria,
2. Examine the statistical link between environmental costs and Return On Equity(ROE) of listed service companies in Nigeria, and
3. Assess the relationship between environmental costs Earnings per share (EPS) of listed service companies in Nigeria.

Research Questions

In Line With The Objective Of The Study, The following research question were raised:

1. What is the relation between Return On Asset (ROA) of listed service companies in Nigeria?
2. What is the statistical link between environmental costs Return On Equity (ROE) of listed service companies in Nigeria?
3. What is the relationship between environmental cost and Earning Per Share (EPS) of listed service companies in Nigeria

Research Hypothesis

Ho1: There is no significant relationship between environmental costs and Return on Assets (ROA) of listed service companies in Nigeria

Ho2: There is no significant statistical link between environmental costs and Return on Equity (ROE) of listed service in Nigeria.

Ho3: There is no significant relationship between environmental costs and Earning Per Share (EPS) of listed service in Nigeria.

Scope of the study

This study investigate the link between environmental cost and the performance of listed service companies in Nigeria using environmental costs, return on asset, return on equity, earnings per share and film size . The study period spanned from 2009 to 2018 which marks the post global financial crisis era

Review Of Related Literature

Conceptual Review

Environmental accounting, also called green accounting, refers to the modification of the system of national Accounts to incorporate the use of depletion of natural resources. Environmental accounting is a field that identifies resources use, measures and communicates costs of a company`s or national economic impact on the environment. (Labaran 2011). According to Hadani and Coombes (2015); Liket and Maas (2016), environmental accounting can be defined as a voluntary, non- obligatory, and non-reciprocal transfer of wealth from corporate entities to its external stakeholders. For the purpose of this study, we measured environmental accounting in the form of social donations and other associated environmental costs incurred by reporting entities. Thus, environmental accounting encompass actions that appear to further some social good, beyond the interest of the firm and that which is required by law. Environmental accounting focus largely on the recording and reporting of all environmental costs incurred by corporations. Such costs may sometimes be connected to social and charitable causes, education, culture, arts, minorities, healthcare, and disaster relief (Godfrey, 2005; and Fan, Wong and Zhang, 2007).Environmental costs consist of environmental measures and environmental losses. They include cleanup cost, costs of recycling materials or conserving energy, closure cost, capital expenditure and development expenditure. These costs are incurred in preventing, reducing or repairing damage to the environment and conserving resources. The reporting of environmental costs in the financial statements of firms provides useful information that will guide users and satisfy their decision making needs (GRI,2013).Research evidence indicates that environmental reports are used to satisfy different decision making needs, depending on the various user groups (Kamala,2015; and Kamala, Wingard and Cronje, 2015).According to Environmental Accounting Guidelines (2002), the reporting of environmental costs encompass theidentification, measurement, allocation, and integration of environmental costs into identified businesses and communicating such information to the variousstakeholders. Accordingly, CIMA- (2012), defines the disclosure of environmental costs as the public disclosure of information about the environmental performance of

firms. Environmental costs accounting encompass part of what experts have previously described as social responsibility disclosures which covers all disclosures that relate to the interactions betweenorganizations and their physical/social environment.Jeroh and Okoro (2016) posit that by their very nature, environmental costsare usually divided into monetary or non-monetary costs. Research evidence indicates that the provision of information on environmental costs tend to be vital for probity and accountability such that non- disclosure of such information may have adverse effect on the economic decision of various users of accounting information (Ashafoke and Ilaboya, 2017). Corporate performance encompasses three specific areas of a firm outcome,namely financial performance. According to Makori and Jagongo (2013), a positive relationship seems to exist between firm performance (when measured by the net profit after tax margin) and social and environmental accounting, but with return on equity which is said to exhibit a negative relationship with social and environmental accounting.Prior studies conducted by Nnamani, Onyekwelu and Ugwu (2017); Agbiogwu, Ihendinihu and Okafor (2017) indicatedthat environmental and social cost significantly affect the return on assets of firms.Given the diverse findings of prior studies and the presumed few empirical outcomes with data from the financial service sector, this study assesses the link between environmental costs and firm performance by focusing on three performance variables - return on assets, return on equity and earnings per share.Investors are mostly interested in ROA as they indicate the company'scapability to generate returns that commiserate with the accumulatedassets/investments in assets of the entity over time (Al-Matarneh, 2009).This study thusexamines the influence which environmental costs may have on the Return on Asset (ROA) of financial service firms, by obtaining evidence from Nigeria.

Angelia and Suryaningsih (2015), argued that in most instances, investorsassess companies based on their respective environmental engagements. In thisway, companies that engage more on environmental activities are rated high whencompared with companies that engage less on environmental concerns. As indicated in the literature, ROE is favored by several economists andfinance experts who are more concerned about short-term performance of the firmin addition to the rate of return of business over the whole existing capital (Demsetzand Villalonga, 2001; Wahla, Shah and Hussain, 2012; Nuzula, 2019).In view of the aforementioned, this study shall also measure performancewith ROE for the purpose of unveiling the link between environmental costs' andfirm performance among firms in the financial service sector in Nigeria.Results from prior studies on the link between EPS and environmental costs have been mixed,while studies like those ofMalarvizhi and Ranjanni (2016) and Pandey and Kumar (2016) suggests that thereis no significant relationship between profitability measures like EPS andenvironmental costs, we observe that in a Nigerian study, Ezeagba,John-Akameluand Umeoduagu (2017) reported a significant relationship between environmentalcosts and EPS.This therefore calls for further studies to clarify the link between EPSand environmental costs.It is on this note that this study also sets out to examine the relationshipbetween environmental costs and the reported EPS of firms by drawing evidencefrom listed financial service firms in Nigeria.The size of firms vary in many ways and it becomes essential for studies toconsider how the size of a firm affects the quality and type of reported information incorporate reports.According to Meek, Soa and Skousen (2007), based on theinformation asymmetry theory, large firms have lower information asymmetry asthey have strong governance and control mechanisms thus increasing the quality ofdisclosure (environmental costs disclosure inclusive). Conversely, on the basis of theagency theory, it is believed that larger irms witness greater agency costs whichmay result in more opportunistic practices.In view of the abov e, in examining the relationship between environmentalcosts and the performance of listed service firms in Nigeria, this study introducesfirm size as a control variable.

Theoretical Framework

Several theories have been linked with studies on corporate governance and corporate governance measure as they affectindices like performance, financial reporting and reporting quality, firm characteristics, environmental costs amongothers (Hawley, Crane and Matten, 2007; Jeroh, 2017). These theories range from the agency theorywhich was expanded into stewardship theory, stakeholder theory, legitimacy theory,resource dependency

theory, transaction cost theory, political theory and ethicsrelated theories.In spite of the bulk of theories in this area of study, this study shallbeanchored on the stakeholders' theory and legitimacy theory.The stakeholder's theory states that firms should notonly be responsible to shareholders, but also to a wider group of stakeholders whichincludes employees, representatives, customers, suppliers, government, industries,bodies, local communities among others (Hobbard, 2009). The theory advocates that managers in organizations have anetwork of relationships to serve.This view is to be considered too narrow, as managers' actions impact other interested parties, other thanshareholders. This study shall be hinged on the stakeholders' theory because fromthe above, it is obvious that the stakeholder theory assesses various concerns,actions and practices within the organizations against the expectation of a variety ofstakeholder groups. To this end, the environmental costs practice of firms is not an exception

L L egitimacy Theory

Legitimacy theory according toAghdam (2015), imply companies' consideration, concern and expectation ofcommunity to appear legitimate in stakeholders' point of view and pledge that theiractivities are socially acceptable. As the organizationcontinues to operate within the domain and norms of society, a firm willuse many disclosure strategies to preserve an image of a socially responsiblecorporate citizen and to ensure continued access to resources needed for the success ofthe business. Legitimacy theory is the theory that underpin this research because itseeks to show that companies' operations are carried out according to the way that willnot harm the society.

Empirical Review

There is avalanche of empirical evidence on the nexus betweenenvironmental accounting and corporate performance in Nigeria; however, there isdearth of empirical evidence on social donation, corporate performance andmediating role of industrial categories in Nigeria.Nnamani, Onyekwelu and Ugwu (2017) examined the effect of sustainabilityaccounting and reporting on financial performance of firms in Nigeria brewerysector. Data of total asset, return on equity, total personal cost to turnover andreturn on asset were obtained from the annual reports and accounts of three (3)brewery firms quoted on the Nigerian Stock Exchange.Data were analyzed usingthe OLS estimation technique and findings indicated that sustainability reporting haspositive and significant effect on the financial performance of the brewerycompanies investigated.Gamble, Hsu,Kite and Radtke (2015) investigated environmental disclosuresin annual reports and accounts by using 234 companies in 12 industries during theperiod 1986-1991 (OLS). Return on asset was employed as proxy for performanceand research and development for environmental disclosure. The study found asignificant increase in environmental reporting in annual reports in 1989. However,certain industries (e.g. petroleum refining, hazardous waste management and steelmanufacturing)were judged to have provided the highest quality of disclosures intheir annual reports while the period 1989-1991 produced a significant increase inenvironmental disclosures.Emeakponuzo and Udih(2015) assessed the role of environmental accountingpractices by corporate firms in emerging economies. The study utilized twenty-five (25)quoted companies and the hypotheses of the study were tested via Chi-square and Kendall Coefficient. The study found that environmental accounting practice issignificant in benchmarking standard for corporate reporting. Also compliance withenvironmental protection laws may not have had significant influence onenvironmental accounting practice due to enforcement and compliance issues.Makori and Jagongo (2013) assessed environmental accounting and firmprofitability of some selected firms listed in Bombay Stock Exchange,India. Thestudy employed descriptive approach and primary data were basically relied on.Analysis was done via chi-square and findings shows that the greatest challengesmilitating against EMA implementation in developing economies are connected withthe difficulties in defining, unraveling, recognizing, categorizing, measuring andcontrolling environmental protection costs.

Gap in Literature

There is conflicting findings as regards the nexus between environmental costaccounting and corporate performance. The mixed results may be connected withthe methodological approaches employed by these sets of studies. Given the methodological bottlenecks resulting to the conflicting findings as well as choice ofproxy for environmental cost and bearing in mind thatmost

prior studies on environmental cost accounting focused onthe manufacturing sector,yet,the activities of companies in other sectors also haveenvironmental implications on their respective host communities. This studyseeks to fill the gap in literature by examining the nexus between environmentalcosts and the performance of listed service firms in Nigeria.

3. Methodology

The ex-post facto research design was adopted in this study, becausethe data obtained for this study already existed and the researchers does not havethe capacity to manipulate their outcomes, thus removing any form of researcher'sbias in arriving at dependable conclusion.

Population of the Study

The population of this study comprised of all service firms listed on the floor of theNigerian stock exchange as at 31st December, 2018.

Sample and Sampling Technique

This study focuses on listed service firms in Nigeria (financial) and the purposivesampling technique was the basis of arriving at the sample size for this study.Onthis note,the following selection criteria were established to guide the inclusion of acompany in the sample of this study:

i.The company must be a listed service company

ii. The company must be in operation within the study period (2009 -2018).

iii. The company must have published annual reports throughout the studyperiod and must have consistent data set for all the variables of this study. The choice of the purposive sampling technique was deemed appropriatesince it helped in reducing the problem of missing data set which is believed to becommon with most studies in Nigeria and other developing economies. In all, only 34 firms listed in the financial service sectormet the above stated criteria.

Model Specification

The models for this study were developed in line with the specific objectivesand hypotheses of this study. These are:

Environmental Cost=f(Return on Asset,Size) eq.1

Environmental Cost=f(Return on Asset,Size) eq.2

Environmental Cost=f(Earnings Per Share,Size) eq.3

Eqs 1-3 above can be rewritten in its explicit form as below:

$EnvCost_t=\beta o+\beta 1ROA+\beta 2FSIZE+\varepsilon_t$

$EnvCost_t=\beta o+\beta 1ROE+\beta 2FSIZE+\varepsilon_t$

$EnvCost_t=\beta o+\beta 1EPS+\beta 2FSIZE+\varepsilon_t$

Where

EnvCost = Environmental Cost (Measured by dummy variation of 1

where costs have been incurred on Environmental

engagements as indicated in the Environmental Section in annual reports of each firm, otherwise 0).

ROE = Return on Asset (Measured by earnings divided by total assets)

ROE = ROE of firms (Measured as the net profit after tax for each firm divided by shareholder's equity).

EPS = EPS of firms (Measured as the Net Income divided by the number of outstanding ordinary shares).

SIZE = Firm Size (proxy by Log of Total Assets).

= Error Term (variables not captured in the model).

Method of Data Analysis

Given the nature of the data obtained in this study,the ordinary least square (OLS) regression technique was adopted. The analysis of data comprises both descriptive (mean, standard deviation and correlation) and inferential statistics (Ordinary Least Squares). The OLS technique is consistent with its unbiased estimation technique hence it was considered as appropriate for this study. From the result of the OLS regression, the R^2 obtained which is the co-efficient of determination was used to assess the total variation in the dependent variable that could be explained by the independent variables taken together. The R^2 for degree of freedom is used to justify the inclusion or exclusion of variables in each of the specified models. Additionally, the F statistics was used to test each hypothesis of the regression plane. The F statistics was used to test

the statistical significance of each independent variable in explaining the changes in the dependent variables.

.4. Data Presentation

This study examined in the link between environmental costs and the performance of listed firms in Nigeria, The data obtained in this study was analyzed using bot descriptive (mean, standard deviation and correlation) and inferential (OLS) statistics. The data used in this

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things being equal. The statistical analysis was done The a-priori expectations are $a_1>0$, $a_2>0$, <0 all via STATA 13.0 version

study are presented in appendix II. The analysis of data are presented in order of priority: analysis of mean and standard deviation, which was closely followed by the correlation result and trends in performance measures of the study. The test of research hypothesis and discussion concludes this chapter

Data Analysis

Descriptive Statistics

Table 4.1: Result of the Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min.	Max
envcost	340	.2529412	.4353382	0	1
roa	340	1.183706	10.42128	-56.22	115.41
roe	340	10.02256	79.77542	-394.32	1222.87
eps	340	.5565882	1.878551	12.66	21.35
firmsize	340	7.818941	1.009809	5.58	10.77

Source: Researcher's computation via STATA 13.0

Table 4.1 reports the descriptive statistics of the dependent variable (EnvCost), the independent variables (ROA, ROE and EPS) and the control variable (FIRM SIZE). The mean value of EnvCost was approximately 0.253 with a standard deviation of approximately 0.44.

by the high standard deviation that the value of ROE varies largely among firms with marked differences. Additionally, EPS recorded a mean and standard deviation of approximately 0.557 and 1.879 respectively; with values ranging from a minimum of -12.66 to a maximum of 21.35.
The minimum EPS of -12.66 was recorded by Union bank Plc. in 2011, whereas, the maximum EPS of 21.35 was recorded by AxaMansard Plc. in 2018.

Furthermore, the result for the control variable reveals the FSIZE obtained a mean of approximately 7.819, with a corresponding measures among the sampled Nigerian firms.

ROA recorded a mean and standard deviation of approximately 1.184 and 10.421 respectively; whereas the mean for ROE stood at approximately 10.023 with a standard deviation of 79.775. The large variation in the ROE as indicated standard deviation of 1.0098. The minimum and maximum values of FSIZE were 5.58 and 10.77 respectively. Noteworthy, the variations and sizes of the value of standard deviation for all variables indicates that the variables were not constant, yet in some cases, varied largely across firms; hence this permitted the researcher in examining the nexus between environmental costs and selected corporate performance

Correlation Analysis

Table 4.2: Correlation Matrix for all Variables

	ENVCOST	ROA	ROA	EPS	FSIZE
ENVCOST	1.0000				
ROA	-0.0106	1.0000			
ROE	-0.0610	-0.0930	1.0000		
EPS	0.2758	0.1495	0.0103	1.0000	
FSIZE	0.4995	0.0647	0.0032	0.3534	1.0000

Source: Researcher's computation via STATA 13.0

In addition to testing for the direction of relation among variables, prior empirical studies have used the correlation analysis to test for the presence or otherwise of multi-collinearity among variables.

The result showed that there is the absence of multi-collinearity between each pairs of the independent variables of the specified models of this study. This is evident from the result in Table 4.2 as the correlation coefficient between the independent variables (ROA, ROE and EPS) and the control variable ranged between 0.0032 and 0.4995.

This section reports the result of the test for the presence or otherwise of multi-collinearity among the independent variables. To achieve this, the Variance Inflation Factor (VIF) test was conducted and the result is hereafter presented

Additionally, the result of correlation matrix as shown in Table 4.2 revealed that while ROA and ROE had negative relationship with ENVCOST; EPS and FSIZE were found to be positively related with ENVCOST.

To confirm the absence of multiollinearity among the variables used in this study, the data for all the independent variables were further subjected to multi-collinearity test using the Variance Inflation Factor (VIF) test and the results are as shown in Table 4.3 under the following sub-section.

Multi-Collinearity and Test for Heteroscedasticity

Table 4.3: Variance Inflator Factor Results for Independent Variables

VARIABLE	VIF	1/VIF
EPS	1.16	0.858586
FSIZE	1.14	0.874988
ROA	1.03	0.968547
ROE	1.01	0.990743
MEAN VIF	1.09	

Source: Researcher's computation via STATA 13.0

Table 4.4: Result for Breusch-Pagan/Cook Weisberg Test

BREUSON-PAGAN /COOK-WEISBERG TEST FOR HETEROSCEDASTICITY

HO: CONSTANT VARIANCE	
VARIABLES: FITTED VALUES OF ENVCOST	
OHI2 (1)	**= 35.60**
PROB > OHI2	**= 0.0000**

Source: Researcher's computation via STATA 13.0

As evident in Table 4.4, the chi2 (1) of the fitted values of ENVCOST is 35.60 with a p-value of 0.0000. This result therefore confirms the absence of heteroscedasticity problem in the data set. With the above results, the OLS regression outcome in the following section of this report can be relied upon.

Test Research Hypotheses

4.3.1 Test of Hypotheses I

H_{o1}: There is no significant relationship between environmental costs and the Return On Assets (ROA) of listed services companies in Nigeria.

In order to test the above hypothesis, data for Return on Asset (ROA) was regressed against data for environmental costs (ENVCOST) for the sampled firms and the result from test of Hypothesis I is presented below

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Table 4.5: OLS Result showing the nexus between environmental costs (ENVCOST), and return on asset (ROA)

Variables	Coeff.	Std.Err.	T	P>|t|
C	-1.438096	0.1603889	-8.97	0.000
ROE	-0.0018001	0.001973	-0.91	0.362
FSIZE	0.216547	0.020362	10.63	0.000
F(2, 337)	56.58			
Prob > F	0.0000			
R-squared	0.2514			
Adj. R-squared	0.2469			
N	**340**			

Source: Researcher's computation via STATA 13.0

The result in Table 4.5 reveal that about 25% of the changes in the environmental disclosure practices of listed service firms was accounted for by changes in the value of ROA over the study period. In addition, it was observed that with a regression coefficient of about 0.0018001, an inverse relationship tend to exist between, movement in ROA and the level of environmental costs' disclosure among firms. Impliedly, a unit increase in ROA reduces the possibility of full disclosure of environmental costs by firms. From the results of the F-Statistics of 56.58 and a P-value of 0.0000, the null hypothesis that there is no significant relationship between environmental costs and the Return on Assets (ROA) of listed service companies in Nigeria is rejected. Decision: From the result in Table 4.5, we therefore reject the null hypothesis and accept the

alternate hypothesis which means that there is significant relationship between environmental costs and the Return on Assets (ROA) of listed service companies in Nigeria.

Test of Hypothesis II

H_{o2}: There is no significant statistical link between environmental cost and the ROE of listed service companies in Nigeria.

In order to test the above hypothesis, data for ROE was regressed against data for environmental costs (ENVCOST) for the sampled firms and the result from the test of Hypothesis II is presented below.

Table

4.6: OLS Result showing the nexus between environmental costs (ENVCOST), and Return on Equity (ROE)

Variables	Coeff.	Std.Err.	T	P>|t|
C	-1.428074	0.1599822	-8.93	0.000
ROE	-0.0003418	0.0002568	-1.33	0.184
FSIZE	0.2154308	0.0202912	10.62	0.000
F(2, 337)	57.20			
Prob > F	0.0000			
R-squared	0.2534			
Adj. R-squared	0.2490			
N	**340**			

Source: Researcher's computation via STATA 13.0

Table 4.6 presents the regression result for test of hypothesis II. As indicated in the table, about 25% of the variations in environmental costs among listed service firms in Nigeria was accounted for by changes in the values of ROE over the study period. In addition, it was observed that with a regression coefficient of about -0.0003418, a negative relationship tend to exist between movements in ROE and Environmental Costs among the sampled firms. Impliedly, a unit increase in Environment Costs possibly reduces the ROE firms. From the results of the F-Statistics of 57.20 and a P-value of 0.0000, the null hypothesis that there is no significant statistical link between Environmental Costs and the ROE of listed service companies in Nigeria is rejected.

Decisions: From the result in Table 4.6, we therefore rejected the null hypothesis and accept the alternate hypothesis which means that there is significant statistical link between Environmental Costs and the ROE of listed companies in Nigeria. This is because, ROE was found to have significant effect on environmental disclosure among firms

Test of Hypothesis III

H_{o3}: There is no significant connection between Environment Costs and the EPS of listed service companies in Nigeria.

In order to test the above hypothesis, data for EPS was regressed against data for Environmental Costs (ENVCOST) for the sampled firms and the result from the test of Hypothesis III is presented below

:**Table 4.7:OLS Result showing the nexus between environmental costs (ENVCOST), and Earning Per Share (EPS)**

Variables	Coeff.	Std. Err.	T	P>|t|
C	-1.310268	0.1678265	-7.81	0.000
EPS	-0.0263038	0.0116021	2.27	0.024

FSIZE	0.1980535	0.0215834	9.18	0.000
F(2, 337)	59.45			
Prob > F	0.0000			
R-squared	0.2608			
Adj. R-squared	0.2564			
N	**340**			

Source: Researcher's computation via STATA 13.0

The regression result for the test of Hypothesis III is presented in Table 4.7. Again, from the results, in the table, it is evident that about 26% of the variation in Environmental Costs among listed service firms in Nigeria was actually accounted for by changes in the value of EPS over the study period.

Additionally, it was observed that wit regression coefficient of about 0.0263038, a positive relationship tend to exist between movement in EPS and Environmental Costs among the sampled firms. Impliedly, a unit increase in EPS increases the possibility of full disclosure of Environmental Costs by firms. From the results of the F-Statistics of 59.45 and a P-value of 0.0000, the null hypothesis is that there is no significant relationship between Environmental Costs and the EPS of listed service companies in Nigeria is rejected. **Decision:** From the result in Table 4.7, we therefore reject the null hypothesis and accept the alternate hypothesis which means that there is a significant relationship between Environmental Costs and the EPS of listed service companies in Nigeria, This is because EPS was found to have significant positive effect on environmental disclosures among firms.

Discussion and Findings:

This study aimed at assessing the relationship between selected performance measures and Environmental Costs among listed service firms in Nigeria. In this study, secondary data were obtained with respect to the variables of interest for a 10-years period covering 2009-20189. To achieve the broad and specific objective of the study, hypothesis were formulated and regression models were developed to guide the testing of the hypothesis which was done via windows software- STATA 13.0 version.

First, from the correlation analysis conducted, we observed that the independent variables did not show signals of the existence of multi-collinearity (see Table 4.2). This is evident from the result of the Pearson Correlation (Pearson R), as the correlation coefficient between the independent variables (ROA, ROE and EPS) and the control variable ranged between 0.0032 and 0.4995. With this range of values, no Pearson Correlation (Pearson R) between pairs of independent variable in each of the regression models (each independent variable and the control variable) has value of 0.80 or above; a suggestion that the models specified are fit and devoid of issues of multi-collinearity. This was further confirmed by the result of the multi-collinearity test as indicated in Table 4.3. Accordingly, the mean VIF obtained for the independent variables did not exceed the standard VIF level (1.09<10.00) which means that multi-collinearity does not exist among the independent variables used in this study.

Again, the variable was further subjected to tests for heteroscedasticity using the Breusch-Pagan/Cook Weisberg Test which interestingly revealed in Table 4.4 that the fitted value of ENVCOST is 35.60 with a p-value of 0.0000; thus confirming heteroscedasticity problem in the data set. These results however, proved that from the tests of hypothesis could be relied upon.From the result of the test of hypothesis I, we observed from the evaluation of the

regression result that R^2 is 0.2514 suggesting a 25.14% of the explanatory ability of the estimation for the systematic variation in the dependent variable (ENVCOST) with an adjusted value of 0.2465. The evaluation of the slope coefficients of the explanatory variables revealed the existence of a negative relationship between ENVCOST and the Explanatory (ROA = 0.0018001). However, with an F-value of 56.58 (p-value = 0.0000), there was a strong evidence that ROA has significant negative effect on environmental costs among listed service firms in Nigeria. This finding corroborates that Ong, Teh and Ang (2014) and Nuzula (2019).Furthermore, from the result of the test of Hypothesis II, we noticed from the evaluation of regression result that R^2 was 0.2534 suggesting about 25% explanatory ability of the estimation of the systematic variation in the dependent variable (ENVCOST) with an adjusted value of 0.2490 (24.90%). The evaluation of the slope coefficients of the explanatory variables revealed the existence of a negative relationship between environmental costs (ENVCOST) and the ROE firm (coefficient of ROE = 0.0003418). Impliedly, the costs incurred by firms for environmental engagements are largely affected by amount of computed values of EPS of firms. However, with an F-value of 57.20 (p-value = 0.0000), there was a strong evidence that ROE has significant negative influence on environmental costs among firms.Finally, from the test of Hypothesis III, we noticed from the evaluation of regression result that R^2 was 0.2608 which suggests 26.08% of the explanatory ability of the estimation for the systematic variation in the dependent variable (ENVCOST) with an adjusted value of 0.2564 (25.64%). The evaluation of the slope coefficients of the explanatory variables further revealed the existence of a positive association between environmental costs (ENVCOST) and EPS (coefficient of EPS = 0.0263038). With an F-value of 59.45 (p-value = 0.0000), there was strong evidence that EPS has significant positive influence on environmental costs of listed service firms in Nigeria. This result is in consonance with the finding of Ezeagba, John-Akamelu and Umeoduagu (2017), but at variance with that of Pandey and Kumar (2016) and Malarvizhi and Ranjani (2016).

5. Summary of findings

This study examines the nexus between environmental cost and selected measures of corporate performance with evidence from selected listed service companies in Nigeria. Data for both the dependent and independent variables were obtained for a period spanning from 2009 – 2018 and were analyzed by means of descriptive (mean, standard deviation and correlation) and inferential (ordinary least square) statistics. Based on the analysis of data and test of Hypothesis, the following findings emerged:

1. That there is significant relationship between environmental costs and Return On Asset (ROA) of listed service companies in Nigeria.
2. The ROE has significant negative effect on environmental costs of listed service companies in Nigeria.

That there is significant positive relationship between environmental costs and the EPS of listed service companies in Nigeria.

Conclusion

This study was motivated by the inclusive nature of studies carried out on environmental accounting and disclosure practices in Nigeria and beyond. However unlike most prior studies, this study examined the effect of selected class of performance measures on environmental costs of firms in Nigeria.

The study found that corporate performance indicators such as return on assets, return on equity and earning per share have significant effect on environmental costs among firms. The implication of this study's result is that the level of disclosure of environmental related costs depends on the respective performance of listed firms over time.

Recommendations

We therefore recommend that

1. The management of firms should ensure full disclosure by reporting environmental related costs in their financial statements irrespective of the performance recorded in any given year.

2. The accounting framework should consider developing environmental disclosure index in order to facilitate the disclosure of environmental related costs by firms.

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