Environmental Costs Accounting and the Earnings of Oil Firms in Nigeria

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Abstract
This study sought to assess the effect of environmental investments on the earnings of listed oil and gas firms within the Nigerian economy over a ten year period (2008-2017). Exposit facto research design was adopted and secondary data were sourced from the financial reports of the five selected firms. Data analysis was conducted using the ordinary least square regression method and findings indicate that firms investments on the environment associates significantly with their earnings. Hence the study recommended for all business units in Nigeria to keep pace with contemporary financial reporting issues by engaging in, and adequately reporting their investments in the replenishment of the planet as that will promote their organizational image and business. The study also noted that there is a gap in the reporting of environmental activities of firms largely drawn from unavailability of the global accounting standard to ensure accountability and harmonization of environmental reports; and so called on the International Accounting Standards Board to deliver a dedicated standard to fill this gap thus enabling the accounting profession to effectively contribute its quota towards a sustainable planet.

Introduction

The traditional method of accounting has received serious criticisms in the recent times thus revealing the incomplete nature of the erstwhile (i.e. traditional method) financial information in such statements as it excludes an important headline that attests to an organization's investment or lack of investment in the replenishment of the physical environment from where it sources its income. This also includes muddling up costs incurred towards the protection and replenishment of the environment together with other costs of operations.

Environmental accounting has been described as efforts towards tracking, recording and reporting of organization's interactions with its immediate environment and natural resources which should include effect of its activities and efforts towards ameliorating and replenishment of lost essential natural resources. It principally describes the preparation, presentation, and communication of information related to an organization's interaction with the natural environment. Eze, Nweze and Enekwe (2016) posit that environmental accounting should reflect any costs and benefits that arise from changes to firm's products or processes, where the change also involves a change in environmental impacts. It is applied in the assessment of full environmental costs associated with the activities and products; and also the assessment of organization's environmental performance with some key monitoring areas ranging from emission to air, water, effluent discharge, soil contamination and boundary noise level (Seetharaman, 2007).

Norhasimah, Norhabibi, Nor, Sheh and Inaliah (2016) attribute the development and expansion of environmental accounting to the increase in social focus towards the natural environment. They also assert that environmental accounting is one of the elements that contribute to corporate governance of firms (p. 119).

The present activities of humans in the struggle to make a living and provide basic necessities of living have been observed to have tremendous negative effects on the earth's sustainability prospects and have a likelihood of jeopardizing the ability of the future generations to provide the same basic necessities of living for themselves. It then follows that efforts should be made to replace the losses to the environment due to present activities of man or at the least ameliorate these negative consequences on the environment. Hence Adediran and Atu (2010) see environmental accounting as a new concept that tries to recognize the side effects of production and consumption on the physical environment.
The importance of this concept having already justified the need for its internalization into the financial statements of firms; and evidences abounding of firms that have voluntarily started reporting their environmental activities, it is only natural that a guideline should be dedicated to its treatment if financial statements of firms must be comparable and influential to inform economic decision making. Presently environmental friendly firms prepare their environmental reports using various options which include annual reports, websites and standalone reports (Norhasimah *et al*, 2016). And this obviously is due to the absence of an accounting guideline or standard dedicated to this concept in the international accounting standards as neither the effective IASs nor new IFRSs include any standard dealing fundamentally with environmental issues (Van, 2011).

Furthermore, firms' investments in replenishing the planet often involve out flows of financial resources. This underscores the expediency of this research geared towards establishing possible association between environmental cost accounting and earnings of listed firms within the Nigerian oil and gas sector.

Objective of the Study

The main objective of this study is to analyze the influence of environmental costs on the earnings of listed oil and gas companies in Nigeria. Specifically the study aims at:

i. Assessing the effect of environmental cost on the earnings per share of listed oil and gas companies in Nigeria

Hypothesis of the Study

i. Ho: Environmental costs have no significant effect on the earnings per share of listed oil and gas companies in Nigeria**.**

Conceptual Framework

Environmental Costs

Environmental accounting is largely concerned with the cost and benefits associated with use of the natural environment. Environmental cost is defined as the costs; capital or recurrent which are incurred by a firm to ensure that organizations' activities do not cause harm to the environment or replenishment damage to the environment resulting from the firms' activities. Most times, the identification of environmental cost has posed a difficult task to organizations especially when hidden in order overheads instead of being separated. However, according to Adejola (2013, par. 4), environmental costs can be categorized into:

1. Environmental appraisal costs; defined as costs of activities performed to monitor environmental effect that an organization is responsible for. Example is cost of inspecting the environmental liability that is likely to occur in the production of a particular product or service, contamination testing, e.t.c.
2. Environmental Prevention Costs; are costs or expenses undertaken to forestall damages to the natural environment which includes land, water, air, forest, wildlife, etc. due to the organizations' activities. It includes costs of recycling products, training staff and carrying out environmental studies.
3. Environmental Internal failure cost; are cost of making good contaminations and waste that have been discharged by the firm during production of goods and services, though at this level the waste or pollution so far has not been discharged into the public environment. Costs of maintaining pollution equipment and treating toxic wastes will fall under this category.
4. Environmental External failure cost; are costs incurred by firms in remediation of its failure to forestall harm from occurring to the environment in its production activities. A good example of this type of environmental cost is costs of clearing oil spill or cleaning polluted river. However, costs incurred in the settlements of fees and fines arising due negligence or not observing certain legislations on environmental pollution including compensations paid to third parties cannot be attributed to this category (Van 2011, p. 186).

Bassey, Effiok and Okon (2013, p. 58) noted that no accounting standards have been issued presently to guide accounting treatment of environmental costs instead some organizations like international chamber of commerce, chemical manufacturing association, etc. have issued standards that guide related firms in the treatment of these costs. They also articulated issues in the area of environmental accounting as including:

- **i.** Identification of environmental costs and expenses
- **ii.** Capitalization of costs
- **iii.** Identification of environmental liabilities
- **iv.** Measurement of liabilities.

Environmental costs should be treated in line with the basic accounting treatment of business costs which capitalizes costs whose benefits is expected to exceed one accounting period and expenses the others whose accruing benefits will elapse in the given accounting period.

Environmental Accounting

The environment is made up of:

- **a.** Biosphere (living organisms)
- **b.** Geosphere (soil and rock bodies)
- **c.** Hydrosphere (water masses)
- **d.** Atmosphere (air and space)
- **e.** Technosphere (man's creations), (Adediran and Alade 2013).

The need for environmental accounting is explained by the need to reckon the effects of man's creations and activities on the other segments of environment which in most times affect the quality of life available for living organisms within the environment.

According to Kamieniecka and Nozka (2013), environmental accounting also known as green accounting is a management tool addressing all areas of accounting that may be affected by the response of business organizations to environmental issues, including the new area of eco-

accounting. It is an essential exercise necessary for the replenishment of the environmental losses due the activities of various business outfits within the environs.
It is responsible for the generation of reports for both internal use, providing management with environmental information for making decisions on controlling overhead, capital budgeting and pricing, and external use thereby disclosing environmental information of interest to the government, public and to the financial community (Eze, Nweze and Enekwe2016, p.17). Hence, its wide extent and focus on both external and internal users brought about the basis to categorize it into:

a. Environmental financial accounting
b. Environmental management accounting (Kamieniecka and Nozka 2013).

Environmental financial accounting deals with the reporting of organizational environmental dealings, commitment and investment to all concerned stakeholders as a means of informing them of its actions and plans for the foreseeable future. No doubt, environmental reporting should instill environmental responsibility in the reporting firms as no rationale management team will prefer to give a report of itself when such report will portray negativity or substandard performance. In fact, environmental accounting aids firms' environmental transparency and determines their relationship with the environmental pressure groups in particular and society in general (Eze, Nweze and Enekwe 2016).
On the other hand, environmental management accounting is designed to inform the management and enhance their ability to make strategic decisions. It supports decision making. Obviously, managers of environmentally responsible firms attract some benefits to the firms due to their ability to achieve optimal waste management in bringing about a cost reduction results.

Furthermore, some issues that need to be addressed for successful environmental accounting to be implemented were articulated by Van (2011) to include:

a. Identifying the area of environmental costs,
b. Analyzing environment related costs
c. Introducing the financial aspects of environmental issues and investigating what promotes adequate decision making.
d. Identifying areas that cause environmental risks.
e. Preparation of criteria prescribed by law, and generating numerical data on penalties and benefits.
f. Separation of environmental costs from total costs.
g. Considering environmental liabilities, and the system of contingent liabilities and provisions.
h. Promoting more comprehensive information content and comparability of reports.

Obviously, the last issue which has to do with information content and comparability of reports is a huge role which the global accounting standards body is more equipped and fit to achieve.

Benefits of Environmental Accounting

Eze, Nweze and Enekwe (2016)posits that environmental accounting is aimed at enabling organizations to fulfill their role of accountability, propagation of environmental friendliness and also enlightenment of environmental commitment through disclosure.
Further, Adediran and Alade (2013) attributed the following advantages to flow to companies and individuals who engage in environmental accounting:

a. Increased turnover for firms due to enhanced company and product image.

b. Attractive company share values in the investors' perspective as a result of enhanced product or company's image and environmental risk rating.
c. Better access and terms from lending institutions due to favourable risk incidents.
d. Compliance with environmental laws which in turn will minimize exposure to future financial losses arising from environmental incidents.
e. Increased company's profile as a result of increase in the area of environmental responsibilities.
f. Innovations and new inventions because organizations can recycle what was formerly considered waste to invent new products.

Environmental Accounting in Nigeria

Nigeria as a developing economy and also an oil producing nation has many activities going on within its environment which eats away the sustainability of the environs and reduces the quality of life of its occupants ever before its independence in 1960. According to Eze, Nweze and Enekwe (2016), oil producing communities in Nigeria often find it very difficult to cope with their natural environment because of oil spillage, industrial pollution, deforestation and other environmental hazards due to the activities of oil companies. Worst still is the effects of dangerous hydro carbons emitted into the air whenever there is oil spillage. These include the effects of benzene which may result to leukemia and birth defects, ethyl benzene which may lead to dizziness, slower reflexes, loss of consciousness and death; and zylene which may result to damage of a developing fetus, liver, kidney, skin, eyes and bone marrow (p. 22).

The nation was rather late in coming up with extensive and water-tight legal framework to curb the excesses of most foreign multinational oil firms who were operating in the country. Ifureze, Lyndon and Bingilar (2002) rightly pointed out that before 1988, environmental regulation was just in a window dressing form until a foreign company acting through an agent attempted to dump toxic waste in the Niger Delta Region; obviously the shock of this event made the then Federal Government, being a military regime to enact Decree No. 42 of 1988 which made it a criminal offence for one to carry or dump any harmful waste within the entire land mass and waters of the Federal Republic of Nigeria. In fact, that was the foundation of the present Ministry of Environment in Nigeria and other laws protecting the forest, wildlife, aquatic and entire atmospheric environment in the nation.

Accounting Standards and Environmental Accounting

Most powerful economies of the world have subscribed to one set of accounting standards regulated by the International Accounting Standards Board (IASB). The justification of this movement is derived from the need to achieve uniformity and enhance comparison of financial reports of firms, notwithstanding the country of origin as technology has reduces the world to a global village. Also, it is believed that this board being more powerful as member bodies are from diverse backgrounds will be thorough and even proactive in pronouncing proper ways of treating accounting issues with ever dynamic nature of the business environment. Dragomir and Anghel-ilcu (2011, p. 11268) noted that there is lack of comparability in financial reports of companies from various countries of the world which is traceable to the architecture of accounting systems having uneven levels of development and sophistication, or simply relying on incompatible paradigms. Hence, the aim of the IASB is mainly to harmonize divergent accounting practices across the globe that hitherto accounted for the incomparability.

However, neither effective IASs nor new IFRSs include any standard dealing fundamentally with environmental issues (Van 2011, p. 184). Rather companies are left to account for their use of the environment voluntarily using any format of their choice thereby defeating the harmonization purpose.

Some researchers have tried to present some sections of the existing international accounting standards as reflecting the IASB's support for environmental reporting and recommended that companies should adopt those highlights derived from different sections of various standards as means of achieving harmonization. Firoz and Ansari (2010, p.107) listed out some relevant standards under the IASs and IFRSs to guide environmental accounting as follows:

a. Framework for preparation and presentation of financial statement; it was asserted what the framework prescribed by IASB should guide the preparation and presentation of environmental reports just as it guides financial reporting. The environmental reports should possess accountability of information, relevancy of information, materiality, and substance over form, neutrality, prudence and capital maintenance adjustments.

b. IFRS 6 – Exploration and Evaluation of Minerals; it was also observed that since IFRS 6 permits a mining company to either select to capitalize or expense its exploration and evaluation costs (provided the policy is applied consistently between periods and to similar items and activities), it indicates the Board's willingness to assist firms to account for their environment since the policy to capitalize or expense should reflect the extent to which the type of exploration and evaluation can be associated with finding specific minerals. Also that since IFRS 6 did not cover expenditures before and after exploration and evaluation costs, it therefore means that they are to make policies of those aspects in line with other prevalent provisions of IFRS.

c. IAS 8 – Accounting for policies changes in accounting estimates and errors; they assert that the provision of IAS 8 in regarding management's use of its judgment in developing and applying accounting policies where there is no specific IFRS dealing with such issue, is an indication that the standard had somehow made provision for the treatment of environmental accounting issues since there is no specific standard for environmental issues. In terms of making and changing already made estimates, they posit that this standard also demands judgments based on latest available reliable information on issues which may include: provision for cleanup costs, provision for rehabilitation cost for mining industries, provision for contingency claims, provision for other environmental related cost such as air pollution, noise pollution, toxic gases and hazardous waste materials; and provision for acquisition of equipment's for pollution control (p. 108).

d. IAS 1 Presentation of financial statements; here Ansari and Firoz (2010, p. 109) posits that the IASB have already in this standard made provision on how environmental reports are to be presented via the application of going concern principle and itemization of information to be presented in the statement of financial position. So environmental accounts should also reflect the going concern assumption of firms.

e. IAS 37 Provisions, Contingent Liabilities and Contingent Assets Provisions; they held that the provision of this standard on recognition of provision on the basis of i. That there is present obligation as a result of past event
ii. That there is probability that an outflow of resources embodying economic benefits will be required to settle the obligation, and
iii. That a reliable estimate can be made concerning the amount of the obligation.

However, Van (2011) raised the shortcomings of these standards in effectively regulating the practice of environmental accounting as follows:

a. IAS 1; the standard here did not include any criterion for the presentation of environmental costs and liabilities hence revealing the stance of the standard in not making the separation of environmental costs from other costs obligatory. It was

strongly recommended that separate disclosure of environmental costs and liabilities should be required so that policies adopted in accounting for these items can also be stated alongside other policies in the financial reports. Thereby improving on harmonization and comparability of environmental reports of firms. Also discussed is the issue of going concern which is to be adopted naturally in preparation of environmental reports, but the absence of guidelines on how to approach it when companies operations fails substantially due to legal modifications (going concern is threatened) is another shortcoming.

b. IAS 16 on Property, Plants and Equipment's; it was pointed out that the standard needs to clarify its stance on whether it is standing on the present wording which holds that items recognized as assets should bring about increase in "expected economic benefits" or "continued benefits". This is obviously drawn from the fact that certain environmental security assets may need to be recognized as assets and consequently capitalized but cannot bring about expected economic benefits rather its purchase and use will secure the continued benefit enjoyment by the firm. This will also apply in cases where companies incur huge costs in elimination of environmental damages which will aid in avoidance of suspension of their operations.

c. IAS 36 on Impairment of Assets; this standard opined for assets not to be carried at any amount higher than their value in use or net selling price. The problem cited here is measuring impairments of assets due to environmental factors, i.e. the determination of the net selling price of such asset when measurement of environmentally impaired assets may be affected by uncertainties deriving from the possibility of improvement in related technology or changes in legislation.

d. IAS 37 on Provisions, Contingent Liabilities and Contingent Assets; this standard provides the criteria for making provisions, recognizing contingent assets and liabilities to include:

i. Provisions being made only when there is a present obligation as a result of past events

ii. Outflows embodying economic benefits required to settle the obligation

iii. And the amount can be reliably estimated.

Provisions, contingent assets and contingent liabilities as account heads are relevant at most in companies with environmental issues and so attract attention of researchers of environmental accounting. It was critiqued based on the following:

i. It is possible for there to exist contingent liabilities as a result of future events in cases of environmental accounting especially when a new legislation is enacted making the future event legally obligatory to some specific demands.

ii. Uncertainty on whether proposed change in the law gives rise to an obligation.

iii. There are basically problems of uncertainty on timing and amount of economic benefit to settle the liabilities in most environmental issues.

Hence, it is obvious a standard that is chiefly intended for environmental accounting is of necessary to tackle these issues which are specifically peculiar to it.

e. IAS 38 on Intangible Assets; mainly the issue here is researchers on environmental accounting is the need to recognize and capitalize some environmental related items as assets in the financial reports such as emission rights and pollution permits.

Theoretical Framework

The theories that underpin this study include:

a. Triple bottom line theory: triple bottom line approach advocates for financial reports that take proper cognizance of the three major areas of stakeholders' interests in firms which are social, economic and environmental. It is often described as a better and refined manner of rendering accounts of firms as it takes care of the people, profit and the planet. Interestingly, this theory has been aligned with the theory of a firm proposed by Adam Smith as Ifurueze *et al* (2013, p. 3) submits that securing and guaranteeing shareholders of continuous income in the future is dependent on the firm's contribution to sustainable development of the environment from where these future profits will be made. Reasonable investors nowadays value firms who contribute to sustain the environment and human resources rather than those who relegate all others standards to the background in pursuit of profits alone.

b. Stakeholder' theory: Firms are deemed as successful based on their ability to manage their stakeholder relationships effectively where a stakeholder is described as any person or group affected by the firm's operations. The stakeholders group can also be described as a combination of interests without which the firm cannot thrive successfully. In times past, these interests have always be dominated by the financial interest groups i.e. shareholders, lenders and other investors but changing times have seen cases where aggrieved community members destroy properties of firms and even obstruct their business premises for neglecting the pollution of the physical environment due to their activities as is often the case at the Niger Delta region of Nigeria. So the influence of the social contributors among the stakeholder groups has suddenly grown. Hence, Bassey, Effiok and Eton (2013, p. 59) posits that stakeholders theory proposed an increased level of environmental awareness which create the need for companies to extend their corporate planning to include the nontraditional stakeholders like regulatory adversarial groups asserting that the concern of the stakeholders theory in environmental accounting is to address the environment cost elements and valuation and its inclusion in the financial statement.

c. Legitimacy theory: this theory is noted for its assumption that the activities of firms are acceptable and desirable within some socially constructed system of values and norms. In other words, firms are expected to operate in compliance with some socially accepted norms if their business is to be regarded as legitimate in the community. Bassey *et al* (2013, p. 60) also identified four stages of the legitimacy to include establishing legitimacy, maintaining legitimacy, extending legitimacy and defending legitimacy. The legitimacy theory is critical to business survival as firms who do not operate within the set socially acceptable limits may not succeed in their operations due to incessant hostility form government, community groups, and environmental activists.

Empirical Review

The importance of environmental accounting and the role expected of accountants in upholding the accountability of firms for the effect of their activities on the environment have made it a popular topic among scholars. Some writers has prescribed the role expected of the accountant and the accounting profession in upholding this practice.

Goyal (2013) noted that there is notable variations in the application of environmental disclosure in annual reports of firms, i.e. the fact that there is presently no specific IAS/IFRS dealing with environmental accounting but attempted to identify areas in which the existing standards have directly or indirectly remarks on the topic. The standards identified include IAS 1, 10, 16, 20, 32, 38 and 39, 41; and IFRSs 3, 6, 7 and 8.

Eze, Nweze and Enekwe (2016)posits that increased information on the organization's influence on the environment is paramount to its survival, also noting that environmental accounting motivates companies to track their greenhouse gas emissions and other environmental factors against elimination point and prescribed the adoption of uniform standards for the purpose of control and measurement of performance and for companies to resort to product designs that generate less waste and emissions during their life cycle.
Barbu, Pascal, Feleaga and Feleaga (2011) undertook to investigate whether the level of environmental disclosure under IFRS is related to the size of the reporting firms. They concluded that environmental disclosures imposed by IFRS increase with firm size just like voluntary disclosures, they also found that firms domiciled in countries with constraining environmental disclosure regulations report more on environmental issues than those domiciled in countries with weak constraining regulations. They suggested that development of standards as IFRS is not enough to ensure comparability in financial reporting and hence prescribed incentives and enforcement as necessary to attain full convergence and attainment with accounting standards. It is evident that Barbu *et al* (2011) is more concerned with the achievement of uniformity in the environmental reports based on the direct and indirect references of the various present standards on the topic rather than the development of a dedicated standard on environmental accounting.

Firoz and Ansari (2010) set out to make a critical appraisal of the contemporary environmental accounting literature, observing relevant standards in the IFRS that will serve as backbone for the articulation of environmental reports. They recommended the application of

- **a.** The framework for the presentation and preparation of financial statements
- **b.** IFRS 6
- **c.** IAS 8
- **d.** IAS 1
- **e.** IAS 41
- **f.** IAS 20, and
- **g.** IAS 37 in the preparation of environmental reports.

Kamieniecka and Nozka (2012) presented environmental accounting as a notable means of implementing corporate social responsibility of firms. They prescribed the enforcement of environmental friendliness on firms through environmental reporting requirements and thus promote proper assessment of the environmental impact of the business activities and achieving comparability over time and space p. 10.
Van (2011) attempted to answer the critical question which bothers on whether there is a need at all to have a particular standard dealing with environmental reporting issues considering mainly the standards already commented above by some scholars as reflecting procedures of environmental reporting. A critical examination of IASs 1, 16, 36, 37 and 38 revealed some shortcomings which made them ambiguous and insufficient to regulate environmental reporting and recommended the articulation of a specific standard to regulate environmental reporting in the global accounting standards p. 189.
On the other hand, some empirical works have attempted to describe various environmental investment practices in some selected firms and also related these environmental practices of firms to their performances through statistical based analyses. Bassey *et al* (2013) examined the effect of environmental accounting and reporting on organizational performance of oil and gas companies within the Niger Delta region of Nigeria using Pearson's product moment correlation analysis. They found that environmentally friendly firms will significantly disclose environmental related information in financial reports and therefore recommended that firms

should adopt a uniform method of reporting and disclosing environmental issues for the purpose of control and measurement of performance. They also advised for publishing of accounting standards locally and internationally which will be reviewed continually to ensure dynamism and compliance to meet environmental and situational needs.
Ifureze, Lyndon and Bingilar (2013), explored the impact of environmental costs on corporate performance using three selected indicators which includes community development costs, waste management costs, and employee health and safety costs. It was found that sustainable business practices are significantly related to corporate performance, concluding that sustainability may be a tool for corporate conflict resolution as evidenced in the reduction of fines, penalties and compensations paid to host communities of oil companies. They therefore, called for well-articulated environmental costing system in order to guarantee a conflict free corporate atmosphere needed by workers for maximum productivity and eventually improve performance.

Another study regarded companies' approach to the environment as one of the major factors influencing corporate performance in Nigeria (Adediran and Alade 2013). Their findings revealed that there is significant negative relationship between environmental accounting and Returns on Capital Employed and Earnings per Share of firms whereas environmental accounting is positively related to Net profit margin and Dividend per share. Hence mandatory environmental reporting and advancement of tax credit to firms who comply with environmental laws was recommended as a means of improving environmental responsibility as well as firm's performance.
In Indonesia, Mohammad, Sutrisno, Prihat and Rosidi (2013) investigated the effect of environmental accounting implementation, performance and information disclosure on company's value while sampling 59 companies. The result of the study showed that the explanatory variables all influence company's value significantly
Norhasimah *et al* (2015) investigated the impact of environmental disclosure on financial performance of 100 companies in Malaysia through content analysis of the financial reports of selected firms. They found that there exist in a mixed result on the impact of environmental disclosure on financial performance of firms in Malaysia and therefore recommended the facilitation of environmental reports by regulators (i.e. accounting bodies) so as to ensure sustainability of the physical environment, as there is presently no regulation nor statutory requirement in that regard.

Omodero and Ihendinihu (2016) measured the impact of environmental costs of fourteen randomly selected listed firms on their performances using the regression analytical technique. The study adopted exploratory research design and used profit after tax (PAT) as a measure of the firms' performances for five years. They found that environmental costs have non-significant and negative effect on the profit after tax of the selected firms.
A study by Okafor (2018) focused on firms within the Nigerian oil sector and used returns on assets (ROA) as the indices for performance of firms. The study employed the regression analysis technique and found that environmental costs incurred by firms within the oil and gas sector have significant and positive influence on their performance. The study therefore called on those at helm of affairs of oil companies to increase their involvement in environmental activities for improved and sustainable performance.

Gap in Literature
This paper will attempt to isolate environmental costs accounting and study its effect on earnings per share as a measure of performance for firms in the oil and gas sector with the aim

of exploring the singular effect of the environmental costs on the earnings of firms. This is a departure from the generalizations by various related studies and this choice was informed by the need to evaluate oil and gas firms who are known for their significant release of waste into the environment which often spills into rivers and lead to loss of farmlands for immediate host communities.

Additionally, it is evident from the above literatures, that currently there is no known dedicated accounting standard that exclusively regulate environmental reporting at the global level and this has led to varying levels of environmental disclosure among firms who wish to engage in voluntary disclosure thereby creating a whole lot of difficulty in comparing environmental performance of firms. This situation jeopardizes the interest of investors who may wish to promote companies with high regard for environmentally sustainable programmes. It is the role of the International Accounting Standards Board (IASB) to ensure maximum safety of investors' interest in a firm through provision of standards to guide the preparation financial reports as the managers' representations; so the Board has a great need to deliver on the issue of environmental accounting, not because efforts are not already on ground by concerned firms but for the sake of uniformity and comparability in financial reports of firms all over the world which also forms the bedrock of the Board's existence.

Methodology

Expost *facto* research design was used for this study in consideration of the nature of data required in analysis done in this work. The study focused on the oil and gas sector within the Nigerian economy and judgmentally selected five companies incorporated before 1970 out of the 14 listed oil and gas firms on the Nigerian stock Exchange. The secondary data utilized which are earnings per share and environmental costs of the individual selected firms from 2008 – 2017 were obtained from the financial reports of the companies. Panel regression analysis was deemed appropriate to investigate the nature and direction of possible association that may exist between environmental cost and earnings per share of selected firms. The regression model is stated below:

$logEPSit=\beta0+\beta1logENVCit+\mu it$

Where logEPS = logged values Earnings per share

$\beta0$ = Constant of the regression equation

$\beta1$ = Coefficient of the regression equation

logENVC = logged values of Environmental costs incurred by firms.

Result and Discussions

The panel simple regression analysis conducted in this study utilized the fixed/random effect model. The choice is premised on the need to take into cognizance the cross section and time series nature of the data hence allowing for the individuality of the several firms that are selected in this work. This approach is more realistic as it may not be feasible to assume that the various oil firms have the same level of outcome on environmental costs and performance in terms of their earnings. So two regression estimates were conducted using fixed and random effects models and a choice was made on the most appropriate regression with the aid of the hausman test shown on appendix 1 of this paper. The hausman test proposes a set of hypothesis in the null and alternative forms as follows:

H0: Random effect regression model is more appropriate

H1: Fixed effect regression model is more appropriate.

So we select the fixed effect model based the outcome of the hausman test which yields a significant probability value for the chi-square statistics.

Table 1: Regression of Environmental Costs on Earnings per Share of Oil & Gas Firms in Nigeria

Dependent Variable: LOGEPS
Method: Panel Least Squares
Date: 12/13/18 Time: 21:49
Sample: 2008 2017
Periods included: 10
Cross-sections included: 5
Total panel (unbalanced) observations: 46

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.854770	1.279642	-1.449445	0.1550
LOGENVC	0.468666	0.197665	2.371005	0.0226
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.615538	Mean dependent var		1.176309
Adjusted R-squared	0.567481	S.D. dependent var		0.582547
S.E. of regression	0.383119	Akaike info criterion		1.040166
Sum squared resid	5.871208	Schwarz criterion		1.278684
Log likelihood	-17.92381	Hannan-Quinn criter.		1.129516
F-statistic	12.80832	Durbin-Watson stat		1.690639
Prob(F-statistic)	0.000000			

Source: Researcher's Eviews Computation 2018

According to the result of the fixed effect regression model shown on table 1 above, firms' investments on the maintenance of their environment over the years covered by this work have a positive influence on the earnings per share of the firms. This is because the beta coefficient of the regression has a positive value and its t-statistics is above 2 and is also accompanied by probability value of less than 5%. Hence the study rejects the hypothetical claim made in the introductory part of this work and accepts instead that environmental cost of firms has significant and positive effect on their earnings per share. The result of the beta coefficient is further supported by r-squared outcome of the regression estimate which suggests a goodness

of fit for the regression and the f-statistics which is significant at 1% underscoring the potency of the environmental costs in predicting the variations that may occur in the performances of the five selected oil and gas firms covered in this paper.

The above outcome is in agreement with the works of Ifureze, Lyndon and Bingilar (2013) and Okafor (2018) who found that environmental cost and investments of firms within the Nigerian oil sector influence their performances in a positive way and to a significant level. On the other hand, the study disagrees with the submissions of Adediran and Alade (2013) and Omodero and Ihendinihu (2016) with respect to the negative influence of environmental costs of firms on earnings per share. But then, the work of Adediran and Alade was not centralized on the oil sector but they covered 14 companies from consumer goods, basic materials and financial sector. Omodero and Ihendinihu (2016) applied a random selection of all listed firms on the Nigerian Stock Exchange, covered five years and used profit after tax as a measure of firms' performance.

Conclusions and Recommendations

Having found that environmental maintenance and upgrading costs of firms predicts a significant variation in their earnings, this study therefore concludes that environmental friendly practices and investments by oil and gas firms in the Nigerian sector improve their performances. The paper also recommends that environmental friendly practices should be upheld by every business unit in Nigeria as a way of replenishing the planet and safeguarding the earth for next generations of its inhabitants. Management of oil and gas companies should realize that maintenance of legal environmental standards will put their firm in good standing and favorable ranking as well as eliminate avoidable fines and penalties which increase corporate expenditures leading to lesser earnings.

Finally, it is of paramount interest to the accounting profession to live up to expectation concerning this issue as it remains a core accounting issue which has attracted interest from many disciplines. This is because the scientists have done their part in reporting that negative environmental measures need to be mitigated for the sustainability of the planet and the manner to engage in such mitigations, the legal experts have also made sure laws are on ground to enforce these remarkable findings, then the accountants should not fail in delivering a timely framework and a dedicated for firms to report their investments on the environment.

References

Adediran, S. A. & Alade, S. O. (2013). The impact of environmental accounting on corporate performance in Nigeria. *European Journal of Business Management.* 5 (23), 141 – 151.

Adediran, S. A. & Atu, O. K. (2010). Corporate environmental responsibility as a means of alleviating Niger Delta Crises. *Academic Scholar Journal.* 2 (1), 1 – 12.

Barbu, E., Dumontier, P., Feleaga, N. & Feleaga, L. (2011). Mandatory environmental disclosures by companies complying with IAS/IFRS:the case of France, Germany and the UK. <*halshs-00658409*>1 – 30.

Bassey, B. E., Effiok, S. O. & Eton, O. E. (2013). The impact of environmental accounting and reporting in organizational performance of selected oil and gas companies in Niger Delta region of Nigeria. *Research Journal of Finance and Accounting.* 4 (3) 57 – 69.

Dragomir, V. D. & Anghel, E. R. (2011). Comparative perspectives on environmental accounting elements in France and the United Kingdom. *African Journal of Business Management.* 5 (28),11265 – 11282.

Eze, J. C., Nweze, A. U. & Enekwe, C. I. (2016). The effects of environmental accounting on a developing: Nigerian experience. *European Journal of Accounting, Auditing and Finance Reseaech. 4 (1), 17 – 27.*

Firoz, M. & Ansari, A. A. (2010). Environmental accounting and international reporting standards. *International Journal of Business and Management.* 5 (10), 105 – 112.

Goyal, N. (2013). Integrating corporate environmental reporting & IFRS/IAS: need of the hour. *International Journal of Management and Social Sciences Research (IJMSSR).* 2 (3), 50 – 55.

Ifurueze, M. S. K., Lyndon, M. E. & Bingilar, P. F. (2013). The impact of environmental cost on corporate performance: A study of oil companies in Niger Delta states of Nigerie. *Journal of Business and Management.* 2 (2), 1 – 10.

Kamieniecka, M. & Nozka, A. (2013). Environmental accounting as an expression of implementation of corporate social responsibility concept. *Knowledge Management & Innovation, Zadar Croatia International Conference 2013.* 1 – 12.

Mohammad, I., Sutrisno, T., Prihat, A. & Rosidi (2013). Effect of environmental accounting implementation and environmental performance and environmental information disclosure as mediation on company value. *International Journal of Business and Management Invention.* 2 (10), 55 – 67.

Norhasimah, M. N., Norhabibi, A. S. B., Nor, A. A., Sheh, M. Q. A. S. K. & Inaliah, M. A. (2016). The effects of environmental disclosure on financial performance in Malaysia. *Procedia Economics and Finance.* 35 (2016), 117 – 126

Okafor, T.G. (2018). Environmental costs accounting and reporting on firmfinancial performance: a survey of quoted Nigerian oilcompanies. *International Journal of Finance and Accounting Vol. 7(1): 1-6*

Omodero, C.O. & Ihendinihu, J.U. (2016). Impact of environmental and corporate social responsibility accounting on organizational financial performance: evidence from selected listed firms in Nigerian stock exchange. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS) Vol. 7(5): 291-306*

Seetharaman, A., Mohamed, I. & Saravan, A. S. (2007). Environmental accounting as a tool for environmental management system. *Journal of Applied Science, Environment and Management. 2 (2): 137 – 145.*

Van, H. (2011). The relationship between international accounting standards and environmaental accounting. *Studies in International Economics and Finance.* 181 – 191.

Appendix I

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.544078	1	0.0240

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOGENVC	0.468666	0.385758	0.004452	0.0240

Cross-section random effects test equation:
Dependent Variable: LOGEPS
Method: Panel Least Squares
Date: 12/13/18 Time: 21:50
Sample: 2008 2017
Periods included: 10
Cross-sections included: 5
Total panel (unbalanced) observations: 46

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.854770	1.279642	-1.449445	0.1550
LOGENVC	0.468666	0.197665	2.371005	0.0226

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.615538	Mean dependent var	1.176309
Adjusted R-squared	0.567481	S.D. dependent var	0.582547
S.E. of regression	0.383119	Akaike info criterion	1.040166
Sum squared resid	5.871208	Schwarz criterion	1.278684
Log likelihood	-17.92381	Hannan-Quinn criter.	1.129516
F-statistic	12.80832	Durbin-Watson stat	1.690639
Prob(F-statistic)	0.000000		