



## Evaluating the Impact of Environmental Costs on the Market Values of Oil and Gas and Communication Firms in Nigeria

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### Abstract

*This study evaluates the impact of Environmental Cost on Market Value of publicly listed oil and gas and communication firms in Nigeria. The specific objectives are to assess the impact of environmental investment costs on market capitalization, examine the impact of environmental remedial costs on market capitalization and determine the impact of environmental law compliance and penalty costs on market capitalization of publicly listed oil and gas and communication firms in Nigeria. The study adopted an ex-post-facto research design which made use of secondary data obtained from the annual reports and accounts of the selected oil and gas, and communication firms under study. The period for the study spanned from 2007 to 2021. The study utilized the Ordinary Least Squares (OLS) multiple regression model for data analysis. The analysis results indicated a positive and significant impact of environmental investment costs on the market capitalization of the selected oil and gas and communication firms in Nigeria. However, environmental remediation costs were found to have a negative and nonsignificant effect on market capitalization. Conversely, environmental law compliance and penalty costs exerted a significant and positive influence on the market capitalization of these selected firms in the oil and gas and communication sectors in Nigeria. The implication of these findings underscores the importance of integrating environmental investment costs into the strategic considerations of publicly listed oil and gas and communication firms in Nigeria, as it positively affects their market capitalization. Furthermore, the research highlights the need for prudent management of environmental remedial costs and demonstrates the potential benefits of strong environmental law compliance and penalty cost adherence on market capitalization in these industries. In conclusion, this study underscores the growing importance of environmental considerations in the financial performance of oil and gas and communication firms. Companies that prioritize environmental investments and compliance may experience enhanced market values. On the other hand, overlooking environmental remediation costs can potentially hinder market capitalization. Recommendations stemming from these findings include urging firms to invest in environmentally responsible practices, adhere to environmental laws, and consider innovative strategies to mitigate and remediate environmental damage. By doing so, these companies can secure their financial well-being while contributing to a sustainable future.*

**Keywords** Environmental Costs; Investment Costs; Remedial Costs; Law Compliance Cost and Market Value

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## **Introduction**

In the context of Nigeria, where the operations of oil and gas and communication firms have often impacted the environment hazardously, there is a growing awareness of the need to consider the environmental consequences for these companies. This recognition goes beyond just understanding the significance of these impacts on the market values of such firms; it also encompasses a deeper understanding of how corporate actions affect the environment in which they operate. This broader perspective is essential for a more comprehensive evaluation of the environmental and economic dynamics at play in these industries. This growing awareness has led professionals such as accountants, auditors, and managers, who play pivotal roles in economic development, to recognize the profound influence of environmental costs on market value. Environmental preservation, sustainable corporate practices, and the accurate assessment of environmental costs and associated liabilities have become prominent issues in academic discourse, national policy agendas, and corporate strategies (Omaliko et al., 2020). Environmental degradation stemming from activities like bush burning, deforestation, and the depletion of natural resources presents formidable challenges to businesses, particularly in developing nations. The environmental cost debate has been fueled by mounting evidence of ecological degradation resulting from economic progress (Worimegbe & Temitope, 2022). While industrialization, which gained momentum in the late 18<sup>th</sup> century, brought substantial economic benefits, it also introduced factory pollutants and intensified land use, contributing to adverse effects on the natural environment.

Industrial emissions have contributed significantly to climate change and land degradation. Overpopulation and heightened human activities have further exacerbated these negative consequences, impacting environmental sustainability and the potential of future generations to meet their fundamental needs. In response to these challenges, companies are now compelled to ensure the maintenance of a safe and healthy operational environment. This necessitates the integration of environmental externalities into accounting frameworks to achieve eco-efficiency and prioritize human well-being over profit maximization (Onyali, Okafor & Egolum, 2014). Increased global awareness and advocacy efforts have prompted the evaluation and estimation of environmental costs associated with resource depletion, energy consumption, and other factors. In Nigeria's Niger Delta region, the operations of oil and gas companies have precipitated political crises, environmental harm, and adverse effects on life expectancy and the ecosystem. There is an imperative need for comprehensive approaches that integrate environmental considerations into the planning and decision-making processes of the oil and gas industry.

Corporate climate reporting plays a vital role in promoting corporate responsibility and transparency concerning industrial emissions. The deleterious impact of human and industrial activities on biodiversity and the environment has led to the establishment of laws and regulations mandating the disclosure of information related to industrial emissions and environmental damage (Earnhart et al., 2007). Regulatory agencies strive to enforce compliance with local and international environmental laws through monitoring and enforcement measures. Nevertheless, existing regulatory solutions designed and enforced by public agencies often fall short in addressing the complexities of contemporary environmental challenges. International Financial Reporting Standards (IFRS) provisions related to environmental issues are not universally adopted as environmental accounting standards for companies. Within Nigeria, corporate environmental sensitivity and regulatory compliance remain weak, and environmental reporting policies are predominantly voluntary.

The role of accounting in addressing environmental issues is paramount. Traditional accounting practices have often failed to fully incorporate environmental accounting, which entails the measurement of resource usage and the assessment of its impact on the environment. Environmental cost valuation involves the consideration of both monetary and non-monetary impacts on companies due to activities that affect environmental quality. These costs encompass internal ones, comprising direct and indirect expenses, and external costs that relate to environmental damage outside the firm and social costs. The move towards environmental cost accounting has been motivated by the inadequacy of conventional accounting systems in providing comprehensive information on environmental matters. Given the pivotal role of accountants as stakeholders, it is essential that they stay well-informed about issues affecting business management, accounting practices, audit procedures, and disclosures. The market value of companies is significantly influenced by environmental costs, making it imperative for oil and gas and communication

sector firms to address environmental externalities in order to ensure sustainability and consistency in their operations (Worimegbe & Oyewole, 2020).

Sustainability necessitates proactive actions, innovation, and a commitment to environmental stewardship. Companies that prioritize environmental concerns are perceived as leaders in innovation and good management, thereby enhancing their market value. While the relationship between corporate environmental costs and market value remains a topic of debate, proponents argue that environmental disclosure, despite potential financial impacts, is an investment in sustainable practices. Market capitalization is a widely used metric for assessing a company's market value, but the connection between environmental costs and market value remains a subject of ongoing discussion. Understanding the underlying reasons that drive businesses to invest in environmental matters despite potential financial implications is of paramount importance.

### **Statement of the Problem**

Environmental issues have gained prominence globally, and Nigeria is no exception. Increased attention to climate change, resource depletion, and pollution necessitates an evaluation of how businesses respond to these challenges, especially in resource-intensive sectors like oil and gas and communication. Ideally, there should be a robust acknowledgment of the impact of environmental costs and environmentally related information on the market value of oil and gas, as well as communication firms in Nigeria. This would involve the effective integration of environmental concerns into corporate decision-making processes and the adoption of accounting frameworks for disclosing industrial environmental externalities.

The existing problem is characterized by the lack of regulatory compliance, limited corporate environmental sensitivity, and the absence of comprehensive environmental reporting policies within Nigeria. This creates challenges in addressing environmental concerns and assessing the relationship between corporate environmental costs and market value.

If these problems remain unaddressed, Nigerian oil and gas and communication companies may face continued market volatility due to environmental factors. Additionally, there could be a failure to meet global sustainability goals, leading to reputational and operational risks. Therefore, resolving these issues is vital for both corporate sustainability and market stability. To the best of our knowledge this study is unique because it stands out as pioneering within the field of study in Nigeria, however, it has not been given adequate attention. Against this backdrop this study seek to evaluate the impact of environmental costs on the market values of oil and gas and communication firms in Nigeria.

### **Objectives of the Study**

The broad objective of the study is to evaluate the impact of environmental costs on market value of publicly listed oil and gas and communication firms in Nigeria while the specific objectives of the study are to:

- i. Assess the impact of environmental investment costs on market capitalization of publicly listed oil and gas and communication firms in Nigeria.
- ii. Examine the impact of environmental remedial costs on market capitalization of publicly listed oil and gas and communication firms in Nigeria.
- iii. Determine the impact of environmental law compliance and penalty costs on market capitalization of publicly listed oil and gas and communication firms in Nigeria.

### **Research Questions**

The study provided answers to the following research questions.

- i. To what extent have environmental investment costs affected the market capitalization of publicly listed oil and gas and communication firms in Nigeria?
- ii. To what extent have environmental remedial costs affected the market capitalization of publicly listed oil and gas and communication firms in Nigeria?

- iii. To what extent have environmental law compliance and penalty costs affected the market capitalization of quoted oil and gas, and communication firms in Nigeria?

### **Statement of Hypotheses**

The hypotheses stated in null form are denoted by ( $H_0$ ):

- i.  $H_{01}$ : Environmental investment costs have no positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria
- ii.  $H_{02}$ : Environmental remedial costs have no positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria
- iii.  $H_{03}$ : Environmental law compliance and penalty costs have no positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria

### **Significance of the Study**

This study work will be of benefits to the following categories of users:

#### **Management**

This study aims to investigate the interplay between environmental costs and market value, offering valuable insights to the management of the sampled firms. By delving into the intricacies of environmental costs, this research endeavor will enable managers to enhance the precision of cost estimation and product pricing. Moreover, it will aid in identifying the financial strengths and weaknesses of the firm, determining the need for additional financing, and selecting the most suitable financing methods.

#### **The Government**

The study will be of immense benefit to the Federal, State and Local governments on policy formulations, especially in the area of environmental laws and regulations. This study will also help the government to recognize environmental costs as allowable expenses in calculating the government taxes from the operating profit of the oil and gas, and communication firms in Nigeria. Lastly, it will be significant to the government in obtaining statistics to enhance environmental and social awareness reporting.

#### **Researchers, Students and Body of Academia**

The research conducted in this study will lay the foundation for future investigations by scholars into environmental costs and related environmental information. Students conducting further research on the same topic will also find this work to be a valuable source of information for their studies. Moreover, this empirical study significantly contributes to the existing literature in this field of study. The findings of this research on environmental costs and market values of quoted oil and gas, and communication firms will have a positive impact on enhancing the teaching and learning of environmental disclosure in our tertiary institutions.

#### **Oil and Gas, and Communication Sector**

It helps the sampled firms to understand the need to disclose environmental related information in financial statements and reports. They will also get to know the need to adopt a uniform method of reporting and disclosing environmental issues for the purpose of control and measurement of market value.

#### **Scope of the Study**

The study focused on environmental costs and market value of quoted oil and gas, and communication firms in Nigeria. The work concentrated on three major types of environmental costs: Environmental investment cost,

Environmental remedial cost and Environmental law compliance and penalty cost. These costs encompass all expenses associated with addressing environmental damage and safeguarding the environment. Firm's market value depicts the dependent variable for the study and was measured by market capitalization. The corporate firms studied were quoted on the Nigerian Exchange Group; they include the oil and gas, and communication firms. The study covered a period of fifteen years from 2007 to 2021.

## **Review of Related Literature**

### **Conceptual Review**

#### **Environmental Costs**

Environmental costs hold diverse meanings within the environmental sphere. Muyiwa and Olubunmi (2021) suggests that environmental costs, also known as potential costs, involve identifying, compiling, estimating, and analyzing environmental cost information to make better decisions within a company, thereby fulfilling corporate environmental objectives. Mohamed (2002) points out that environmental cost savings may not be easily identifiable as they may be hidden within overhead accounts. Environmental costs encompass identifying, measuring, and allocating ecological costs and integrating them into business practices, including the communication of such information to the company's stakeholders.

Ndifon et al., (2014) also expresses the view that environmental cost refers to the expenses incurred to ensure a company's activities do not harm the environment or that any damage is properly addressed. Various types of environmental costs are often difficult to identify as they are embedded in overhead expenses. Measuring environmental costs has become a critical issue for many companies due to increasingly strict national regulations and more severe penalties or fines. Many environmental costs can be significantly reduced or eliminated through various business decisions, such as operational and housekeeping changes, investment in cleaner production, and process/product redesign. Accounting for environmental costs and performance can support an organization in developing and operating an overall Environmental Management System (EMS) and achieving ISO 14000 accreditation. For the aforementioned reasons, the researcher believes that accounting should be responsible for measuring, evaluating, and disclosing environmental performance and market value in financial statements or their attachments. While monetizing environmental issues may not yield absolute accuracy, economists and accountants must provide the best estimates based on the current level of knowledge and techniques used.

#### **Environmental Investment Costs**

Environmental investment costs refer to the capital expenditures made by a company for environmental conservation purposes. These costs help in obtaining information related to capital invested in environmental activities (Clause & Rikhardson, 2008). Communication firms employ various environmental investment tools, such as establishing "carbon-neutral" companies that purchase enough carbon offsets to balance carbon emissions, and investing in cloud computing applications (Choi, 1998). Similarly, oil and gas firms require advanced technologies, leading to substantial procurement costs, starting from geophysical surveys to drilling and construction of rigs. Waste management issues may involve procurement of recycling equipment, representing significant capital outlay (Omaliko, Okeke & Obiora, 2021).

#### **Environmental Remedial Costs**

Remediation involves costly activities, including excavation, drilling, construction, pumping, soil and water treatment, and monitoring. It also includes response costs borne by regulatory authorities. Remediation costs can also include alternate drinking water supplies for affected community residents, and in some cases, the purchase of properties and relocation expenses. The technical studies and expenditures of management, professionals, and legal resources add to the overall cost of remediation (Omaliko, Uzodimma & Ogbuagu, 2018).

### **Environmental Law Compliance and Penalty Costs**

Failure to comply with relevant environmental regulations can lead to potential civil or criminal fines, penalties, or expenses associated with agreed-upon projects as part of a non-compliance settlement (Jonathan et al., 2005). These punitive measures and deterrents are separate from the costs incurred in achieving compliance. Fines, penalties, and expenses for supplementary environmental initiatives can vary widely, ranging from small sums to several million dollars per violation (Kayode, 2011). Civil penalties are often assessed to be at least equal to the costs saved through non-compliance, thus removing any financial incentive to ignore the law (Ahmed, 2019).

### **Market Capitalization**

Market capitalization, or "market cap," represents the aggregate market value of a publicly traded company's outstanding shares. It is calculated based on the current market price of its shares and the total number of outstanding shares or the company's "float" (Dias, 2013). Market capitalization is used to compare and categorize the size of companies among investors and analysts. The capital market has experienced significant growth in recent decades, with more companies turning to it for risk capital and diversification (Dias, 2013). Market capitalization serves as a significant market indicator, reflecting the value of shares and the overall worth of companies. Dias, also provided insights into the size and value of companies operating within the market and is often used as a measure of the market's performance and attractiveness to investors.

### **Market Values**

Market value refers to the worth of an asset or company on the financial market, as determined by market participants. It is commonly used to represent the market capitalization of a company, calculated by multiplying the current market price by the number of outstanding shares. The market value of a company is a significant measure of its shareholders' wealth (McMillan et al., 2019). Various methods, such as accounting net worth, capitalized value, and deductive application of human judgment, can be used to determine the value of a company. However, market value, which considers all outstanding shares, is considered the most reliable and straightforward way to assess a company's worth (Bessong et al., 2020).

Markets value corporate sustainability performance, using a company's environmental performance as a signal of desirable attributes like integrity capacity. However, a signaling conflict can arise when a firm belongs to an organizational form with a reputation for being unethical, which may impact the value placed on the firm's environmental performance (Basuki & Irwanda, 2018).

### **Oil and Gas Firms**

Oil and gas firms are involved in various global processes, including exploration, extraction, refining, transportation, and marketing of petroleum products. The Nigerian oil and gas industry has been vibrant since the discovery of crude oil in 1956, with multinational corporations dominating it initially. Local participation increased with the implementation of Nigerian Content Directives and the Nigerian Oil and Gas Industry Content Development (NOGIC) Act, which promotes the use of Nigerian resources in oil-related activities. The industry is broadly divided into the upstream sector (exploration and production), downstream sector (processing, storage, marketing, and transportation), and midstream sector (processing, storage, marketing, and transportation of crude oil, gas, gas-to-liquids, and liquefied natural gas) (Richard, 2014).

### **Communication Firms**

The Nigerian telecommunications sector has a history dating back to British colonial times, with the establishment of a post office in Lagos in 1851 and the commissioning of a submarine cable to link Lagos and London in 1856. The Nigerian Communications Commission (NCC) was established in 1992 to regulate telecommunications, leading to the licensing of private telephone service providers and the end of the monopoly of NITEL. The deregulation of the sector resulted in a significant increase in telephone and internet penetration, along with substantial investment



and growth in the ICT sector. Nigeria's telecommunications industry is currently composed of various operatives, including government bodies, private operators, and service providers (Dabson & Khan, 2020).

### **Theoretical Review**

This study on evaluating the impact of environmental costs on the market values of publicly listed Oil and Gas, and Communication firms in Nigeria was anchored mainly on the Triple Bottom Line Theory by John Elkington (1994).

### **Triple Bottom Theory**

The concept of the Triple Bottom Line (TBL) was introduced by John Elkington in his book "Enter the Triple Bottom Line" in 1994. The TBL framework encompasses three dimensions of performance: social, environmental, and financial. Unlike traditional reporting frameworks, the TBL takes into account ecological and social aspects, which can present challenges when determining appropriate measurement methods.

Elkington expanded upon the concept of the TBL to encourage a more comprehensive approach to measuring impact and success, shifting away from a solely financially-focused accounting system. Previously, businesses primarily focused on their financial bottom line. However, with the adoption of the TBL theory and its application, some businesses started recognizing the interconnectedness between environmental well-being, social welfare, and the financial prosperity and resilience of an organization.

Today, organizations understand that success cannot be solely measured through profit and loss statements. Instead, to gain a holistic understanding of their operations and their relationship with the environment, community, and economy, organizations must account for all costs associated with their business activities, going beyond mere compliance. Certified B Corporations play a role in bringing the concept of the TBL, as originally envisioned by Elkington, to life. B Corporations are a relatively recent type of business entity that is legally obligated to consider the impacts on all stakeholders, including employees, customers, suppliers, community, and the environment. Their objective is to foster a community of influential leaders who advocate for the global adoption of business as a force for positive change.

The Triple Bottom Line (TBL) theory broadens the criteria for measuring business success by encompassing contributions to environmental health, social well-being, and a just economy. These three dimensions are commonly referred to as the "three P's": people, planet, and prosperity. The fundamental premise of the TBL theory is that companies should prioritize social and environmental concerns on par with financial profitability. Rather than focusing solely on financial outcomes, TBL theory advocates for three bottom lines: profit, people, and planet. This approach holds significant importance as it has implications not only for business and corporate leaders but also for social communities and the environment. By embracing this accounting framework, a more sustainable future can be envisaged, which duly considers both social and environmental sustainability.

### **Empirical Review**

Muyiwa and Olubunmi (2021) studied the determinants of environmental disclosure of listed oil and gas firms in Nigeria from 2007 to 2018. The study applied a census sampling method, with a total population of fifteen (15) oil and gas firms listed on the Nigerian Stock Exchange as of 31 December 2018. The researchers employed descriptive statistics, goodness-of-fit evaluation tests, and binary logistic regression analysis to analyze the data. The findings of the study demonstrated that three out of the four determinants examined, namely return on assets, financial leverage, and firm size, exhibited a positive and statistically significant influence on the quality of environmental disclosure. However, the distribution of share ownership had a negative effect on the quality of environmental disclosure.

Onyekachi et al. (2020) examined the impact of environmental investments on the earnings of listed oil and gas firms in the Nigerian economy. The research covered a ten-year period from 2008 to 2017, utilizing an ex post facto research design and relying on secondary data from financial reports of five chosen firms. The data were analyzed

using the ordinary least square regression technique. The findings indicated that investments made by firms to uphold environmental standards have a significant positive influence on their earnings per share, suggesting that companies prioritizing environmental investments tend to experience an improvement in their earnings per share. Based on these outcomes, the study recommended that all business units in Nigeria should keep pace with contemporary financial reporting matters and adequately report on their investment activities concerning environmental replenishment to enhance their image and business.

Adegbie, et al. (2020), equally used data obtained from food and beverages listed firms on the Nigeria Stock Exchange to assess the impact of environmental accounting on the sampled firms' share value in Nigeria from 2008 to 2019. The results indicated that environmental accounting practices influence positively on the share value of the firms. Also, the results revealed that the impact remain positive and significant even after controlling for the firm size.

Atang and Eyisi (2020) studied the factors that determine the environmental disclosures practices among the listed non-financial firms in Nigeria from 2005 to 2018. The study made use of regression analysis. The results showed that an increase in the profitability of non-financial firms by 1% results to a rise of 1.8% in the environmental disclosure of the company.

Bessong et al. (2020) investigated the impact of environmental costs on the earnings per share of oil and gas companies in Nigeria from 2010 to 2019. The main focus of the study was to explore the influence of environmental costs on the earnings per share of oil and gas companies in Nigeria during the specified period. The study utilized an ex-post facto design with a study population of 15 oil and gas companies in Nigeria. Multiple regression analysis techniques were used to examine the relationship between oil spillage costs, gas flaring costs, and earnings per share in the oil and gas industries. Data were collected from the Environmental Impact Assessment Agency and the annual reports of various companies. The results of the analysis indicated that there was no significant association between oil spillage costs, gas flaring costs, and earnings per share in the oil and gas industries. Additionally, the payment of fines and penalties by Nigeria's oil and gas companies had a negative impact on earnings per share.

Ahmed (2019) focused on studying environmental accounting disclosures in the case of listed manufacturing companies in Palestine. The data for the study were gathered from annual reports and accounts of listed companies in the Palestine Securities Exchange, and the analysis was done using descriptive statistics. The study found that firms are not being responsible to their environment, often ignoring the disclosure of necessary financial material to stakeholders.

Wasara and Ganda (2019) investigated the link between sustainable business disclosure and the performance of listed mining businesses in Johannesburg from 2000 to 2018. The method of data analysis adopted was the ordinary least square regression analysis. The study found that environmental performance is value-relevant, especially in relation to green technologies, renewable energy policies, and foreign trade. However, during crisis periods, the negative effect of renewable energy policies deepens, offsetting the positive effects of green patents and foreign trade on environmental performance.

Obara et al. (2017) examined the effect of accounting for waste management expenditure on the profitability of oil and gas companies in Nigeria spanning from 2002 to 2015. The study used three companies for the study, namely Nigeria Agip Oil Company Ltd, Schlumberger Nig. Ltd, and Total E&P Nig. Ltd. The study investigated four operational variables: Waste management, Return on Assets, Return on Equity, and Operating Profit. The results indicated that waste management has a high positive and significant influence on the Return on Assets, Return on Equity, and Operating Profit levels of the oil and gas companies in Nigeria. The study recommended that companies should be socially responsible to their host communities, while the government should ensure compliance with relevant laws regulating waste management.



## **Methodology**

### **Research Design**

The study employed an *ex post facto* research design to assess the impact of environmental costs on the market values of publicly listed oil and gas and communication firms in Nigeria over a specific time frame (2007-2021). An *ex post facto* design is appropriate for this study as it examines the effects of independent variables (environmental costs) on a dependent variable proxy by (market capitalization) after the fact, taking into account historical data.

### **Area of Study**

The research was conducted in Nigeria.

### **Sources of Data**

The nature of data for this research was secondary. Secondary data are data which have been processed, collated and existed in published form (Onwumere, 2005). The secondary data that was used in this study, were sourced from the published financial statements and accounts of the sampled oil and gas, and communication firms in Nigeria which cover a period fifteen years, from 2007 to 2021. The judgment of the researchers for the period chosen was to enable the use of enough data stream which would serve as an essential condition for valid inferences and recommendations.

### **Population of the Study**

The population for this study consists of the entire publicly listed oil and gas, and communication firms in Nigerian, as contained in the Nigerian Exchange Group as at 31<sup>st</sup> December, 2021. The entire population of the oil and gas firms in Nigeria as at the time of this study are 13 in number. The oil and gas firms are MOBIL, ANINO, CAPOIL, CAVERTON, CONOIL, ETERNA, FORTE OIL, JAPAULOIL, MRS OIL, O & O, RAKUNITY, SEPLAT and TOTALNG.

The population of the communication companies listed at the Nigerian Exchange Group as at the time of this study are 5 in number. All the 5 firms which constitutes the entire population of were utilized. They are: DAARCO.ng, MTN.ng, GLO, 9mobile, and Airtel.

### **Determination of Sample Size**

The sample size was drawn from the population over the period of the study. For reliability and accuracy of information, only oil and gas and communication firms quoted in Nigerian Exchange Group with relevant data-set for the period under review were considered. The sample size of ten (10) oil and gas and communication firms were selected and used in this work. Out of the thirteen (13) oil and gas firms quoted in the Nigerian Exchange Group, five (5) firms were sample. They are: CONOIL, MOBIL, FORTE OIL, MRS OIL and TOTALNG. The sample size from the communication industry were made up of all the five (5) quoted communication firms which are: DAARCO.ng, MTN.ng, GLO, 9mobile, and Airtel. These firms were selected from the period 2007 - 2021, utilizing stratified random sampling technique.

### **Model Specification**

Koutsoyiannis (2003) asserts that model specification involves the determination of the dependent and explanatory variables which were included in the model, the theoretical expectations about the sign and the size of the parameters of the function. The model specification for this study were related to previous research efforts in the area of study. A considerable number of previous research efforts on environmental disclosure and market values such as Eyo, Effiok and Okon (2013), Banerjec (2005) and Hearit (1995) adopted multiple regression analysis. The Multiple Regression Model (MRM) was used in this study to determine the impact of the explanatory variables on

the focal variable. Therefore, this study particularly utilized the ordinary least squares (OLS) multiple regression model, as stated below.

$$Y = a + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it} \dots\dots\dots i$$

Where, Y = dependent variable  
 X1, X2, X3 = explanatory variable  
 β0 = intercept of Y  
 β1, β2, β3 = slopes of coefficients  
 ε<sub>it</sub> = error terms.  
 t = time

**Explicit representation of the model:**

$$MC = \beta_0 + \beta_1 EIC_{it} + \beta_2 ERC_{it} + \beta_3 ELPC_{it} + \epsilon_{it} \dots\dots\dots ii$$

Where  
 MC = Market Capitalization  
 EIC = Environmental Investment Cost  
 ERC = Environmental Remedial Cost  
 ELPC = Environmental Law Compliance and Penalty Cost  
 ε<sub>it</sub> = error terms  
 t = time

**Results and Discussions**

**Summary of Multiple Regression Result**

**Table 1: Regression Analysis Result of the Industry Level Panel Data**

Dependent Variable: MC  
 Method: Panel Least Squares  
 Date: 10/10/23 Time: 04:46  
 Sample: 2007 2021  
 Periods included: 15  
 Cross-sections included: 10  
 Total panel (balanced) observations: 150

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EIC	0.045484	0.022463	2.024863	0.0447
ERC	-0.005540	0.020556	-0.269528	0.7879
ELPC	0.212880	0.020876	10.19751	0.0010
C	2.226615	0.054045	41.19901	0.0000

R-squared	0.897774	Mean dependent var	9.640533
Adjusted R-squared	0.797696	S.D. dependent var	0.498199
S.E. of regression	0.023912	Akaike info criterion	-4.589702
Sum squared resid	0.082336	Schwarz criterion	-4.469276
Log likelihood	350.2276	Hannan-Quinn criter.	-4.540777
F-statistic	12907.00	Durbin-Watson stat	1.028526
Prob(F-statistic)	0.000001		

*Source: E-view 10.0 Statistical Output, 2023*

Table 1 depicts that Environmental Investment Cost exerts a positive and significant impact on market capitalization of the sampled oil and gas, and communication firms in Nigeria with a t-statistic of 2.024863 and a p-value of 0.0447 respectively. On the other hand, the result shows that environmental remediation cost has negative and nonsignificant impact on market capitalization with a t-Statistic of -0.269528 and probability value of 0.7879. Environmental law compliance and penalty cost was found to have a positive (t-statistics: 10.19751) and significant impact (p-value 0.0010) on market capitalization. The adjusted R-squared ( $R^2$ ) indicated that about 80% approximately of the changes in market capitalization are accounted for by the explanatory variables (Environmental Investment Cost, environmental remediation cost and environmental law compliance and penalty cost). The remaining 20% could be explained by other factors capable of influencing market capitalization of the sampled oil and gas and communication companies in Nigeria and other remote factors captured by the error term. The probability of the F-statistic is significant (0.000001) which shows the statistical fitness of the multiple regression model and the results, by extension. There is an absence of serial autocorrelation in the panel data extracted from annual reports and accounts of the oil & gas and communication companies as suggested by Durbin-Watson statistics which is relatively normal.

### Test of Hypotheses

#### Test of Hypothesis One

##### Restatement of the Hypothesis in Null and Alternate forms:

**H<sub>0</sub>1:** Environmental investment costs have no positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria

**H<sub>a</sub>1:** Environmental investment costs have positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria

##### Statement of Decision Rule:

Reject the null hypothesis ( $H_0$ ), if the p-value of the t-statistics is less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

##### Decision

In Table 1, the panel regression result indicates that market capitalization is influenced by environmental investment costs (EIC). The extent of the influence exerted on market capitalization by environmental investment costs is positive and significant. This implies that an increased environmental costs in terms of environmental investment costs is highly probable to enhancing market values of the sampled oil and gas and communication firms in Nigeria. The P-Value of 0.0447 for environmental investment costs is less than a-value of 0.05;  $H_0$  is therefore rejected and the alternate hypothesis accepted. However, the study suggested that Environmental investment costs have positive and significant influence on market capitalization of selected oil and gas, and communication firms in Nigeria.

#### Test of Hypothesis Two

##### Restatement of the Hypothesis in Null and Alternate forms:

**H<sub>0</sub>2:** Environmental remedial costs have no positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria.

**H<sub>a</sub>2:** Environmental remedial costs have positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria.

**Statement of Decision Rule:**

Reject the null hypothesis ( $H_0$ ), if the p-value of the t-statistics is less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

**Decision**

The panel regression result from table 1 indicates that market capitalization is influenced by environmental remediation cost (ERC). The extent of the influence exerted on market capitalization by environmental remediation cost is nonsignificant and negative. This implies that an increased environmental remediation cost is likely to have an adverse impact on market capitalization of the sampled oil and gas and Communication firms in Nigeria. The P-Value of 0.7879 for environmental remediation cost is greater than the threshold value of 0.05;  $H_0$  is therefore accepted and the alternate hypothesis rejected. However, the study stipulates that environmental remedial costs have no significant and positive influence on market capitalization of selected oil and gas, and communication firms in Nigeria.

**Test of Hypothesis Three**

Restatement of the Hypothesis in Null and Alternate forms:

$H_{03}$ : Environmental law compliance and penalty costs have no positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria.

$H_{a3}$ : Environmental law compliance and penalty costs have positive and significant impact on market capitalization of publicly listed oil and gas and communication firms in Nigeria.

**Statement of Decision Rule:**

Reject the null hypothesis ( $H_0$ ), if the p-value of the t-statistics is less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

**Decision**

In Table 1, the panel regression result indicates that market capitalization is influenced by environmental law compliance and penalty costs (ELPC). The extent of the influence exerted on market capitalization by environmental law compliance and penalty costs is significant and positive. This implies that an increased environmental law compliance and penalty costs exerts a corresponding impact on market capitalization of the sampled oil and gas and communication firms in Nigeria. The P-Value of 0.0010 for environmental law compliance and penalty costs is less than a-value of 0.05;  $H_0$  is therefore rejected and the alternate hypothesis accepted. Hence, the study concludes that environmental law compliance and penalty costs have significant and positive influence on market capitalization of selected oil and gas, and communication firms in Nigeria.

**Discussion of Findings**

The result of the test of hypothesis one revealed that environmental investment costs have a significant and positive influence on market capitalization of selected oil and gas, and communication firms in Nigeria. The implication of this finding is that an increased environmental costs in terms of environmental investment costs is highly probable to enhancing market values of the sampled oil and gas and communication firms in Nigeria. This is evidenced in the p-Value of 0.0447 for environmental investment costs which is less than a-value of 0.05.

In the test of hypothesis two, the regression analysis result revealed that market capitalization is influenced by environmental remediation cost (ERC). The extent of the influence exerted on market capitalization by environmental remediation cost is insignificant and negative. This implies that an increased environmental

remediation cost is likely to have an adverse impact on market capitalization of the sampled oil and gas and Communication firms in Nigeria.

In the test of hypotheses three, the regression analysis result revealed that market capitalization is influenced by environmental law compliance and penalty costs (ELPC). The extent of the influence exerted on market capitalization by environmental law compliance and penalty costs is significant and positive. This implies that an increased environmental law compliance and penalty costs exerts a corresponding impact on market capitalization of the sampled oil and gas and communication firms in Nigeria. This result is in consonance with the findings of Jonathan et al. (2005) on their study on the reputational penalties for environmental violations.

### **Summary of Findings**

The findings arising from this research were summarized as follows:

- i. Environmental investment costs (EIC) have a positive and significant impact on market capitalization of selected oil and gas, and communication firms in Nigeria with P-value of  $0.0447 < 0.05$  and the t-statistics of  $2.024863 > 2$ .
- ii. Environmental remedial costs exerted a negative and nonsignificant impact on market capitalization of selected oil and gas, and communication firms in Nigeria with P-value of  $0.7879 > 0.05$  and the t-statistics of  $-0.269528 < 2$ .
- iii. Environmental law compliance and penalty costs have a positive and significant impact on market capitalization of selected oil and gas, and communication firms in Nigeria with P-value of  $0.0010 < 0.05$  and the t-statistics of  $10.19751 > 2$ .

### **Conclusion**

This study is an empirical evaluation of the impact of environmental costs on market value of quoted oil and gas, and communication firms in Nigeria. Based on the findings of this study, Environmental investment costs (EIC) have been shown to have a significant and positive impact on the market capitalization of the studied firms in Nigeria. The statistical analysis indicates a P-value of 0.0447, which is less than the commonly accepted significance level of 0.05. Additionally, the t-statistics value of 2.024863, exceeding the critical threshold of 2, further supports the significance of this relationship. This finding underscores the importance of environmental investment in enhancing the market value of these companies. Environmental remedial costs, on the other hand, do not demonstrate a significant effect on the market capitalization of the selected oil and gas, and communication firms in Nigeria. The P-value of 0.7879 exceeds the 0.05 significance level, indicating a lack of statistical significance. The t-statistics value of -0.269528, which is less than 2, further confirms the absence of a significant relationship. This suggests that environmental remediation expenditures do not appear to substantially impact market capitalization. Environmental law compliance and penalty costs have been found to have a significant and positive effect on the market capitalization of the studied firms. The P-value of 0.0010 is well below the 0.05 significance level, signifying a highly significant relationship. The t-statistics value of 10.19751, surpassing 2, further emphasizes the significance of this relationship. This finding indicates that companies complying with environmental regulations and facing penalties for non-compliance tend to have higher market capitalization. In summary, these findings provide valuable insights into the nuanced relationship between environmental costs and market capitalization. They underscore the importance of proactive environmental investment and regulatory compliance for enhancing the market value of companies in the oil and gas and communication sectors in Nigeria. This study contributes to the body of knowledge in environmental cost accounting and has practical implications for financial management and strategic decision-making in these industries.

## Recommendations

In view of the findings above, this study recommends that:

- i. Companies in the oil and gas and communication sectors in Nigeria should consider prioritizing environmental investment. The positive and significant impact of environmental investment costs on market capitalization highlights the value of sustainable practices. Managers and decision-makers should allocate resources to environmentally responsible projects and initiatives to enhance the market value of their firms.
- ii. Companies in the oil and gas and communication sectors in Nigeria should explore cost-effective remediation strategies. Given that environmental remedial costs showed a negative and nonsignificant impact on market capitalization, it's essential to minimize these costs while still ensuring environmental compliance. Firms should invest in research and development of innovative, budget-friendly approaches to address environmental issues effectively.
- iii. Firms should focus on compliance with environmental laws and regulations. The study reveals a significant positive relationship between environmental law compliance and market capitalization. To maintain and potentially increase market value, organizations must effectively manage the risks associated with environmental regulatory compliance. This includes the development of strategies to mitigate the financial impact of penalties and liabilities.

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