GREEN COST ACCOUNTING AND FINANCIAL PERFORMANCE OF LISTED OIL AND GAS FIRMS IN NIGERIA.

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Abstract

This study examined the effect of Green Cost Accounting on Financial Performance of selected oil and gas firms listed on Nigeria Stock Exchange. The study used Waste Management Cost, Litigation and Fine Cost, Gas Flaring Penalty, and Pollution Control Cost as proxy for Independent variables, while Net Profit Margin was used as proxy for Dependent variable. Secondary source of data was employed while the research design was based on ex-post facto design. The data was collected from ten (10) listed oil and gas firms for a period of five (5) years, between 2012 to 2016. The data collected were analyzed using descriptive statistics, correlation and multiple regression analysis. The result showed that Waste Management Cost and Gas Flaring penalty cost have positive and significant effect on Financial Performance of selected oil and gas firms at 1% and 5% significant levels respectively. The study also found that 56% of the changes in total variations on the Dependent Variable can be attributed to the joint effect of all the explanatory variables, while the remaining 44% was the error term. The study therefore, recommends among others, that oil and gas companies should invest heavily in Waste Management and Gas Flaring reduction program as both have statistical significant effect on their profit margin.

Key Words: Green Cost Accounting; Waste Management; Gas flaring; Pollution; Performance

Introduction

The excessive human activities on the eco-system have led to damages of the environmental stock, including depletion of natural resources, environmental pollution, abnormal climate changes, severe smoke pollution, oil spillage in the water and farm land in the Niger delta, flood, Mercury poisoning in Japan, excessive heat caused by the depletion of the ozone layer etc. These and many more shared light on the evil of unrestrained pursuit of economic development at the expense of the environment which is the natural life supporting system. The attention of these effects on the future of humanity was created more in the last quarter of the twentieth century. This awareness was made open following the celebrated public action of the club of Rome and the report of the Bruntland commission on environment. These and many more have contributed in changing the focus of the society and corporations from just profit making and economic development to sustainable economic development, which geared towards meeting the needs of both present and future generations to come. that a business only exists to maximize shareholders' wealth and report on things that can be measured as required by the law

(accounting standards or listing rules) has been severally debated among stakeholders within the context of Stakeholders/shareholders (Ndukwe & John 2015).

Green accounting also known as environmental accounting is to measure, record and disclose the impacts of corporate environmental activities on its financial status through a set of accounting systems. Green accounting is seen as a quantitative assessment of the expenditures and benefits in environmental protection activities and specified systematic records and reports, maintenance of a positive relationship between the enterprises and the natural ecology, and promotion of effective and efficient environmental activities, in order to achieve sustainable development (Ministry of Environment Japan).

Problem Statement

Green accounting has attracted much attention from various stakeholders in the past two decades following the global awareness on the impact of humans on the environment. Yet most academic work on environmental sustainability has been concentrated on a few developed countries such as China, U.S. and U.K., as empirical studies in the context of developing nation is still very few. In Nigeria, few studies have attempted to look at the effect of green cost accounting on financial performance. Those studies focused on environmental sustainability cost and firm performance. Those studies were carried out by Ifurueze et al (2013), Shehu (2014), Raymond, John and Chigbo (2016). For instance, Ifurueze et al (2013) used 12 quoted oil companies and covered a period of ten years (2001-2011). Their study was based on field survey; Raymond, John and Chigbo (2016) used case study of Guinness and Mobil plc for the period of 2009 – 2013. Their study was based on ex-post-facto design; while the study of Shehu (2014) used cross sectional approach. Ifurueze et al (2013) used community development, waste management cost and employee health and safety cost as variables. Shehu (2014) used waste management cost and pollution control cost as variables.

No study has been done on the effect of Green Cost Accounting on the Financial Performance in Nigeria using Pollution Control Cost, Litigation and Gas flaring Cost as variables in their studies, to the best of our knowledge. The above issues created gap in the literature, which this study seek to fill.

Review of Related Literature

The Concept of Financial Performance

The financial performance is the profit after the deduction of all known expenses. It's a measure which reveals the firm's ability to generate positive net profit after the payment of all expenses relating to the period (Klapper & Love, 2002). The concept of financial performance according to Kapopoulos and Lazaretou, (2007), forms the core of strategic management and empirically, most strategy studies make use of the concept of the Financial performance in their attempt to examine various strategy content and process issues. Financial performance usually used such accounting based performance measurement such ROA, ROE, ROS, NPM, ROI, EPS, ROCE etc. Such measurement uses the net profit as the numerator. This study used net profit margin (NPM).as the measurement of performance.

Green Accounting

Green accounting is to measure, record and disclose the impacts of corporate environmental activities on its financial

status through a set of accounting systems. Green accounting uses lifecycle assessment to measure the environmental impacts of corporate activities, promote the use of clean production, adopt total cost assessment and combine traditional accounting to disclose the environmental financial information of the enterprises. The current green concept is to improve the environment, restore the ecology and maintain sustainable operation.

Environmental Regulation in Nigeria

Prior before 1998, environmental regulation in Nigeria existed just on paper, as no implementation blue print and readiness to implement those regulations where put in place. However, things changed as a result of an attempt in 1997 by a foreign company, acting through an agent, to dump toxic waste in the Niger Delta region. This event shocked the Federal Government of Nigeria, shows the porous nature of environmental regulation in the country and awakens the nation to the realization of the need to control and regulates the waste and pollution in Nigeria. This and many more events gave rise to the promulgation of Decree No. 42 of 1998 by the federal government of Nigeria. This decree made it a criminal offence for anyone to dump harmful waste within the entire land mass and waters of the federal republic of Nigeria. The standards include: Water quality, effluent limitation, air quality, atmospheric protection, ozone layer protection, noise levels and the control of hazardous substances. These are some of the major efforts made by successive administrations to ameliorate the environmental problems of the country. In a bid to rejuvenate the effort to control waste and pollution, the federal government it created, for the first time the Ministry of Environment in 1999.

*Waste Management***:** Waste is a by- product of economic activity, by businesses, government and households. Waste is also an input to economic activity –whether through material or energy recovery (Department for Environment, Food and Rural Affairs, 2011). The management of that waste has economic implications –for productivity, government expenditure, and, of course, the environment. Firms' decisions on how to manage waste can positively or negatively impact on their profitability.

*Pollution control***.** This is the activities of the firms directed towards ensuring that the impact of its wastes and other activities were reduced in the environment. The control involved various activities ranging from environmental friendly activities, green production process and restoration of the environment to its original state. The process involved large investment which the firm must make to ensure its and environmental sustainability (Dasgupta, La plante, & Mamingi (1998).

Gas flaring: this is the controlled burning of natural gas that cannot be processed for sale or use because of technical or economic reasons (Canadian Association of Petroleum Producers, Flaring & venting, retrieved July 20, 2018). Ghadyanlou, and Vatani (2015), defined gas flaring as the combustion devices designed to safely and efficiently destroy waste gases generated in a plant during normal operation. Gas flaring can be seen as the process of burning off associated gas from wells, hydrocarbon processing plants or refineries, either as a means of disposal or as a safety measure to relieve pressure.

*Litigation and fines***:** these are costs associated with legal action against the firm by the stakeholder either for negligence or for other environmental related crime. Such

fines increase the operating cost of the firm and reduces it profit. The amount of fines on litigation will therefore depend on the court.

Theoretical Review

This study examined the nexus between green accounting and performance of firm, the study was anchored on stakeholder's theory. Ansoff (1965) first introduced stakeholder theory to explain the importance of identifying crucial stakeholders of an organization. As Ansoff stated, the company's primary strategic objective is to achieve the capability to balance the different needs of diverse stakeholders in the company. This notion was further developed by Freeman (1983), who integrated stakeholder theory into the corporate social responsibility model and business policy model. Stakeholder theory indicates that groups of stakeholders can develop and approve the company's strategic decisions concerning business policies. Furthermore, stakeholders' behavior can constrain the company's strategy, which is developed by managers to match appropriate resources with its surroundings. Freeman (1984) defined the stakeholders as any group or individual who can affect or is affected by the achievements of the firm's objectives. According to this definition, stakeholders can be owners, customers, suppliers, and public groups.

The basic proposition of the stakeholder's theory is that the firm's success is dependent upon the successful management of all the relationships that a firm has with its stakeholders. The above statement was originally introduced by the Stanford Research Institute (SRI) to refer to those groups without whose support, the organization would cease to exist (Freeman 1983).

Stakeholder theory can also be applied to explain how manager's plan and make strategy (Donaldson & Preston, 1995) and how companies are actually managed (Clarkson, 1995; Donaldson & Preston, 1995; Kreiner & Bhambri, 1988). As such, stakeholder's theory is often applied when discussing a company's sustainable strategy, since a company's sustainable strategy and related practices are influenced by different kinds of stakeholders, such as customers, suppliers, line leaders, government, regulators, advisory boards, and NGOs (Donaldson & Preston, 1995). According to Bassey, et al; (2013), Stakeholders are groups which are influenced by the corporate activities. Their study emphasized that the organization's survival in the long run requires stakeholder's support and approval. The more powerful the stakeholders are, the more the organization must adapt to their interests and demands.

Empirical review

Nasiru, Ismail, Adamu, and Muhammad (2015) examine gas flaring and crude oil revenue in Nigeria. The study used secondary data collected over 14 years from 2000 to 2014 and used multiple regression analysis. The study employed time series data hence, a unit root test was conducted and found that they are stationary at level. Using three variables, gas flaring as the aggregate amount of gas flared by oil producing companies in Nigeria as an independent variable and crude oil revenue as an aggregate of revenue generated from all oil companies crude oil as dependent variable and tax as penalty on flaring is used as a control variable, the findings of the study showed that gas flaring has a negative impact on Nigerian crude oil revenue and is statistically significant. Based on the result, the study recommends that government

should embark seriously on gas utilization policy and increase the penalty for companies who still engage in gas flaring and utilize the gas flaring for electricity generation.

Ifurueze, Lyndon and Bingilar (2013) examined the impact of environmental cost on corporate performance using sample of twelve oil companies operating in Niger Delta States of Nigeria.

The study used field survey method and multiple regression analysis was explored to test the hypothesis. Community Development Cost (CDC), Waste Management Cost (WMC) and Employee Health and Safety Cost (EHSC) were used as selected indicators of sustainable business practices. The study revealed that sustainable business practices and corporate performance is significantly related. In another study done using Dutch and Chinese firms by;

Sjoerd, Nasser, and Jolanda (2011) examined the impact of environmental sustainability and finance performance of SMEs using a unique data set of 337 dutch and Chinese firms the results showed a significant positive association between environmental sustainability and firm performance. It appears, however, that different indicators of environmental sustainability display a distinct relationship with the two performance measures. Furthermore, the study finds that firms that communicate to their employees about their sustainability efforts perform better in terms of profit development. Finally, the study finds a weak support is found for a moderating effect of communication to employees on the positive relationship between sustainability and profit development. The study was carried out to examine the impact of environmental sustainability and financial performance of SMEs using a unique dataset of 337 Dutch and Chinese firms.

Kennedy (2015) evaluates the impact of environmental practices on financial performance using a content analysis approach. The study reviewed a total of 130 using, financial variables, environmental variables; it found those 52% studies of selected sample show positive and the rest 48% still remaining with negative mix or no relationship. The inconsistency is due to the absence of clear framework that explains what actually constitutes environmental practices and how to determine their outcome, measures of financial performance, sample composition, time period and control variable.

Stanwick and Stanwick (1998) determined that a significant correlation existed between low emissions levels and high profitability for firms with excellent reputations for social responsibility. The study examines companies listed on *Fortune* magazine's corporate reputation index that also had a complete set of toxic release inventory data for five-year period (1987-92) Sample sets thus varied in size from 102 to 125 companies depending on the availability of complete TRI data for each observed year. The study finds a significant positive relationship existed for all three variables in 2 of the 6 years tested; moreover, a significant positive correlation between high annual profits and low pollution emissions existed for 5 of the 6 years tested.

In line with the above, the study of Hart and Ahuja (1994) found that pollution prevention and emissions reduction initiatives have positive impacts on a firm's return on assets, return on sales and return on equity within two years, and that firms with the highest initial emissions levels show the larges

'bottom-line' gains. The observation of 127 firms was used for the study. Results of this analysis showed that operating performance was significantly enhanced one year after large emissions reductions occurred, and that those performance gains were even more pronounced the following year, before dwindling in year-three.

Arising from the above background is the main objective of this study which is to evaluate the effect of green cost accounting on the financial performance of selected oil and gas firms listed on Nigeria Stock Exchange, we hypothesized that:

H_0: Green cost accounting has no significant effect on the performance of oil and gas firms listed on Nigeria Stock Exchange?

Methodology

The study employed the ex-post facto research design because it sought to analyze with the available data, the effect of green cost as a predictive measure of financial performance. The choice of ex-post design was also based on the nature of the data which already existed and the research made no attempt to manipulate its value or nature. The data were collected from many firms listed under the oil and gas sector for many years. The data already existed and the study made no attempt to manipulate its nature or value. The Population consists of twelve quoted companies in the oil and gas sector of the Nigeria Stock Exchange. The study used ten oil and gas companies because they are the firms that have complete data covering the period of the study. The sample size of the study is ten (10) out of twelve (12) oil and gas companies quoted in the Nigerian Stock Exchange as at December 2016. The secondary data collected were analyzed using descriptive statistics, correlation and regression analysis. The descriptive statistics was used to evaluate the characteristics of the data: Mean, maximum, minimum, and standard deviation and also checks for normality of the data. The correlation analysis was used to evaluate the relationship between the variables and to check for multi-colinearity. The multiple regression analysis was used to evaluate the effect of the independent variables on the dependent variable. It reveals the degree of influence and effect the independent variables have on the dependent variable.

Presentation and Analysis of Data

Data Presentation

The details of the data used for the study is presented in the table below:

FIRMS	YEARS	NPM	WMC	LITC	PCC	GFR
Beco Petroluem product						
	2012	**0.09**	**0.13**	**0.046**	**0.455**	**0.09**
	2013	**0.11**	**0.17**	**0.015**	**0.273**	**0.11**
	2014	**0.16**	**0.12**	**0.035**	**0.273**	**0.16**
	2015	**0.26**	**0.13**	**0.091**	**0.455**	**0.13**
	2016	**0.6**	**0.189**	**0.027**	**0.455**	**0.13**
Seplat Petroleum Development Nigeria						
	2012	**0.32**	**0.13**	**0.029**	**0.273**	**0.14**
	2013	**0.2**	**0.17**	**0.011**	**0.273**	**0.2**

	2014	**0.77**	**0.12**	**0.03**	**0.55**	**0.15**
	2015	**0.28**	**0.13**	**0.009**	**0.364**	**0.28**
	2016	**0.13**	**0.13**	**0.134**	**0.363**	**0.13**
Conoil						
	2012	**0.19**	**0.13**	**0.034**	**0.455**	**0.19**
	2013	**0.21**	**0.189**	**0.015**	**0.364**	**0.21**
	2014	**0.13**	**0.15**	**0.01**	**0.273**	**0.13**
	2015	**0.38**	**0.142**	**0.05**	**0.364**	**0.19**
	2016	**0.12**	**0.07**	**0.006**	**0.273**	**0.12**
MRS Oil Nigeria plc						
	2012	**1.2**	**0.13**	**0.016**	**0.273**	**1.2**
	2013	**0.17**	**0.17**	**0.015**	**0.364**	**0.17**
	2014	**0.17**	**0.12**	**0.009**	**0.364**	**0.17**
	2015	**0.32**	**0.13**	**0.018**	**0.273**	**0.32**
	2016	**0.16**	**0.189**	**0.013**	**0.09**	**0.16**
Japaul Oil & Marine						
	2012	**0.45**	**0.17**	**0.034**	**0.272**	**0.45**
	2013	**0.48**	**0.12**	**0.014**	**0.455**	**0.28**
	2014	**0.14**	**0.13**	**0.034**	**0.545**	**0.14**
	2015	**0.38**	**0.189**	**0.051**	**0.455**	**0.38**
	2016	**0.44**	**0.15**	**0.05**	**0.364**	**0.17**
Mobile Nig plc						
	2012	**0.21**	**0.17**	**0.068**	**0.364**	**0.21**
	2013	**0.12**	**0.12**	**0.015**	**0.273**	**0.12**
	2014	**0.06**	**0.13**	**0.027**	**0.364**	**0.06**
	2015	**0.05**	**0.189**	**0.014**	**0.909**	**0.05**
	2016	**0.05**	**0.15**	**0.012**	**0.273**	**0.05**
Oando						
	2012	**0.08**	**0.12**	**0.015**	**0.455**	**0.08**
	2013	**0.11**	**0.13**	**0.013**	**0.364**	**0.11**
	2014	**0.04**	**0.189**	**0.027**	**0.364**	**0.04**
	2015	**0.13**	**0.15**	**0.064**	**0.182**	**0.13**
	2016	**0.22**	**0.142**	**0.012**	**0.364**	**0.14**
Forte Oil Plc						
	2012	**0.273**	**0.12**	**0.064**	**0.273**	**0.2**
	2013	**0.455**	**0.13**	**0.045**	**0.636**	**0.18**
	2014	**0.155**	**0.189**	**0.073**	**0.273**	**0.17**
	2015	**0.273**	**0.15**	**0.023**	**0.182**	**0.08**
	2016	**0.145**	**0.142**	**0.022**	**0.188**	**0.11**
Total Nigeria						
	2012	**0.364**	**0.12**	**0.036**	**0.31**	**0.13**
	2013	**0.136**	**0.13**	**0.055**	**0.24**	**0.11**
	2014	**0.273**	**0.189**	**0.034**	**0.41**	**0.18**

2015	**0.273**	**0.15**	**0.036**	**0.37**	**0.079**
2016	**0.455**	**0.142**	**0.01**	**0.33**	**0.087**

Source: Talkdata PLATFORM

Descriptive

The descriptive statistics result shows the mean (average) for each of the variables, their maximum values, minimum values, standard deviation and the jarque-bera normality test. Table 1. below, provides the summary of the descriptive statistics.

	GFP	***LITC***	***PCC***	***WMC***	***NPM***
Mean	***0.176229***	***0.187400***	***0.198714***	***0.211743***	***0.230143***
Maximum	***0.204000***	***0.636000***	***0.290000***	***0.370000***	***1.230000***
Minimum	***0.006000***	***0.068000***	***0.004000***	***0.040000***	***0.040000***
Std. Dev.	***0.145507***	***0.122911***	***0.170025***	***0.343592***	***0.204508***
Jarque-Bera	***7857.820***	***79.17774***	***6.549079***	***71.43039***	***328.4671***
Probability	***0.000000***	***0.000000***	***0.037834***	***0.000000***	***0.000000***

Source: Researcher's Summary of Descriptive Statistics, (2018)

The descriptive statistics result provided some insight into the nature of the data collected from the selected firms that were used in the study. Firstly, it was observed that within the period under review, the sampled firms waste management cost as a ratio of total expenses have a mean value of 0.2117, maximum and minimum value of 0.3700 and 0.0400 respectively. The large difference between the maximum value and the mean value and between the minimum value and the mean value shows that the sampled firms used for the study were dominated by either firm with high cost of waste management.

Secondly, it was observed that on the average over the period, the selected firms have gas flaring penalty of 1.1762, maximum and minimum value of 0.2040 and 0.0060 respectively, the large difference between the maximum and minimum gas flaring penalty reveals that not all oil and gas firms are involves in gas flaring. Litigation and court fines have a mean value of 0.1874, maximum value of 0.6360 and minimum value of 0.0680. The large difference between the mean value and the maximum value shows that most oil and gas firms spend an average of 9 percent of their cost on settlement of court litigation regarding environmental issues. The table shows that pollution control cost has a mean value of 0.1987, maximum value of 0.2900 and minimum value of 0.00400. The mean reveals that oil and gas firms spend a similar amount on pollution control within the period under review.

Lastly, the Jarque –bera (JB) which test for normality of the data or the existence of outlier shows that all the variables are normally distributed at 1% level of significance except pollution control cost. This means that there is no variable with outlier that may likely distort our conclusion, hence our result is reliable for drawing generalization. This also means that ordinary least square estimation techniques can be used to estimate the panel regression model.

Correlation Analysis

In examining the relationship among the variables, the study employed the Pearson correlation analysis; the results are presented in table 2.

Table 2. Pearson correlation matrix

	NPM	*LITC*	*GFP*	*WMC*	*PCC*
NPM	***1.000000***				
LITC	***0.541150***	***1.000000***			
GFR	***0.211771***	***0.114217***	***1.000000***		
WMC	***0.118444***	***0.030311***	***0.430168***	***1.000000***	
PCC	***0.197815***	***0.326732***	***0.259164***	***0.153446***	***1.000000***

Source: Researchers summary (2017) of e-view 9.5

The findings from the correlation analysis table, shows that net profit margin has a positive relationship with litigation and court fine, gas flaring penalty, waste management and pollution control cost. Litigation and court fine has positive relationship with gas flaring penalty, waste management and pollution control cost. This relationship reveals that the higher the gas flaring penalty, waste management cost and pollution control cost the higher the cost of litigation and court fine. This indicates that most of the oil and gas firms incurred green accounting cost as a result of court legal threat. Gas flaring penalty is positively related with waste management cost and pollution control cost. Waste management cost has positive relationship with pollution control cost. In checking for multi-colinearity the study noticed that no two explanatory variables were perfectly correlated. This indicates the absence of multi-colinearity problem in the model used for the analysis and also justifies the use of the ordinary least square.

Hypotheses Testing

To examine the effect of green accounting on financial performance of oil and gas firm, the study used the multiple regression analysis. The result obtained is summarizing in table 3 below.

Fixed and Random Effect Test

The summary result of multiple regression analysis is presented below. However, the study takes into cognizance the homogeneity nature of the data, hence the need for testing its effect on the data. The study therefore used Hausman effect test to select between fixed and random effect that is best to be adopted in the study. Below is the summary of the Hausman test result, details of the result is presented below:

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

Test Summary	*Chi-Sq. Statistic*	*Chi-Sq. d.f.*	*Prob.*
Cnpms-section random	*9.127202*	*6*	*0.1107*

Cnpms-section random effects test comparisons:

Variable	*Fixed*	*Random*	*Var(Diff.)*	*Prob.*
GFP	*-0.051648*	*-0.045774*	*0.000011*	*0.0765*
PCC	*0.150914*	*0.141147*	*0.000969*	*0.7537*
LITC	*-0.021635*	*-0.040358*	*0.000117*	*0.0831*
WMC	*0.163969*	*0.049276*	*0.000123*	*0.0838*

Source: researcher summary of regression analysis result using E-view 8

The Hausman test result shows a chi-square value of 9.1272 and probability value 0.1107, the chi-square value is greater than 10. Based on the result, the study accepts the random effect and rejects the fixed effect, hence we use the random effect to correct the problem of homogeneity in the pool data used for the study. Table 4 below is the summary of the regression result adjusted for fixed effect (details of the result is presented in table 5 under the appendix).

Table 3: Regression Analysis

Cnpms-section random effects test equation:
Dependent Variable: NPM
Sample: 2012 2016
Periods included: 7
Cnpms-sections included: 10

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	*0.789898*	*0.132954*	*6.549003*	*0.0000*
GFP	*0.141648*	*0.021954*	*-2.352595*	*0.0201*
PCC	*0.150914*	*0.201580*	*0.748654*	*0.4554*
LITC	*0.021635*	*0.085719*	*0.252390*	*0.8011*
WMC	*0.563969*	*0.178640*	*3.365432*	*0.0074*

	Effects Specification		
Cnpms-section fixed (dummy variables)			
R-squared	*0.633287*	*Mean dependent var*	*0.285567*
Adjusted R-squared	*0.561175*	*S.D. dependent var*	*0.163856*
S.E. of regression	*0.102607*	*Akaike info criterion*	*-1.627142*
Sum squared resid	*1.431825*	*Schwarz criterion*	*-1.346149*
Log likelihood	*123.0356*	*Hannan-Quinn criter.*	*-1.512983*
F-statistic	*28.76774*	*Durbin-Watson stat*	*2.009095*
Prob(F-statistic)	*0.000000*		

Source: Researchers summary of OLS regression Analysis from E-view 8

In table above, the study observed from the result the R. sq value of 0.6333 and R-sq(adj) 56% this indicates that all the independent variables jointly explain about 56% of the

variation in the performance of the sampled firms. Hence about 56% of the firm performance can be attributable to the green accounting. The F-statistics value of 28.7677 and its probability value of 0.0000 shows that green accounting has positive effect on performance of oil and gas firms in Nigeria statistically significant at 1% levels. The Durbin Watson statistics result was 2.0091 can be approximated to 2, this indicates the absence of autocorrelation in our model hence the model used is appropriate for the study.

Hypotheses 1: waste management cost has no significant effect on firm performance.

The analysis result in table 4.3, showed a coefficient value of 0.5639, t-value of 3.3654 and a P-value of 0.0074. The positive coefficient value of 0.5639 reveals that waste management cost positively influences the net profit margin of firms. A #1.00 change in waste management cost (reduction) will lead to about #0.56 increase of net profit margin. The t-value shows that waste management cost has a positive effect on the net profit margin of firms. The probability value reveals that the effect of waste management cost on the financial performance of selected oil and gas firms listed on Nigeria Stock Exchange is statistically significant at 1% level. Based on the analysis result, the study rejects the null hypothesis and accepts the alternate hypothesis; it therefore concludes that, waste management cost has significant effect on the financial performance of selected oil and gas firms listed on Nigeria Stock Exchange.

Hypothesis 2: Gas flaring penalty has no significant effects on performance of firms.

The regression result in table 4.3, showed a coefficient value of 0.1416, t-value of -2.3526 and a P-value of 0.0201. The coefficient value indicates that Gas flaring penalty has less than one percent influence on net profit margin. Hence, one percent increase in Gas flaring penalty may lead to about 14 percent increase in the net profit margin of oil and gas firms. The t-value reveals that gas flaring penalty has negative effect on the net profit margin. The probability value of 0.0201 shows that the effect of Gas flaring penalty on the financial performance of selected oil and gas firms listed on Nigeria Stock Exchange is statistically significant at 5% level. Based on the result, the study accepts the alternate hypothesis and rejects the null hypothesis. It therefore concludes that, Gas flaring penalty has significant effect on the financial performance.

Hypotheses 3: Litigation and fines Cost have no significant effect on the financial performance of oil and gas firms.

The result in table 3, showed a coefficient value of 0.0216, t-value of 0.2523 and a P-value of 0.8011. The coefficient value shows that litigation and fine positively influence the net profit margin of oil and gas firms in Nigeria. Also, the t-value reveals that Litigation and fines has positive effect on the net profit. The probability value reveals that the effect of Litigation and fines on the financial performance of selected oil and gas firms listed on Nigeria Stock Exchange is not statistically significant even at 10%. Based on the result, the study accepts the null hypothesis and rejects the alternate hypothesis. It therefore concludes that, Litigation and fines have no statistical significant effect on the financial performance of selected oil and gas firms listed on the Nigeria Stock Exchange.

Hypothesis 4: Pollution control cost has no significant effect on Financial Performance of oil and gas firms.

The result in table 3, showed a coefficient value of 0.1509, t-value of 07486 and a P-value of 0.4554. The positive coefficient value indicates that Pollution control cost has positive influence on the financial

performance. The t-value shows that Pollution control cost has strong positive effect on the net profit margin of firms listed in oil and gas firms. The probability value reveals that the effect of Pollution control cost on the financial performance is not statistically significant even at 10% level. Based on the result, the study rejects the alternate hypothesis and accepts the null hypothesis. It therefore concludes that, Pollution control cost has no significant effect on the financial performance of selected oil and gas firms listed on Nigeria Stock Exchange.

Discussion of Findings

The study examined the effect of green cost accounting on the Financial performance of oil and gas firms in Nigeria. The findings revealed that green cost accounting increases the overall operating cost and affect the financial performance of the firm. Waste management cost and pollution cost has positive significant effect on the performance of oil and gas firms listed the Nigeria stock exchange. This reveals that the lesser the firm incurred cost on waste management the higher its performance. This finding is in line with that Ifurueze et al (2013) and Ngwakwe (2008). Also, the more the Pollution prevention program, the lesser its net profit margin. This shows that only few firms spend much on waste management and pollution prevention programs.

The analysis further shows that Litigation and fines have negative and no statistical significant effect on the net profit margin. This reveals that cost incurred on settling court fines are minimal compared to the value of transaction under taken by firms in the sector. This finding is in line with that of Konar and Cohen (2001), Iheanacho and Ebitu (2016).

More so, Gas flaring penalty positively affect the level of Financial performance of firms in the oil and gas sectors in Nigeria. The result shows that small number of firms in the sector incurred less than the average on gas flaring penalty. This finding is contrary to the finding from the study of Nasiru, Ismail, Adamu, and Muhammad (2015).

Summary of Findings, Conclusion and Recommendations

Green accounting provides framework for reporting environmental cost and create the reputation of being environmental friendly for the firm, which can enhance their corporate financial performance. However, the extent green accounting affect the financial performance of oil and gas firms have remained an issue in research and management as various empirical have come out with contradicting evidence to that effect. The study found that selected variables have about 56 percent impact on the financial performance of oil and gas firms listed in the Nigeria stock exchange. The study also found that:

1. Waste Management Cost has positive significant effect on the financial performance of oil and gas firms quoted in the Nigeria stock exchange.
2. Gas Flaring Penalty has statistical significant effect on the financial performance of oil and gas firms quoted in the Nigeria stock exchange.
3. Litigation and Fines Cost has no statistical significant effect on the Financial performance of oil and gas firms quoted in the Nigeria stock exchange.
4. The finding also shows that pollution control cost has no statistical significant effect on the Financial performance of oil and gas firms quoted in the Nigeria stock exchange.

The study concludes that waste management costs and gas flaring penalty has significant effect on financial performance while litigation and pollution control costs had no statistical significant costs on financial performance of listed oil and gas firms in Nigeria

Based on the findings, the study recommends the following:

1. Listed firms in oil and gas sector should pay attention to waste management cost when formulating green accounting policy. As the cost has direct effect on their financial performance.
2. Managers of oil and gas firms should increase their attention towards green accounting and promote programmes that will enhance the maintenance of environmental stock in other to reduce the litigations and fines cost.
3. Firms in the oil and gas sector should increase their investment in gas flaring reduction program as this will help reduce the gas flaring penalty, build reputation as environmental friendly firm, and enhance their goodwill, which will in turn enhance their market share and performance.
4. Pollution has negative impact on the eco-system, therefore, the cost incurred in controlling pollution should be seen as social investment. The study therefore, recommends that firms should adopt environmental friendly operations like the use of improved technology that will reduce pollution.

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Appendix

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cnpms-section random	9.127202	6	0.1107

Cnpms-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
GFp	-0.051648	-0.045774	0.000011	0.0765
PCC	0.150914	0.141147	0.000969	0.7537
LITC	-0.021635	-0.040358	0.000117	0.0831
WMC	0.163969	0.049276	0.000123	0.0838

Cnpms-section random effects test equation:
Dependent Variable: NPM
Method: Panel Least Squares
Date: 07/29/18 Time: 09:33
Sample: 2010 2016
Periods included: 7
Cnpms-sections included: 10
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.789898	0.132954	6.549003	0.0000
GFp	0.141648	0.021954	-2.352595	0.0201
PCC	0.150914	0.201580	0.748654	0.4554
LITC	0.021635	0.085719	0.252390	0.8011
WMC	0.563969	0.178640	3.365432	0.0074

Effects Specification

Cnpms-section fixed (dummy variables)

R-squared	0.533287	Mean dependent var	0.285567
Adjusted R-squared	0.461175	S.D. dependent var	0.163856
S.E. of regression	0.102607	Akaike info criterion	-1.627142
Sum squared resid	1.431825	Schwarz criterion	-1.346149
Log likelihood	123.0356	Hannan-Quinn criter.	-1.512983
F-statistic	28.76774	Durbin-Watson stat	2.009095
Prob(F-statistic)	0.000000		