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Environmental Compliance Obligation And Firm Performance: A Study Of Listed Oil And Gas Firms In Nigeria.

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ABSTRACT
In order to protect the environment and to increase its sustainability, the government sets up regulatory bodies to regulate the activities of oil and gas companies on the environment. They regulate the use of the environment by oil and gas companies by monitoring them and enforcing compliance with laid down rules and regulations, therefore this study examines the relationship between environmental compliance obligation and firm performance of of listed oil and gas companies in Nigeria. The data used for this study was obtained from the annual reports published by the selected oil and gas firms listed on the nigerian stock exchange. The study was able to analyze environmental compliance obligations and its relationship with market value and profitability of upstream sector oil and gas firms listed on Nigeria stock exchange using the random effect pooled least square results from the Hausman specification test. The key findings of the study show that there is significant negative relationship between Environmental compliance obligation costs and Market value (MV) and a significant positive relationship between environmental compliance obligation and profitability (PRF). Based on this it is recommended that the government needs to make inform and sensitize citizens and investors on the need to value companies who are environmentally responsible, This will make investors in Nigeria appreciate companies who comply to environmental regulations and laws, also the government should advice investors to make environmental responsibility a priority in the checklist of things they look out for when looking for companies to invest in on the Nigeria stock exchange apart from the financial health of the company.

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I. Introduction

Industrial and commercial activities that are harmful to the environment often pose risks such as pollution of natural resources, destruction of ecosystens, harm to human health, destruction of property and loss f biodiversity. Environmental harm can be caused in many ways e.g. loss of wetlands, pollution of rivers, and degradation of land and water resources, atmospheric pollution etc. and its negative impacts are in the form of climate change, global warming, and rising sea levels leaving behind adverse impacts. (Asha, 2019). This risks of environmental harm caused by operations of companies represents the liability risk of owners and operators of such activities for consequences that cause environmental damage in the developed environmental regulatory system. As opposed to decades past, the corporate social responsibility of the company now determines how much a listed company is worth on the stock market. Companies are increasingly subject to scrutiny for how they use the environment. Corporate social responsibility is now a major determinant of how well stock of listed companies will perform in the stock market especially in developed countries like USA and UK, and because these companies are multinational companies, having their businesses in different countries, it has spread corporate social responsibility in other countries of the world. A case of the impact Elon musk had on cryptocurrency bitcoin stock in May 2021 is an example. The billionaire Elon Musk tweeted that Tesla would no longer accept bitcoin as payment due to environmental concerns about its heavy energy use, a reversal of its acceptance of the marquee cryptocurrency just two months earlier. As a result, the price of bitcoin dropped around 15 per cent. Later Musk advised bitcoin company to find cleaner energy sources and he would reverse back to using bitcoin currency for transactions in Tesla. He cited Bitcoin's high environmental cost as reason for the move. "We are concerned about rapidly increasing use of fossil fuels for Bitcoin mining and transactions, especially coal, which has the worst emissions of any fuel," Mr Musk said in a note posted on Twitter on May 12. Despite the trend toward corporate social responsibility and obligations to address environmental liabilities, there are still organizations and nations that have not fully incorporated environmental compliance obligations into their fundamental systems and nations that do not enforce environmental compliance laws. Environmental compliance means conforming to environmental laws, regulations, standards and other requirements such as site permits to operate. In recent years, environmental concerns have led to a significant increase in the number and scope of compliance imperatives across all global regulatory environments. Being closely related, environmental concerns and compliance activities are increasingly being aligned with corporate performance goals and being integrated to some extent to avoid conflicts, wasteful overlaps, and gaps. (Wikipedia). Environmental compliance obligation is a duty an organization is bound by causes resources to flow out of the organization for the benefit of people and the benefit of the environment in which it operates. Environmental compliance obligation causes resources to flow out of the firm, that is it may be in form of costs or commitment from the firm, but the responsibility of the firm towards its environmental liabilities have been known to improve firm performance in recent times. Keen (2022) explained ISO 14001 Procedure Template and stated that Compliance obligations will arise from mandatory requirements, and these include for example, applicable laws that require permits and regulations that apply to the environmental aspects of your business's activities, products and services, and their associated environmental impact.

The role of oil giants in Nigeria is gaining increasing attention as production rises and the Nigerian government's repressive response had been repressive until recently after communities which had been badly affected had continuously cried out to international communities and after several lawsuits had been filed against the multinationals. The government now enforces regulations and laws to make companies act environmentally responsibly when carrying out their operations. Manby (1999) stated that shell in particular, the largest producer in Nigeria, has faced a barrage of criticism over its activities in the country. This criticism reached a height in 1994 and 1995 when the government suppressed anti-shell protests by the Movement for the Survival of the Ogoni People (MOSOP), executing MOSOP leader and internationally known author Ken Saro-WiWa and eight other Ogoni activists in November 1995.

IGI Global (2022) defines firm performance as the power of a business to implement activities better rather than its competitors. Firm performance is a term that includes an organization's performance, how it operates, and the results of its operations.. Firm performance is a measure of performance of a company that may not only depend on the efficiency of the company itself but also on the market which it operates. (Taouab and Issor 2019). The responsibilities of companies towards their environmental compliance affects performance especially in the era of ppower given to social media. The main crux of a company's performance especially for a listed company is its performance in the stock market, A company whose share is affected in the stock market as a result of bad reputation from environmental and social irresponsibility is a company whose performance is poor. By adopting and viewing environmental responsibility as a challenge corporations are able to increase their market share, market reputation and share (Asha, 2012). Since the era of social media, where any negative report of the sustainability performance of these firms can damage their reputation and affect the company in the stock market, In other to outperform competitors, oil and gas companies in developed and developing countries try to adhere to environmental regulations and they account responsibly for their environmental liabilities in the financial statements. The business environment of this new century has undertaken several changes, creating more and more complexity and uncertainty. In this changing environment, firms face severe competitive pressure to do things better. They need to cope with a growing number of challenges arising from their environment, and also increase their ability to adapt. (Taouab and Issor 2019).

Statement of the Problem

There is an increased and pressurized demand on oil and gas firms to strictly implement and observe environmental compliance to environmental regulations and reduce environmental damage to the barest minimum. Environmental pollution differ for different countries, therefore, environmental compliance obligations and differ in accordance with geographic setting where activities take place, as one geographic setting may have additional compliance obligations in a form of local or municipal by-laws, which are not applicable to other municipalities or communities, yet in many countries it is now illegal to not comply with environmental regulations. Environmental responsibility is now being mandated in different countries through the establishment of various environmental regulatory and enforcement agencies. Governments across the regions have started getting serious on the environment performance of the corporates and the environmental policies adhere for good corporate governance (Asha, 2012). For example, in the European Union, listed companies are now required to provide shareholders with information on social and environmental risks in their annual reports. Companies that are not environmentally responsible find their market share dropping as a result of bad reputation, so positive environmental responsibility and corporate social responsibility has become an incentive that boosts the value of companies who are environmentally responsible with their environmental liabilities in developed countries. A company's responsibility to its environmental compliance does not only affect the company's stock in the stock market, it also protects its reputation before its customers which couldd improve patronage and improve profitability. Porter and Van der Linde (1995) question conventional wisdom about the effect of environmental regulation on firm performance by stating that well-designed regulation could improve a firm's competitiveness. When a company has a good standing reputation before its customers, it enhances good customer relations and also increases profitability for the firm. Selvam et al (2016) opines that the conceptualization of firm performance is based on satisfying these stakeholders. Empirically, several studies have worked on the environmental compliance and responsibility using different construct and practices. For instance; Horváthová, E. (2012) examined the intertemporal effect of environmental performance on firm performance firm level, data from the Czech Republic. Olatunde, Mary & Sulaiman (2021) focused on the effect of Environmental accounting and the corporate performance of selected quoted companies in Nigeria. Ngakwe (2008) studied Environmental responsibility and firm performance: Evidence from Nigeria and established a possible relationship between sustainable business practice and firm performance. Ou & Jiang (2023). examined the impact of environmental regulation on firm performance: evidence from the pulp and paper industry in china. From the listed empirical literature, it is therefore evidenced that previous have focused on general environmental expenditure and studies and have not thoroughly studied Environmental compliance obligations and firm performance particularly among the quoted upstream oil and gas companies in Nigera. This study would investigate relationship between environmental compliance obligations and firm performance of listed oil and gas companies in Nigeria.

Objectives of the Study

The aim of this study is to evaluate the relationship between environmental compliance obligation and firm performance of selected oil and gas companies in Nigeria. Concisely, the objectives of the study are to:

1. Determine the relationship between environmental compliance obligation and market value of listed oil and gas companies in Nigeria.
2. Ascertain the relationship between environmental compliance obligation and profitability of listed oil and gas companies in Nigeria.

Research Questions

The study will provide answers to the following research questions:

1. What is the relationship between environmental compliance obligation and market value of listed oil and gas companies in Nigeria.
2. What is the relationship between environmental compliance obligation and profitability of listed oil and gas companies in Nigeria?

Research Hypotheses

$H0_1$: There is no significant relationship between environmental compliance obligation and market value of listed oil and gas companies in Nigeria.

$H0_2$. There is no significant relationship between environmental compliance obligation and profitability of listed oil and gas companies in Nigeria.

II. LITERATURE REVIEW

Compliance, Fines and Penalty Obligations

Compliance obligations are the regulations that guide the manufacture, use, and disposal of chemicals and other harmful substances in the environment. A key component of safeguarding the environment and communities throughout the growth of oil and gas is efficient regulation. The ability to set suitable criteria, check that regulated businesses are complying, take action to guarantee enforcement, and make repairs in the event that the enforcement mechanism malfunctions are essential components of any industry's efficient regulation. According to ISO 14001, compliance obligations are legal requirements that an organisation must comply with and other requirements that an organisation has to, or chooses to comply with (Green Spark, 2018). These requirements can include laws and regulations, contracts, codes of practice and voluntary commitments like industry standards. A business must consider existing compliance regulations and the possibility that new laws will be enacted.

A firm will need to pay some expenses that shield it against future liabilities in order to guarantee compliance with existing legislation. Costs for waste treatment, managing the negative consequences of air pollution, managing chemical spills, and shutting disposal sites are all incurred by a firm. A company may face legal action from the government and litigation if it fails to control the environmental impacts of its trash. When oil and gas companies make compliance to environmental rules their focus, accidents and environmental destruction will reduce, which will also reduce the cost of compensation. Higher cost on compliance will reduce the cost of damages. In the event that it is discovered that a company is not in compliance, the expected costs of achieving compliance should be assessed. These costs can range from modest outlays necessary to conform to administrative requirements (e.g. record keeping, reporting, training, etc.) to more substantial outlays, including monitoring costs and capital costs for new equipment or changes to the facility to alter existing processes (Norbes, 2015).

Federal and state agencies jointly determine Standards that oil and gas businesses must adhere to. Federal and state governments share responsibilities for setting standards with which oil and gas companies must comply. These are some of the federal and state agencies that enforce compliance to environmental laws in Nigeria:

1. Federal Ministry of Environment (FMOE).
2. National Environmental Standards and Regulations Enforcement Agency (NEREA)
3. National Oil Spill Detection and Response Agency (NOSDRA)
4. National Emergency Management Agency (NEMA)
5. Department of petroleum resources (DPR)

Fines and penalties

A person or organization may also be subject to fines and penalties for breaking any laws or rules that are in place to protect the environment from pollution and damage. The expenses serve punitive purposes and are added to the compliance fee that a company is required to pay. Fines and penalties are usually determined by a government agency after they have ascertained the extent of non compliance and determined the impact the non compliance will have on the environment the organization operates. Odude (2021) stated that In Nigeria, The Petroleum Industry Act provides for a stringent prohibition of gas flaring by not merely penalizing it but by also making the fines payable, which is ineligible for cost recovery and is no longer tax deductible. Lott et al (1999) stated in the united states,most environmental regulatory violations can be prosecuted as criminal violations. Administrative fines for environmental violations were low—for example, averaging $10,181 in 1995,prompting arguments to increase legal penalties. Although criminal sanctions are now frequently imposed, proponents of higher penalties argue that they should be used even more (Lear, 1998; Lott et al, 1999). The authors got information on firms' estimated costs to comply with regulatory or court-imposed mandates, or to clean up environmental damage and opined that compliance and cleanup costs are substantially higher than remediation and damage awards. Compliance, Fines and penalty obligations leads to Remediation obligations and Compensation Obligations.

III. FIRM PERFORMANCE

Performance of firms is of vital importance for investors, stakeholders and economy at large. Organizational performance is one of the most hotly debated ideas about which different researchers and theorists have never reached consensus. There has various concepts and constructs to the definition of performance. Boru & Chen (2020) noted that that in the lack of any operational definition of performance upon which the majority of the relevant scholars agree, there would naturally be different clarifications and inferences opined by various people according to their perceptions. As a result, a commonly acknowledged definition of the concept looks various difficulties, which means that the possibility of any definitions and originating some standards to arrive at the desired definition is still questionable.

Performance can not be associated with any result achieved, but only with a special one. What does ″special″ mean? In the first place, net superior to what was obtained in an earlier period, in the second place, superior to results obtained by ″others″ and, in a third place, different by the objectives obviously set, in a favourably acceptance (Ion & Criveanu, 2016). Merriam-Webster dictionary defines performance as the execution of an action or something accomplished.

Performance is the achieving your goals that were given to you in the process of carrying out a duty. Organisation Performance is the achievement of objectives set as part of the integration of corporate direction.but Performance is not just getting result, but the result should be in line with organizational objectives and directions.

Michel Lebas (1995) stated that performance is subject generally to a measured result, higher than that provided for or arising from the previous results. The author also noted that Performance can be both positive and negative and relates to past results be both positive and negative and relates to past results.

Pierre et al (2011) beleives that there are various ways to measure organizational performance and they include profitability, return on investment, return on assets, sales, market share and shareholder return; This paper therefore measures firm performance with Profitability and Market Value. Investors are eager to know how the share price of a company is doing in other to determine how the market value of the firm in the long run which determines the firm value. The major purpose a business exists is to create wealth for its owners, a primary way this can be achieved is through making profit. Profitability reveals if the primary objective of a firm has been achieved.

Market Value

Market value also known as market capitalization of a company is the price at which the shares of a company is sold in a fair and open market, or the value an investor attaches to a particular company or business asset. Market value is the value of an asset or company in financial markets by market participants. Market value is determined by the market's assessment of future earnings streams that company assets can generate while book value equals the amount paid for assets when acquired (House & Benefield, 1995). Bogue & Elwood (1984) argue that market book value is an indicator of successful firm value enhancement. Essentially, this ratio corresponds to expected future payments/past resource commitments and serves as a good indicator of the NPV of future cash flows generated by inflation and risk from an investor's perspective.

Profitability

Profitability is the measure of the financial return a company makes from its operational activities. Profitability of a company is a picture that measures how well the company can generate profits from operational processes that have been implemented to ensure the continuity of the company in the future (Manoppo & Arie: 2016). Profitability aids in the achievement of the other objectives an organization aims to achieve. Profitability generally sums up to the firm's ability to generate profits from their activities. The primary objective of the firm is the maximization of profit. Profit is driven by revenues and costs. Thus a firm can maximize profit by maximizing revenues and/or minimizing costs. In addition to having a substantial impact on the attainment of the company's other financial objectives, profitability is frequently regarded as a crucial requirement for the long-term survival and success of businesses. Based on the signal theory, the profits obtained by the company will be a signal from management to show the prospects of a company that can be seen based on the level of profits obtained by the company, so that profitability affects the value of the company, it is supported by research (Yanti & Darmayanti 2019: Reschiwati et al, 2020).

IV. ENVIRONMENTAL COMPLIANCE OBLIGATIONS AND MARKET VALUE

Dasgupta, Laplante, and Mamingi (1998) found that capital markets are sensitive to information about the environmental performance of firms, information such as level of compliance to environmental regulations and pollution control. Epstein & Young (2006) opined that properly adopted environmental responsibilities for environmental obligations should improve the firm's reputation positively which would improve the value of the firm's product or service. customers patronize a firm which they perceive the product or service to be valuable, This will further improve the value of shareholder's investment. Companies that have good environmental performance will receive a positive response from investors, so that the company's value can be increased through an increase in share prices. (Ologbenla, 2021; Fauzi, 2022).

V. ENVIRONMENTAL COMPLIANCE OBLIGATION AND PROFITABILITY

Environmental specialists believe that discretionary investment opportunities such as compliance to environmental obligations do not only offer important advantages in reducing waste and pollution, but may also increase long-term profitability. When consumers of the company's produce perceive a company to environmentally destructive, it may dissuade them from purchasing the company's products or services, but when consumers perceive a company to be environmentally responsible, it may encourage to patronize the company more which thus leads to increase in sales. A company that is environmentally responsible will have increased good reputation, and good reputation increases sales and profitability for business. Porter and Van der Linde, (1995) believe that environmental investments not only pay for themselves but also produce a profit in most cases, while improving environmental quality at the same time .They believe that environmental insensitivity lowers a firm's sales and increases its cost.

VI. Theoretical Review .

Stakeholders Theory

According to Bassey, Sunday & Okon (2013), the basic proposition of the stakeholder's theory is that the firm`s success is dependent on the successful management of all the associations that it has with its stakeholders. The stakeholders‟ theory proposed an increased level of environmental awareness which creates the needs for companies to extend their corporate planning to include the non-traditional stakeholders like the regulatory adversarial groups in order to adopt a changing social demand (Trofman, 1999). The main focus of the stakeholders‟ theory in environmental accounting is to address the environmental cost elements and value in the inclusion of a firm's financial statement. Stakeholders are a group of people that an organization cannot do without there is a need to recognize and satisfy their interest.

Legitimacy Theory

Legitimacy theory was derived from the concept of organizational legitimacy, and it was propounded by Dowling and Pfeffer in 1975. Legitimacy theory posits that organizations continually seek to ensure that they operate within the bounds and norms of their respective societies. The theory is hinged on the assumption that accounting for sustainable development and the associated role of management accounting in sustainable development are used as communication mechanisms to inform and/or manipulate the perception of the entity's actions (Mistry, Sharma & Low, 2014). The objectives of this theory can be identified as describing the relationship between a company and the community; explaining companies' motivations for social and environmental disclosures presenting how companies can use legitimacy strategies and determining the impacts of social and environmental disclosures on the public and society.

Empirical Review

Hassan (2011) examined the effect of environmental expenditure on the performance of quoted Nigerian oil companies. The result reveals that environmental expenditure has significant effect on the performance of quoted oil companies in Nigeria.

Ou & Jiang (2023). examined the impact of environmental regulation on firm performance: evidence from the pulp and paper industry in china. The authors examined the effects of chemical oxygen demand (COD) special emission limit (SEL) on firms' production activity and market performance in the pulp and paper industry in the Lake Tai area in China. The result suggested that the impact of SEL on production and market performance varies with firm ownership, firm size, and target market.

Bhat (1999) paper examined the relationship between environmental compliance and financial performance of large US companies. The environmental performance was measured in penalties assessed for violations of environmental regulations. The financial performance was represented by the profit margins. The developed in this suggested that the degrees of environmental compliance have a positive influence on the profit margins.

Horváthová, E. (2012) examined the intertemporal effect of environmental performance on firm performance firm level, data from the Czech Republic. The results suggested that while the effect of environmental performance on financial performance is negative for environmental performance lagged by 1 year lag, it becomes positive for 2 years lag.

Olatunde, Mary & Sulaiman (2021) focused on the effect of Environmental accounting and the corporate performance of selected quoted companies in Nigeria. The findings of the result showed that there was a significant positive relationship between environmental accounting and return on capital employed (ROCE) and net profit margin (NPM) return on equity (ROE) and return on assets (ROA).

Ngakwe (2008) studied Environmental responsibility and firm performance: Evidence from Nigeria and established a possible relationship between sustainable business practice and firm performance. The paper concludes that, within the Nigerian setting at least, sustainability affects corporate performance and sustainability may be a possible tool for corporate conflict resolution as evidenced in the reduction of fines, penalties and compensations.

VII. Research Methodology

To evaluate whether Environmental compliance obligation has any impact on firm performance, we compare performance of firms who disclose environmental liabilities with the environmental liabilities incurred. The research designed used in this study is ex-post facto research deals with the determination, evaluation and explanation of past events essentially for the purpose of gaining a better and more reliable predicttion of the future (Amahalu et al, 2015).

The population is therefore made up of upstream oil and gas companies listed on the floor of the Nigerian Exchange Group as at June 2022 and have consistently submitted their annual reports from 2005 to 2020. A sample size of five (5) listed upstream oil and gas companies in the upstream sector were selected. The study makes use of secondary data, covered a period of 16 years (2005 to 2020) from the Annual reports and accounts of listed Industrial goods companies in the Nigerian Stock Exchange. The statistical tool for the Hypothesis was the ordinary least square regression method and E-view (10.0) version.

Model Specification

In order to analyze a relationship between different variable, the data were subjected to multiple regression analysis through the use of economic model. The model is specified below:
Dimension of compliance =f(compliance obligation)

Model 1: Based on Hypothesis one, the explicit form of the model in equation is expressed as:

$$MV = \phi_0 + \phi_1 CMO + \varepsilon_i \qquad \text{(i)}$$

where:
CMO = Compliance Obligation
MV = Market Value
ϕ_0 = Intercept

ϕ_1 = coefficient of CMO
ϵ = stochastic error term
Model 2: Based on Hypothesis two, the explicit form of the model in equation is expressed as:
$PRF = \beta_0 + \beta_1 CMO + \varepsilon_i$ (ii)
where:
CMO = Compliance Obligation
PRF = Profitability
β_0 = Intercept
β_1 = coefficient of CMO
ϵ = stochastic error term

VIII. Data Analysis and Results

The data for the study comprises dimension of compliance obligation variable (compliance obligation cost) and firm value which is measured by (market value and profitability).

Descriptive Statistics

Descriptive statistics gives a presentation of the mean, maximum and minimum values of variables applied together with their standard deviations obtainable. The table below shows the descriptive statistics for the variables applied in the study.

Table 1:Summary of Descriptive Statistics

	CMO	MV	PRF
Mean	2119572.	1.00E+11	-194014.0
Median	1767625.	6.79E+10	2573781.
Maximum	8815810.	4.33E+11	19576228
Minimum	711.0000	8.44E+09	-66497549
Std. Dev.	2238959.	8.91E+10	12461421
Skewness	1.594000	2.067601	-3.476928
Kurtosis	5.048729	7.022113	16.84406
Jarque-Bera	186.6883	432.6048	3120.184
Probability	0.000000	0.000000	0.000000
Sum	6.61E+08	3.12E+13	-60532376
Sum Sq. Dev.	1.56E+15	2.47E+24	4.83E+16
Observations	312	312	312
Cross sections	3	3	3

Source: E-View 10 Output (2023)

The descriptive statistics of every variable used in the study are shown in Table 1, and it is clear from the findings that every variable's reported mean value was positive except profitability. This suggests that for the majority of the studied years, all of the variables used have shown an increasing trend. The maximum value for compliance obligation cost(CMO) during the period under study was 2119572 million while the minimum, which is the lowest 711 million, indicating that the compliance obligation cost were decreasing at some point for some of the firms in the oil and gas sector. The mean for market value (MV) and Profitability (PRF) 100,000,000,000 and -194014 respectively, with kurtosis values higher than 3, to 7.022 and 16.84. Furthermore, the Jarque-Bera probability of all variables with values less than the 5% level of significance ($P < 0.05$) demonstrates a statistically significant deviation from normality, and the total observation is at 312.

Test of Hypothesis One

H_{01}: There is no significant relationship between environmental compliance obligation and market value of listed oil and gas companies in Nigeria.

Table 2: Panel Least Square Regression Analysis between Environmental Compliance Obligation Cost and Market Value of listed Oil and Gas Companies

Cross-section random effects test equation:				
Dependent Variable: MV				
Method: Panel Least Squares				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.27E+11	6.62E+09	19.19488	0.0000
CMO	-12800.21	2149.871	-5.953943	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.703517	Mean dependent var		1.00E+11
Adjusted R-squared	0.691837	S.D. dependent var		8.91E+10
S.E. of regression	8.49E+10	Akaike info criterion		53.18294
Sum squared resid	2.21E+24	Schwarz criterion		53.24292
Log likelihood	-8291.538	Hannan-Quinn criter.		53.20691
F-statistic	8.862360	Durbin-Watson stat		1.791251
Prob(F-statistic)	0.000001			

E-Views 10.0 Regression Output, 2023

The result above showed an above average relationship between Environmental Compliance Obligation Cost and firm performance proxied by market value (MV) with the R- Square of 0.703517, and an adjusted R-Square of 0.691837. The value of the R- Square indicates that about 70.4% variations in firm performance (MV) are caused by the Environmental Compliance Obligation Cost only, while 29.6% of the variation in the firm performance is determined by other variables not included in the model. The F- statistics (8.862) signifies that the overall equation is significant at 5% level, indicating that the model is fit to be used for interpretation. The Durbin-Watson statistic of 1.7912 was recorded, which indicates there is evidence of minimal autocorrelation of the residuals in the model. The result shows that CMO has a positive coefficient of -12800 which indicates that additional increase in Environmental Compliance Obligation Cost (COM) will significantly decrease market value performance of the listed oil and gas firms in Nigeria. This agrees with the study of Chukwu et al (2020) who investigated environmental liability estimates and equity value of oil firms in Nigera and found that investors in Nigeria's oil and gas firms negatively value environmental liability estimates.

H_{02}. There is no significant relationship between environmental compliance obligation and profitability of listed oil and gas companies in Nigeria.

Table 3: Panel Least Square Regression Analysis between Environmental Compliance Obligation Cost and Profitability of listed Oil and Gas Companies

Cross-section random effects test equation:				
Dependent Variable: PRF				
Method: Panel Least Squares				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-3268293.	927537.3	-3.523625	0.0005
CMO	1.470405	0.301119	4.883144	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.700372	Mean dependent var		-125424.2
Adjusted R-squared	0.658567	S.D. dependent var		12313699
S.E. of regression	11947672	Akaike info criterion		35.44547
Sum squared resid	4.50E+16	Schwarz criterion		35.50435
Log likelihood	-5666.276	Hannan-Quinn criter.		35.46898
F-statistic	5.961274	Durbin-Watson stat		1.687446
Prob(F-statistic)	0.000123			

E-Views 10.0 Regression Output, 2023

In the estimated regression line as indicated in Table 3, the coefficient of multiple determinations (R^2) is 0.700372. This indicates that about 70% of the total variations in profitability (PRF) is explained by the variations in the independent variable (CMO), while the remaining percentages of the variation in the model is captured by the error term. This indicates that the line of best fit is highly fitted. The standard error test is applied in order to measure the size of the error and determine the degree of confidence in the validity of the estimates and it can be concluded that the estimate is statistically significant. The value of F-statistic is 5.9613 and the value of the probability of F-statistic is 0.0000. This result implies that the overall regression is positive and statistically significant at 5% level of significance.

With respect to the second hypothesis (which is a direct consequence of the second objective of the study), the findings also revealed that the Environmental Compliance Obligation Cost (CMO) has a positive and significant effect on the Profitability of oil and gas companies in Nigeria. This also implies that Environmental compliance is a significant and independent predictor of Profit after tax. The empirical evidences therefore suggest that environmental compliance obligation builds positive reputation for quoted oil and gas companies in Nigeria, there is likely to be a corresponding increase in the profitability position of the firms. The null hypothesis is therefore rejected. This agrees with the finding of Bhat (1999) that degrees of environmental compliance have a positive influence on the profit margins.

Limitation to the study

Majority of the big upstream oil and gas companies that operate in Nigeria do not publish their financial statement on the Nigeria stock exchange , this made it impossible to include them in the sample of the study.

Summary of the Findings

The aim of the study was to investigate the relationship between environmental compliance obligation and firm performance of oil and gas firms listed on Nigeria stock exchange.

The findings are summarily listed below:

1. Environmental compliance costs incurred by oil and gas firms in Nigeria in has a significant negative relationship with market value of listed upstream oil and gas companies in Nigeria.
2. Environmental compliance cost has a significant positive relationship on profitability of listed upstream oil and gas companies in Nigeria.

IX. Conclusion

Compliance to some environmental laws and regulations have become mandatory for upstream oil and gas companies in Nigeria, in the process of compliance, costs are incurred to maintain compliance and to protect the environment in other to avoid higher costs of remediation, restoration and litigation. These costs are disclosed in the financial statements published. The analysis of this study reveals that environmental compliance costs incurred by oil and gas firms listed on the Nigeria stock exchange has a significant negative relationship with the market value of these companies. The reason for the negative relationship is not known. It could be that the companies have a poor relationship with the environment it operates or maybe investors in Nigeria do not value environmental compliance, and there is another key component Nigeria investors look out for. The study also revealed that environmental compliance obligation has a positive and significant relationship with profitability of oil and gas companies in Nigeria. This could be as a result of positive reputation built by environmental compliance. Another reason could be because of positive relationship with the regulatory bodies and the environment the company operates thereby reducing sanctions, litigation and distruption to the company's activities and gaining tax holidays, tax credits and good customer relationship.

The government needs to include environmental compliance in one of the checklists that investors need to look for. The government should help promote companies that are environmentally responsible on the Nigeria stock exchange. This study concludes that there is a positive and significant relationship between environmental compliance obligation and profitability variable of firm performance, and a negative relationship between environmental compliance obligation and market value variable of firm performance of oil and gas firms listed on Nigeria stock exchange.

X. Recommendations

Based on the findings and conclusion of this study, the following recommendations are put forward:

1. The government needs to make inform and sensitize citizens on the need to value companies who are environmentally responsible. The citizens should be made aware of the need to appreciate companies who are environmentally compliant because if this becomes a culture, it will make investors in Nigeria appreciate companies who are comply to environmental regulations and laws.

2. The government should advice investors to make environmental responsibility a priority in the checklist of things they look out for when looking for companies to invest in on the Nigeria stock exchange apart from the financial health of the company.
3. Despite the compliance costs incurred, it seemed the companies are negatively valued in the stock exchange market, oil and gas companies should ensure they have a positive relationship with the environment they operate
4. Oil and gas companies in Nigeria should should ensure they operate responsibly and sustainably by not damaging the environment and society in the cause of cause of carrying out their activities because even if they comply to environmental rules and yet damage the environment, they will have a negative reputation.
5. The government should ensure ministries and regulatory bodies enforcing and monitoring the activities of oil and gas companies are actively carrying out their duties.
6. Oil and gas companies should ensure that environmental costs are recognized and measured in IFRS standard or other applicable standard in their published annual financial statement.

Areas For Futher Research

This study only accessed impact of compliance obligation while there are other environmental obligations which can result in other environmental cost that oil and gas companies can incur other than compliance costs.

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