Environmental Conservation Cost and Corporate Performance of Quarry Companies in Nigeria: An Empirical Analysis

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ABSTRACT

The pursuit of sustainable development has gained significant attention in recent years, emphasizing the need for businesses to integrate environmental conservation practices into their operations. Thus, this study examined the effect of environmental conservation costs on the corporate performance of quarry companies in Nigeria. This study employed a survey research design and data was sourced through the distribution of well-structured questionnaires. The population of the study comprised 682 accounting staff of quarry companies in the southwest of Nigeria. The sample size was 480 determined through a purposive sampling technique. The sourced data were analyzed using both descriptive and inferential statistics. It was found that research and development, legal, and regulatory compliance costs exhibited a significant positive relationship with the corporate performance of quarry firms in Nigeria. Restoration, monitoring, and evaluation, as well as training and engagement costs, exhibited a significant positive relationship with the corporate performance of quarry firms. It was concluded that when quarry companies prioritize allocating resources and attention to these areas it will enhance their overall performance. This study recommends that quarry companies should allocate more resources to research and development activities to foster innovation, improve operational efficiency, and stay competitive in the market.

Keywords: Environmental Conservation Cost, Research and Development Cost, Regulatory and Compliance Cost, Restoration Cost, Corporate Performance.

INTRODUCTION

The pursuit of sustainable development has gained significant attention in recent years, emphasizing the need for businesses to integrate environmental conservation practices into their operations (Falope et al., 2019). As environmental concerns continue to grow globally, industries that have a significant impact on the environment are under increasing pressure to adopt environmentally responsible practices. The quarrying industry in Nigeria is one such sector that plays a vital role in economic development but often faces criticism for its potentially negative environmental impact (Ezeagba, 2017). Quarry companies in Nigeria extract natural resources, such as stone, gravel, and sand, for construction and infrastructure development. However, these activities can result in environmental degradation, including deforestation, land degradation, air and water pollution, and ecosystem disruption. As a result, there is a growing recognition of the need for quarry companies to proactively address these environmental challenges and invest in conservation measures (Nwaiwu & Oluka, 2018).

This study aims to investigate the relationship between environmental conservation costs and the corporate performance of quarry companies in Nigeria. It seeks to shed light on whether the adoption of environmental conservation practices has a positive or negative impact on the financial performance and

long-term sustainability of quarry companies. By examining the potential trade-offs and synergies between environmental conservation efforts and corporate performance. The concept of corporate performance encompasses various dimensions, including financial performance, operational efficiency, market reputation, and stakeholder perception. While financial performance indicators such as profitability, return on investment, and market value are commonly used to evaluate corporate performance, this study will focus on the financial aspect to assess the economic implications of environmental conservation costs.

The incorporation of environmental conservation costs into the financial statements of quarry companies allows for a more comprehensive evaluation of their overall performance. It enables stakeholders, including investors, regulators, and the public, to gauge the company's commitment to environmental responsibility and its potential impact on financial outcomes. Moreover, analyzing the relationship between environmental conservation costs and corporate performance can help identify potential win-win scenarios where environmental stewardship contributes to both sustainable environmental outcomes and improved financial performance. To achieve the research objective, this study will employ a quantitative research approach. It will collect financial data and information on environmental conservation costs from a sample of quarry companies operating in Nigeria. Statistical analysis techniques, such as regression analysis, will be employed to examine the relationship between environmental conservation costs and financial performance indicators, taking into account other relevant factors that may influence corporate performance.

The findings of this study are expected to provide valuable insights for quarry companies, policymakers, and stakeholders in Nigeria's quarrying industry. By elucidating the potential effects of environmental conservation costs on corporate performance, the research can contribute to the development of strategies and policies that promote sustainable practices while ensuring the economic viability of quarry companies. Ultimately, it is hoped that this study will contribute to the ongoing dialogue on environmental sustainability in the quarrying sector and foster a more balanced approach to economic development in Nigeria.

LITERATURE REVIEW

Environmental Conservation Cost

Environmental conservation cost refers to the expenses incurred in the preservation, protection and sustainable management of natural resources and ecosystems. It encompasses various activities aimed at mitigating the negative impacts of human activities on the environment and promoting the long-term well-being of both the ecosystem and human society. Environmental conservation costs are incurred by various stakeholders, including governments, non-profit organizations, private companies, and individuals (Ezejiofor, 2017). They play a crucial role in ensuring the protection and preservation of ecosystems, biodiversity, and natural resources for current and future generations. By investing in environmental conservation, societies aim to strike a balance between economic development and environmental sustainability, recognizing the intrinsic value of nature and the benefits it provides to human well-being. The cost of environmental conservation includes both direct and indirect expenses (Adediran et al., 2013; Agbiogwu et al. (2016).

Research and Development Cost

In the context of environmental conservatism cost, the concept of research and development cost entails all expenses incurred in conducting scientific research and developing innovative solutions to address environmental challenges. R&D cost constitutes spending for research and development activities allocated to environmental conservation (Kilika, 2010). These costs are associated with the exploration and creation of new ideas, technologies, and methods that can contribute to sustainable practices and the protection of the environment. This might be important depending on the industry, the environment such companies operate, and the impact of companies' activities on the environment. The awareness to be socially responsible has

placed a duty on companies to embark on sustainable activities.

Regulatory and Compliance Cost

The importance of environmental conservatism leads to the provision of rules and regulations. These laws are to ensure compliance and encourage activities that will environmental preservation. Companies are no longer appraised based on their economic viability but rather on concerted efforts made at preserving the environment (Sekerez, 2017). Based on this, the costs of complying with policies or practices aligned with environmental conservatism form the basis of this study. These costs can vary depending on the specific actions taken and the scale of implementation. These costs often include expenditures for personnel, equipment, research, monitoring, and enforcement (Dubey, 2022).

Restoration Cost

The initiative aims at maintaining the environment have been the focal point of environmentalists. Organisations contribute in one way or the other, to environmental degradation. Efforts to restore the environment involve costs. These costs need to be weighed against benefits derivable. Restoration costs are the costs associated with returning an environment to its original state after it has been damaged. These costs involve investments in activities such as habitat restoration, reforestation, pollution control measures, and the establishment and maintenance of protected areas. Restoration cost is the cost of assisting the recovery of an environment that has been degraded, damaged, or destroyed while rehabilitation is the replacement of structural or functional characteristics of an ecosystem that have been diminished or lost (Bayraktarov et al. 2016).

Monitoring and Evaluation Cost

This concept is an important component of environmental conservatism cost. While monitoring and evaluation costs vary in scale and complexity, they are crucial for ensuring that conservation goals are being achieved. They include the economic implications of conserving natural resources, such as potential losses in revenue from reduced exploitation of resources, increased costs for sustainable practices, and foregone economic opportunities due to restrictions on certain activities (Atala et al., 2017). Monitoring and evaluation costs are the costs associated with tracking the progress of environmental conservation efforts. Environmental monitoring describes the processes and activities that need to take place to characterize and monitor the quality of the environment and the impact of companies' activities.

Training and Engagement Cost

The concept of training and engagement costs are the costs associated with educating and motivating people to participate in environmental conservation efforts. It is the cost of activities embarked upon in ensuring that environmental conservatism efforts are successful. Additionally, these costs may include the expenses associated with environmental education, public awareness campaigns, and the implementation of sustainable policies and regulations (Act-Ifurueze et al., 2013).

Corporate Performance

The concept of corporate performance deals with the measurement of how well a company is performing financially and operationally. It is, on the one hand, a measure of how an organization is generating income from its activities. On the other hand, it is how well an organization is improving its operation (Kolawole et al., 2023). Every activity of an organization is geared towards realizing its goals. Realizing goals is based on improvement in activities that take place in the organization. However, these activities impact direct or indirectly on the environment.

The extent of an organization to evaluate the impact of such activities on both the environment and future

goals forms the basis of the study (Dagunduro et al., 2022).

Return on Investment

Investment decisions have ethical, moral, political, equity, and financial implications. Investment in environmentally friendly activities should be measured based on its implications to finance and equity. Return on investment, being a financial tool, measures and forecasts financial returns or profit from an investment (Gosselin et al. 2020). Return on investment (ROI) is an economic measure used to indicate how much economic benefit is derived from a program in relation to its costs (Brousselle et al. 2016). It is a metric that is used to determine an investment's effectiveness or to compare the effectiveness of a number of different investments (Gupta & Kumar, 2020). However, this study measures the returns on investment on companies' environmental conservatism activities in Nigeria.

Environmental Conservation Cost and Corporate Performance

Environmental conservation costs and corporate finance are interconnected in today's business landscape, where sustainability and responsible environmental practices are gaining increasing importance. Companies are recognizing that environmental conservation is not only essential for the well-being of the planet but also for their long-term financial viability and reputation (Okafor et al., 2013). Environmental conservation efforts often involve costs, including investments in eco-friendly technologies, waste management systems, renewable energy sources, and sustainable supply chains. These costs may be perceived as an additional financial burden for corporations. However, it is crucial to consider the long-term benefits and potential cost savings that can be derived from such investments. For instance, energy-efficient technologies can reduce operating costs, waste reduction initiatives can minimize disposal expenses, and sustainable sourcing can enhance supply chain resilience (Mba & Unclene, 2012).

Environmental risks, such as climate change impacts, natural resource scarcity, and regulatory changes, can pose significant risks to corporate operations and financial performance. By integrating environmental conservation into corporate finance strategies, companies can proactively manage these risks (Yndiz, 2014). Investing in environmentally sustainable practices and technologies can help reduce exposure to regulatory fines, supply chain disruptions, and reputational damage caused by environmental incidents. It can also improve resilience to the changing regulatory landscape and evolving customer expectations. Environmental conservation is a growing concern for various stakeholders, including investors, customers, employees, and communities. Investors are increasingly incorporating environmental, social, and governance (ESG) factors into their investment decisions and customers are favoring environmentally responsible brands. By demonstrating a commitment to environmental conservation, companies can enhance their reputation, attract responsible investors, and foster customer loyalty. Such positive stakeholder engagement can have a direct impact on a company's financial performance and market value (Rout, 2010).

Integrating environmental conservation into corporate finance can drive innovation and create a competitive advantage. Companies that invest in research and development of sustainable technologies, products, and processes can tap into new markets, reduce costs, and differentiate themselves from competitors. By aligning financial resources with environmental goals, companies can foster a culture of innovation, leading to long-term growth and profitability (Jui-Che & Hsieh-Shan, 2015). Environmental regulations are becoming more stringent, requiring companies to disclose their environmental impact and demonstrate compliance. Properly accounting for environmental conservation costs in corporate finance ensures accurate financial reporting, risk assessment, and compliance with relevant laws and regulations (Dubey, 2022). It also helps companies stay ahead of emerging regulations, avoiding costly penalties and reputation damage. Integrating environmental conservation into corporate finance is no longer an option but a necessity for businesses aiming to thrive in a sustainable future. By considering environmental costs, managing risks, engaging stakeholders, driving innovation, and complying with regulations, companies can strike a balance

between financial performance and responsible environmental stewardship. This integration creates a win-win situation, benefiting both the planet and the bottom line (Rout, 2010).

Theoretical Framework

This study was hinged on the stakeholders' theory propounded by Professor Edward Freeman in 1984. Stakeholder theory is a management framework that recognizes the significance of various stakeholders and their interests in an organization (Dagunduro et al., 2022; Kolawole et al., 2023)). It suggests that organizations should consider the needs and expectations of all relevant stakeholders, including employees, customers, suppliers, communities, and the natural environment. When applied to quarry companies, stakeholder theory highlights the importance of considering the interests of not only shareholders but also the communities and environment affected by their operations. In the context of environmental cost and financial performance of quarry companies, stakeholder theory plays a crucial role. Quarry companies, as extractive industries, have a significant impact on the environment due to activities such as mining, blasting, and material extraction. Stakeholder theory emphasizes the importance of recognizing the environmental costs associated with these activities and properly managing them to ensure sustainable operations (Raouf, 2002).

From an environmental perspective, stakeholders such as local communities, environmental organizations, and regulatory bodies have a vested interest in the quarry company's environmental performance. Negative environmental impacts can lead to community discontent, legal disputes, regulatory fines, and reputational damage. Therefore, quarry companies need to address these concerns by implementing environmental management practices, such as land reclamation, waste management, water conservation, and pollution control measures. By doing so, they can mitigate environmental costs and promote long-term sustainability. Furthermore, stakeholders such as customers, investors, and financial institutions are increasingly considering environmental factors in their decision-making processes (Dagunduro et al., 2022). Environmental responsibility and sustainable practices are becoming critical criteria for selecting business partners and investments. Quarry companies that effectively manage their environmental costs and demonstrate responsible environmental practices can enhance their reputation, attract environmentally conscious customers, and potentially access favorable financing terms. These factors can positively impact their financial performance in the long run (Kolawole et al., 2023).

By incorporating stakeholder theory into their operations, quarry companies can adopt a holistic approach that balances the interests of various stakeholders, including the environment. They can proactively engage with stakeholders, listen to their concerns, and integrate their feedback into decision-making processes. This approach can help foster positive relationships, build trust, and ensure that the company's environmental costs are effectively managed. In summary, stakeholder theory provides a framework for quarry companies to consider the interests of various stakeholders, including the environment, in their operations. By recognizing and addressing environmental costs, quarry companies can promote sustainable practices, enhance their reputation, and improve their financial performance. Embracing stakeholder theory can lead to better environmental management, long-term sustainability, and mutually beneficial relationships with stakeholders.

Empirical Review

Etale and Otuya (2018) conducted a study in Nigeria to examine the correlation between environmental responsibility reporting and the financial performance of oil and gas companies. They utilized secondary data from the annual reports of 13 oil and gas companies listed on the Nigeria Stock Exchange from 2012 to 2017. The researchers employed the ordinary least square (OLS) regression method for data analysis.

The study revealed a significant positive association between financial performance and environmental

responsibility reporting in Nigeria's oil and gas sector.

Uzoh (2022) evaluated the effect of environmental costs on the financial performance of selected oil and gas firms in Nigeria. The study's data came from a content analysis of the annual reports of companies over a ten-year period (2009–2018). Inferential statistical analysis was performed on the collected data. It was found that pollution prevention costs, environmental protection costs, environmental remediation costs, and environmental recycling costs have positive effects on firms' financial performance.

Okeke et al (2022) examined the effects of environmental accounting costs on the financial performance of selected quoted oil and gas firms in Nigeria. Data used in the study were sourced from the annual report of Oil companies covering the period of 21 years (2000-2020). In order to analyze the panel data, the study used both descriptive and inferential statistics. The study's findings indicated that environmental internal failure cost and environmental external failure cost have a positive and significant effect on the financial performance of oil and gas companies in Nigeria. Environmental pollution prevention costs and environmental detection costs showed an insignificant effect on the financial performance of oil and gas companies in Nigeria.

Al-Mawali (2021) investigated both the direct and indirect relationships between Environmental Cost Accounting (ECA), Environmental Performance (EP), and Financial Performance (FP) in Jordan. The samples are companies listed in the industrial sector of the Amman Stock Exchange. To measure financial performance, objective data are used from the companies' annual reports, whereas subjective data are gathered using questionnaires to assess ECA and EP. To analyze the data, the study employed structural equation modeling. The findings indicated that ECA had a favorable impact on EP and FP, as well as EP. The outcomes furthermore supported EP's mediation role in the direct link between ECA and FP.

Idowu and Agboola (2021) examined the effect of environmental costs on financial performance in the extractive industry in Nigeria. For the study, secondary data from the annual financial reports of 18 companies were sampled from the Nigerian Stock Exchange. Data collected, covering a period of 11 years (2010-2020), was analyzed using a panel regression estimation model. Results show that costs associated with environmental factors, such as environmental remediation and administration cost, have a favorable impact on financial performance. Costs associated with business location have a negative and highly significant impact on financial performance. The financial performance of a sampled extractive industry in Nigeria is unaffected by research and development costs or social costs.

Nwanwu (2022) investigated the effect of environmental management costs on the financial performance of quoted oil and gas companies in Nigeria for the period of 2011-2018. Pollution cost served as a dimension of environmental management cost and net profit as a measure of financial performance. The population of the study was 10 quoted oil and gas companies listed on the Nigerian Exchange. Data was sourced from annual reports and accounts of the companies available on the Nigerian Exchange website. Descriptive statistics and regression analysis were used. The result of the study showed that pollution cost has a positive and significant effect on the financial performance of quoted oil and gas companies in Nigeria. It is concluded that environmental management cost has a significant effect on the performance of Oil and companies in Nigeria.

Contrarily, Musa et al. (2015) conducted a study on the Environment Accounting Disclosure Practice of Nigerian Quoted Firms, specifically focusing on selected consumer goods companies listed on the Nigerian Stock Exchange. Their sample included 8 out of 19 consumer goods companies. By employing one-way analysis variance, the study found that accounting standards do not significantly influence environmental accounting disclosures. The absence of a standard led to inconsistencies in disclosure practices and variations in hypothesis testing. The authors recommended that companies, under pressure, tend to disclose comprehensive information about their operations. They further suggested that the international accounting

standards-setting body should establish a uniform standard for environmental accounting disclosure.

In a study by Ezejiofor et al. (2017) titled "Effect of Sustainable Environmental Cost Accounting on the Financial Performance of Nigerian Corporate Organizations," the researchers analyzed time series data and discovered a positive impact of environmental costs on the profit generation of corporate organizations in Nigeria. Consequently, they recommended that both indigenous and multinational firms implement strict policies concerning environmental accounting to improve overall organizational performance stability.

Acti-Ifurueze et al. (2013), Nwaiwu and Oluka (2018), and Ezeagba (2017) conducted separate studies utilizing Pearson product-moment coefficient of correlation and multiple linear regression analysis. Their findings indicated that adequate disclosure of environmental costs and compliance with corporate environmental regulations significantly influenced financial performance. Consequently, they recommended regulatory enforcement to ensure proper environmental cost disclosure and reporting.

Several other studies, including those conducted by Falope et al. (2019), Adediran and Alade (2013), Okafor et al. (2013), Rajshree and Sravani (2015), Varsa and Kapaja (2018), and Atala et al. (2017), focused on the importance of implementing green accounting and monitoring the interaction between companies and the environment. Their findings emphasized the recognition of environmental costs in organizational activities, the necessity for strict government actions in case of environmental norm violations, and the imposition of penalties for non-compliance. Moreover, these studies highlighted the growing significance of environmental responsibility as a primary corporate social responsibility.

While the existing studies have explored the relationship between environmental responsibility reporting and financial performance in various sectors of the Nigerian economy, there is a lack of specific studies focusing on the correlation between these factors in the quarries companies. Overall, although existing studies have contributed valuable insights into the relationship between environmental responsibility reporting, environmental costs, compliance, and financial performance using secondary data, none of these studies adopted primary. This necessitates the current study to fill these glaring gaps.

DATA AND METHODS

This study employed a survey research design and data was sourced through the distribution of well-structured questionnaires. The population of the study comprised 682 accounting staff of quarry companies in the southwest of Nigeria. The sample size was 480 determined through a purposive sampling technique. The sourced data were analyzed using both descriptive and inferential statistics.

Model Specification

The model of Uzoh (2022) on the effect of environmental cost on the financial performance of selected oil and gas firms in Nigeria was modified in this study. Uzoh (2022) stated the model as:

$$ROCE = a_0 + a_1 PPC + a_2 ENVPC + a_3 ENRRC + a_4 ENRC + \mu_t$$

Where:

ROCE = Return on capital employed

PPC = Pollution prevention cost

ENVPC = Environmental protection cost

ENRRC = Environmental recycling cost

ENRC = Environmental remediation cost

a0, a1, a2, a3, a4, and µt represent intercept

Arising from the model in the work of Uzoh (2022), this study hereby formulates its model as follows:

$ROI = \beta_0 + \beta_1 RADC + \beta_2 RACC + \beta_3 RC + \beta_4 MAEC + \beta_5 TAEC + \mu$

Where:

ROI   =   Return on Investment

RADC = Research and Development Cost

RACC   =   Regulatory and Compliance Cost

RESC   =   Restoration Cost

MAEC   =   Monitoring and Evaluation Cost

TAEC=   Training and Engagement Cost

β_0, β_1, β_2, β_3, β_4, β_5, and µ represent intercept.

A priori Expectation

From the extant literature, the a priori relationship between the dependent variable (corporate performance) and the independent variables (research and development cost, regulatory and compliance cost, restoration cost, monitoring and evaluation cost, and training and engagement cost) is thus stated below:

β_1, β_2, β_3, β_4, $\beta_5 > 0$, the implication of this is that a positive relationship is expected between theexplanatory variables and the explained variable.

RESULTS AND FINDINGS

Demographic Analysis

Table 1 below shows the outcome of demographic distribution done to assess the effect of environmental conservation costs on the corporate performance of quarry companies in Nigeria. Based on this, the majority of the respondents are male. In terms of gender, 197 respondents (45.92%) are women and 232 respondents (54.08%) are men. This indicates that there were 6:4 more men than women in the accounting department. According to the respondents' age breakdown, 114 (26.58%) are between the ages of 18 and 27, and 115 (26.79%) are between the ages of 28 and 37. 100 (23.3%) are between the ages of 38 and 47, 66 (15.41%) are between the ages of 48 and 57, and 34 (7.92%) are over the age of 57. This suggests that the majority of respondents are between the ages of 28 and 37.

Additionally, the respondents' educational backgrounds revealed that 78 (18.18%) had post-graduate degrees, 148 (34.50%) had earned bachelor's or higher degrees, and 122 (28.44%) held ND or NCE certifications. The remaining 81 people (18.88%) all hold PhDs. With this information, it can be deduced that the majority of respondents have bachelor's or HND degrees. According to the respondents' marital

status, 314 (73.19%) are married, while 77 (17.95%) are single. Thirteen (3.03%) are widowed, and 25 (5.83%) are divorced. This implies the majority of the surveyed respondents are married.

Likewise, 84 (19.58%) and 96 (22.38%) of the respondents hold the post of an account officer and accountant respectively. There are 70 principal accountants and 68 senior accountants, making up 15.85% and 16.32% of the distribution respectively. Chief accountants make up 49 (11.42%) of the responses, while the head of the accounting department makes up 29 (6.76%). Chief financial officers make up the remaining 33 (7.69%). This shows that the respondents who hold the post of accountant make up the bulk of the distribution. Table 1 also showed that 68 (15.85%) had been employed for 5 years or below. 55 (12.82%) have worked for 6-10 years and 54 (12.59%) have worked for 11-15 years. 162 people (37.76%) have worked between 16 and 20 years, while 90 people (20.98%) have worked for over 21 years. As a result, the majority of responders had been in the workforce for 16 to 20 years.

Table 1. Demographic Analysis

S/N	Demographic Variables	Grouping	Frequency	Percentage
1	Gender	Male	232	54.08%
		Female	197	45.92%
2	Age	18-27 Years	114	26.58%
		28-37 Years	115	26.79%
		38-47 Years	100	23.30%
		48-57 Years	66	15.41%
		Above 57 Years	34	7.92%
3	Educational Status of the Respondents	ND / NCE Certificate	122	28.44%
		Bachelor's Degree /HND	148	34.50%
		MSC	78	18.18%
		PHD	81	18.88%
4	Marital Status	Married	314	73.19%
		Single	77	17.95%
		Divorced	25	5.83%
		Widow	13	3.03%
5	Position held in the organization	Account Officer	84	19.58%
		Accountant	96	22.38%
		Senior Accountant	68	15.85%
		Principal Accountant	70	16.32%
		Chief Accountant	49	11.42%
		Head of Account unit	29	6.76%
		CFO	33	7.69%
6	Years of experience in the accounting unit	0 -5 Years	68	15.85%
		6-10 Years	55	12.82%
		11- 15 Years	54	12.59%
		16- 20 Years	162	37.76%
		21 Years and Above	90	20.98%

Source: Author's Computation 2023

Reliability Test

A reliability test was conducted on all the variables used in the study to determine the integrity of the outcome. Cronbach's Alpha was used for this and a value of 0.60 or higher is considered acceptable. Table 2 below shows that all variables Cronbach's Alpha values (ROI, 0.7930; RADC, 0.7874; RACC, 0.7945; RESC, 0.8013; MAEC, 0,7910; TAEC, 0.7960) are well above the threshold of 0.60. This implies the consistent reliability of the instrument used in the study.

Table 2 Cronbach Alpha Test Results

S/N	Variable	No. of Items	Cronbach's Alpha
1	Return on Investment (ROI)	5	0.7930
2	Research and Development Cost (RADC)	5	0.7874
3	Regulatory and Compliance Cost (RACC)	5	0.7945
4	Restoration Cost (RESC)	5	0.8013
5	Monitoring and Evaluation Cost (MAEC)	5	0.7910
6	Training and Engagement Cost (TAEC)	5	0.7960

Source: Author's Computation 2023

Normality Test on Environmental Conservation Cost and Corporate Performance of Quarry Companies in Nigeria

Because multiple linear regression implies the residuals are normally distributed, normality test was conducted using a histogram and P-P plot. As depicted in both Figure 1 and 2 below, the responses fall within the bell shape, while the P-P plot lies along the gradient line which shows that the residuals are normally distributed. Accordingly, the model accounts for the primary trends and sources of variation in the data, and errors are independent and random.

Figure 1: Histogram
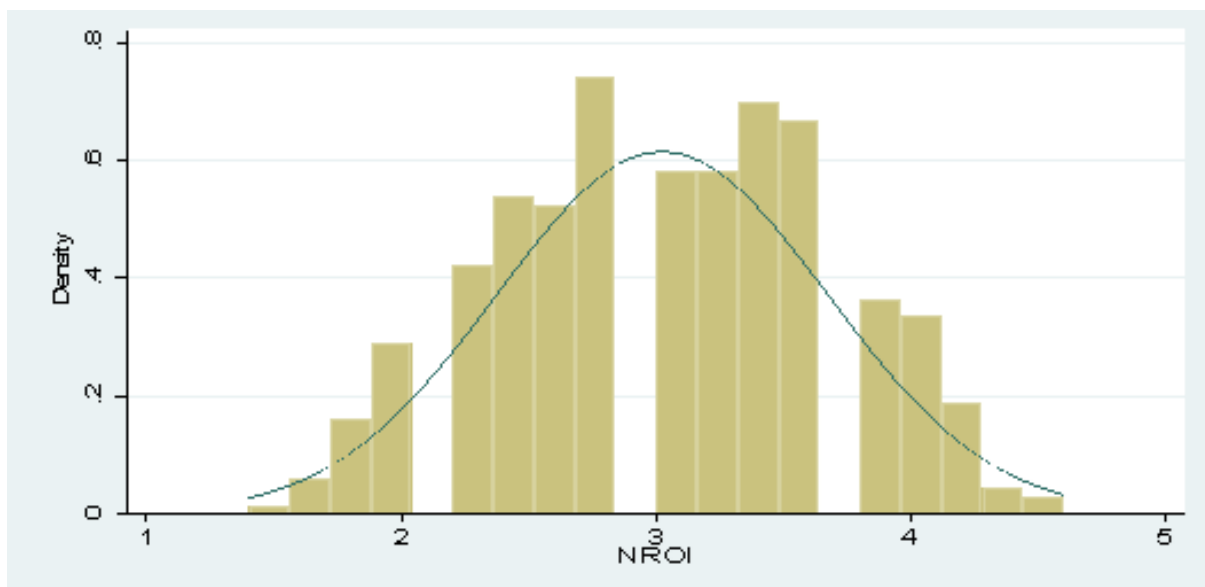
Source: STATA Output, (2023)

Figure 2: P-P Plot of Standardized Residual
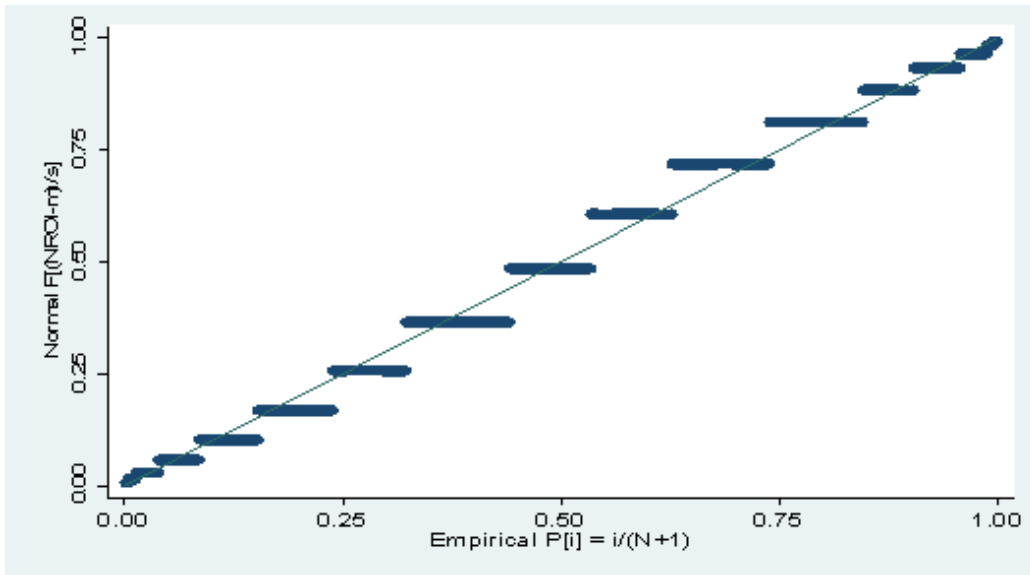
Source: STATA Output, (2023)

Regression Result

The results of the regression analysis performed to determine the impact of environmental conservation costs on the corporate performance of Nigerian quarry firms were displayed in Table 3. The expense of research and development, legal and regulatory compliance, restoration, monitoring and evaluation, as well as training and engagement, all influence the dependent variable (returns on investment). The results of the regression equation are as follows:

$$ROI = 0.5870 + 0.1314_{RADC} + 0.1845_{RACC} + 0.0977_{RESC} + 0.1849_{MACS} + 0.2075_{TAEC}$$

The regression equation predicts that the returns on investment will rise by 0.5870 units or 58.7% in absolute term, if all explanatory variables are kept constant. The coefficient of research and development cost is positive and significant with 0.1314 units. It means that a unit increase in research and development expense in relation to environmental conservation will lead to a 0.1314 unit increase in the returns on investment.

The significant positive coefficient for regulatory and compliance costs is 0.1845 units. It implies that a unit increase in regulatory and compliance costs in relation to environmental conservation will result in a 0.1845-unit increase in returns on investment. Restoration costs, on the other hand, have a very significant positive coefficient of 0.0977 units. It denotes that a unit increase in restoration costs concerning environmental conservation will result in an increase in returns on investment by 0.0977 units. Again, the coefficient of monitoring and evaluation cost showed a significant positive coefficient of 0.1849 units. The result indicated that returns on investment will improve by 0.1849 units for every unit increase in monitoring and evaluation costs on environmental conservation. Lastly, the coefficient of training and monitoring cost is 0.2076. This suggests that a unit increase in the cost of training and monitoring on environmental conservation will increase returns on investment by 20.76%.

However, the F-statistics value stood at 147.72, while the probability value is 0.0000. This result is significant and it suggested that the entire model is significant when taken as a whole. The coefficient of multiple determinations is 0.3547. It revealed that about 35.47% of the dependent variable can be accounted for by the independent variables while the remaining percentages are caused by the stochastic error term.

Table 3: Linear Regression Estimate

Variables	Coefficient	Std. Err.	t-value	p-value
RADC	0.2076	0.0315	6.59	0.000
RACC	0.1849	0.0286	6.47	0.000
RESC	0.0977	0.0269	3.63	0.039
MAEC	0.1845	0.0279	6.61	0.000
TAEC	0.1314	0.0278	4.73	0.006
Constant	0.5870	0.087	6.75	0.000
F-statistic	147.72			
Probability	0.0000			
R-Squared	0.3547			

Source: Author's computation, (2023)

Discussion of Findings

The outcome of this study revealed that research and development, legal and regulatory compliance, restoration, monitoring, and evaluation, as well as training and engagement cost, have a positive significant effect on the corporate performance of quarry companies in Nigeria. This result supports the *a priori* expectation and also concurs with the work of Uzoh (2022), Idowu and Agboola (2021), and Nwanwu (2022) among others. This showed that research and development, legal and regulatory compliance, restoration, monitoring, and evaluation, as well as training and engagement cost, cannot be removed from the corporate performance of quarry companies in Nigeria. Furthermore, the study also contradicted the findings of a prior study conducted by Dinniyah and Nuzula (2018).

CONCLUSION AND RECOMMENDATIONS

The study investigated the impact of environmental conservation costs on the corporate performance of quarry companies in Nigeria. The costs examined were research and development, legal and regulatory compliance, restoration, monitoring, and evaluation, as well as training and engagement cost. The findings revealed that all these costs had a positive and significant effect on the corporate performance of quarry companies in Nigeria. The results demonstrate that these costs are crucial and inseparable components influencing the overall performance of quarry companies in Nigeria.

In conclusion, the study provides valuable insights into the critical determinants of corporate performance for quarry companies in Nigeria. The positive and significant impact of research and development, legal and regulatory compliance, restoration, monitoring, and evaluation, as well as training and engagement cost, highlights the importance of these costs in driving success in the industry. Quarry companies should prioritize allocating resources and attention to these areas to enhance their overall performance. Moreover, the study's findings contribute to the body of knowledge on corporate performance in the quarry sector, reinforcing the existing understanding of the relationship between the identified factors and company success.

Based on the study's results, several recommendations can be made to quarry companies operating in Nigeria:

1. Quarry companies should allocate more resources to research and development activities to foster innovation, improve operational efficiency, and stay competitive in the market.
2. Companies should prioritize compliance with relevant laws and regulations to avoid legal issues and

potential penalties, which could have adverse effects on their performance.

3. Emphasize responsible environmental practices and restoration efforts to mitigate the impact of quarrying activities on the surrounding ecosystems, which can positively influence the company's reputation and social acceptance.

4. Implement robust monitoring and evaluation systems to assess the company's performance regularly and make informed decisions based on data-driven insights.

5. Provide continuous training and development opportunities to employees, fostering a skilled and engaged workforce, leading to increased productivity and overall corporate performance.

This study contributes to existing knowledge by reinforcing the significance of specific factors in determining the corporate performance of quarry companies in Nigeria. The findings add empirical evidence to the theoretical understanding of the impact of research and development, legal and regulatory compliance, restoration, monitoring, and evaluation, as well as training and engagement cost on company success. The research highlights potential inconsistencies or contextual differences that may influence corporate performance across different regions or time periods. Overall, this study contributes valuable insights for both academics and industry practitioners seeking to understand the factors influencing the success of quarry companies in Nigeria.

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