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Environmental Audit and Sustainability Report Quality in Listed Multinational Firms in Nigeria

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Abstract
The multinational firms in Nigeria presents sustainability reports that portray high investment in sustainability; yet the quality of these reports in terms of responsibility and relevance of materiality of the disclosures are questionable. This study examined how environmental audit can influence sustainability report quality in multinational firms in Nigeria. The study employed longitudinal research design. Secondary data were obtained from the sustainability reports of the firms for seven years period covering 2016 to 2022. The study focused on 37 listed multinational firms in Nigeria as at 31st December, 2022. The estimation was carried out using descriptive statistics and panel regression analysis. The findings revealed that environmental audit scope has significant positive effect on sustainability quality. Also, materiality of environmental disclosure positively and significantly affect sustainability report quality. It is concluded that the audit coverage of sustainability reports and the material value of the components of the disclosures have ability to influence the quality of sustainability reports disseminated by the firms. The study recommended that regulators should widen the audit net; and focus more on the material value of items disclosed in the sustainability report to ensure that impactful environmental responsibility functions is performed by firms in Nigeria.

Keywords: *Environmental audit, environmental audit scope, materiality of disclosure, sustainability reporting.*

1. Introduction

Nigeria's regulatory environment for sustainability reporting is still evolving. The lack of consistent and comprehensive regulations can lead to discrepancies in reporting standards and practices among multinational firms. Research present strong evidence that the increase in greenhouse gas emission also entails a global temperature rise which causes several major climate challenges (Kalestic et al., 2020) .

In recent years, sustainability reporting has gained significant attention from researchers and practitioners. This focus is increasingly important due to changes in the economy that have altered the nature of information companies disclose and what stakeholders require. The increase in information disclosure has raised awareness and expectations for high-quality sustainability reporting globally. Tackling global sustainability issues is becoming more complex with the rise in global warming (Chen & Chen, 2018). Key

challenges include increased greenhouse gas emissions leading to higher global temperatures and various climate-related problems, limited supply chain visibility, difficulties in calculating emissions, and a lack of standardized, integrated data (Alshbili et al., 2021).

Environmental audits are seen as a crucial factor in a company's growth, as they provide an independent assessment of an organization's compliance with local environmental regulations (Naseem et al 2019). They also help businesses build a positive environmental reputation, which can strengthen their overall reputation and inform investors' decisions (Liu et al 2019). To increase the reliability of environmental reporting, companies are verifying the accuracy of their information. Environmental auditing typically involves checking the reporting system's robustness, the accuracy of specific facts, or the relevance and completeness of information in relation to company or stakeholder objectives. (Ballou et al 2018). Additionally, stakeholders are demanding that companies demonstrate social responsibility by adopting a sustainability model that balances economic, social, and environmental considerations.

Environmental audits have become prevalent in Nigeria, largely due to the mandates of the Environmental Standards and Regulations Enforcement Agency (Establishment) Act of 2007. This Act authorizes the National Environmental Standards and Regulations Enforcement Agency (NESREA) to oversee and enforce environmental standards across the country. NESREA has established guidelines and regulations that outline the requirements for conducting environmental audits, providing the legal framework for audits in various sectors. Typically, environmental audits involve assessing the accuracy of reporting schemes based on specific evidence, or evaluating the relevance and completeness of information in relation to the objectives of the company or stakeholders (Braam & Peters, 2018).

However, it has been observed that most research on environmental audits and sustainability tends to focus on either environmental accounting or financial performance (Polycarp, 2019; Uniamikogbo & Ifeanyichukwu, 2021), or on environmental disclosure (Nwatwu & Oluka, 2018; Marwa et al., 2020). Some studies have only examined specific aspects of listed companies without considering the broader impact of environmental audits on sustainability in multinational corporations (Erhinyoja & Marcella, 2019; Ogoun & Ekpulu, 2020; Odunze & Maduike, 2018), (Erin et al., 2021; Mion & Adaui, 2020; Moses et al., 2020). Additionally, most research on environmental audits and sustainability has been conducted in advanced countries or regions, unlike Nigeria, with exceptions such as the study by Odunze and Maduike (2018), which used primary data from questionnaires. This indicates a lack of research on environmental audits and sustainability reporting in listed multinational firms in Nigeria, particularly regarding the materiality of environmental disclosure and the scope of environmental audits.

This gap exists despite the importance of these topics to governments, multinational company management, and other stakeholders. There has been insufficient research providing a linear relationship between the dependent variable (sustainability reporting) and independent variables (environmental audit, materiality of environmental disclosure, and the scope of environmental audits), creating a gap that this research aims to fill.

Nigeria was chosen due to its status as the second-largest capital market in Sub-Saharan Africa and as a middle-income emerging country, according to the International Monetary Fund (IMF, 2016). In response to global competition, Nigerian companies are increasingly engaging in sustainability reporting (Erin et al., 2021). The study seeks to answer the following questions: What is the effect of the scope of environmental audits on the quality of sustainability reports in listed multinational companies in Nigeria? How does materiality of environmental disclosure affect the quality of sustainability reports of listed multinational companies in Nigeria? The paper is organized into five sections: the introduction in section one, a literature review in section two, data and methodology in section three, data analysis and findings in section four, and a summary with suggestions for further research in section five.

2. Literature Review and Hypothesis Development

This section covers the review of literature to provide an in-depth explanation of the concept, the theoretical underpinning, review of existing studies and gaps identified in literature.

2.1 Conceptual Review

The conceptual review includes the explanation of concepts as sustainability reporting quality, environmental audit scope, materiality of environmental disclosure, firm size.

2.1.1 Sustainability Report Quality

Sustainability report quality encompasses the reliability, relevance, and completeness of a company's sustainability disclosures (Ferreira et al., 2023). These reports outline the company's social, economic and environmental responsibilities, highlighting its commitment to sustainable development and enhancing the quality of life and the environment for all stakeholders (Adriani & Mahayana, 2021). A high-quality sustainability report should be transparent, offering a clear and comprehensive view of the company's environmental, social, and governance (ESG) performance. It should be grounded in credible data with well-defined standards and guidelines for data collection and reporting, enabling stakeholders to make informed decisions about the company (GRI, 2023). Auditing guidelines for sustainability have been developed to measure and monitor "Triple Bottom Line" performance (GRI, 2002). The Global Reporting Initiative (GRI) guidelines provide the corporate sector with a model for "Triple Bottom Line" accounting and business organization, including procedures for auditing compliance with the sustainability model.

Sustainability reporting is a report printed by a company or business about the economic, environmental and social impacts caused by its everyday activities. Sustainability reporting have been proved to be crucial instruments in guaranteeing that business conduct is based on the philosophies of social responsibility, which serve as a medium for communicating corporate sustainability performance to stakeholders (Hassan & Rabia 2021). Giron et al (2021) defines it as the identification, measurement, monitoring and reporting of the social and economic effects of an institution on society intended for both internal managerial and external accountability purposes. These definitions suggest, unlike the traditional accounting method that concentrates on the preparation and communicating of economic information to interested stakeholders, SR combines the three major aspects of modern reporting, the traditional (economic), environmental (green) and social aspects.

2.1.2 Environmental Audit

Environmental audits (EA) involve an independent external assessor who evaluates an organization's environmental practices and reports the findings to management for decision-making (Ngetich & Ndiema 2020). Similarly, Brunelli et al. (2022) described an environmental audit as a systematic process of gathering and objectively assessing information to determine if certain environmental activities comply with audit standards, criteria, and control systems.

Nazarova (2021) noted that environmental auditors examine how an organization's environmental actions and noncompliance impact its financial statements. This includes evaluating the environmental aspects of the production process, management system, and social impact. Ferreira et al. (2023) emphasized that an EA is a management tool providing a systematic, documented, periodic, and objective evaluation of an organization's management and equipment performance. The goal is to protect the environment by enhancing management control of practices and assessing compliance with company policies, regulatory requirements, and standards. As environmental issues become more complex, both auditors and the audited need guidance on managing and organizing the content of environmental audits. This process assesses a company's environmental performance and compliance, providing an independent third-party evaluation of adherence to local laws and regulations. (Erinoso, 2022).

2.1.2.1 Environmental Audit Scope

According to the Environmental Auditor Guideline (2015), the scope of an environmental audit is a crucial element that includes all aspects of a company's operations affecting the environment. Its thorough coverage, regulatory emphasis, and focus on best practices are vital for improving environmental performance, managing risks, and building stakeholder trust. The guideline suggests that the scope of an environmental audit can vary from a comprehensive evaluation of all environmental aspects of a large, complex activity (such as extensive industrial operations) to a focused assessment of a smaller component of an activity. They stated that this

involves a thorough review and evaluation of an organization's operations, practices, and facilities to assess their environmental impact.

The scope of an environmental audit delineates the breadth and depth of activities, processes, and operations scrutinized within. It defines the parameters for evaluating compliance with environmental statutes, policies, and benchmarks. Encompassing all pertinent industrial processes, operational undertakings, and services impacting the environment, it spans across physical locales like production sites, warehouses, and offices. This scrutiny extends to various environmental facets including waste management, emissions, resource utilization, and energy expenditure (Brunelli et al., 2022). It ensures alignment with local, national, and international environmental statutes while scrutinizing adherence to industry-specific permits and licenses. Moreover, it evaluates the efficacy and execution of organizational environmental protocols and procedures. By benchmarking against industry norms such as ISO 14001, it identifies potential environmental hazards and their ramifications on the organization and the community. The audit scope further assesses the efficacy of existing mitigation strategies and recommends enhancements (Ferreira et al., 2023; Brunelli et al., 2022). As a formal document, the environmental audit scope outlines the objectives, methodologies, and boundaries of the audit, including details like location, timeframe, auditors, and focal areas. Serving as a blueprint, it ensures the audit's consistency, thoroughness, and accuracy, thereby meeting regulatory requisites. Furthermore, it might outline the use of sampling or statistical methods to enhance its thoroughness. (Ngu & Amran, 2021).

2.1.2.2Materiality of environmental disclosure

Materiality of environmental disclosure pertains to the importance of environmental information in shaping the decisions of stakeholders, including investors, regulators, and the public. MEVD (Material Environmental Value Disclosure) provides crucial and reliable information regarding a company's environmental performance, risks, and opportunities, which can affect its financial health and long-term sustainability. Materiality is essential in sustainability reporting, as including irrelevant information can reduce the clarity and understandability of significant details (Ngu & Amran, 2021). It is a key principle in sustainability reporting to prevent credibility issues (Fasan & Mio, 2019). Lubinger et al. (2019) argued that materiality is a growing trend in sustainability reporting, making these reports more pertinent to stakeholders. The process of determining materiality can improve the structure of reported content and ensure it covers topics that are important from a stakeholder perspective. Materiality is crucial for identifying the significance of issues in sustainability reports (Joshua et al., 2023). Ogoun and Ekpulu (2020) highlighted the importance of transparency in materiality judgments, recommending that companies clearly explain the rationale behind their materiality decisions in their environmental reports. This approach enhances the credibility of the reports and builds stakeholders' trust in the company's environmental performance.

2.1.2.3 Firm Size

This was conceptualized as the natural logarithm of the total assets of individual companies in the sector. Firm size can also be measured in various ways, such as through assets, employment, sales, and market capitalization. The significance of a firm's size in determining its value cannot be overstated. Many companies deliberately expand their business operations to grow in revenue, number of employees, or size of facilities (Talha et al., 2021).

Liu (2020) argued that firm size is a crucial factor within an organization's functional environment and external context because it provides a competitive edge over rivals by creating opportunities and cost-reduction mechanisms, which large firms benefit from due to economies of scale. Additionally, in a sample of Malaysian companies, it was observed that those audited by international audit firms are encouraged to disclose relevant and meaningful environmental information.

2.2 Theoretical Review

2.2.1 Agency Theory

Agency theory has been utilized by scholars across various disciplines, including accounting (Saravan et al., 2019), political science (Sergio et al., 2020), organizational behavior (Serena et al., 2020), and finance. This theory is based on the concept of separating ownership (principals) and management (agents). Principals are the firm's stakeholders, while agents are its managers (Xinyi-Zhou, 2023). Agency theory posits that there is a divergence of interests between principals and agents due to this separation of ownership and control. The principal faces the challenge of not being able to verify if the agent has acted appropriately and in alignment with the principal's preferences (Xinyi-Zhou, 2023).

The primary focus of agency theory is to address the problems that can arise in these relationships. Both principals and agents are utility maximizers with different objectives, which can lead to conflicting and misaligned interests. Principals aim to maximize the net present value of the firm, whereas agents seek to maximize their own utility, which includes their income. Often, agents may not act in the best interests of the principals. They might conceal information for personal gain by omitting significant details in financial reporting statements, which can negatively impact the principal's interests (Naz et al., 2021).

2. 3 Empirical Review

Nwatwu and Oluka (2018) explored the relationship between environmental cost disclosure and financial performance in Nigeria's oil and gas sector. Their empirical study used time series data from the Central Bank of Nigeria's annual reports and economic reviews, analyzing it with Pearson correlation and multiple regression via SPSS version 22. The results indicated that thorough environmental cost disclosure and adherence to environmental regulations positively impact financial performance metrics. This current study consider environmental audit and sustainability report quality in listed multinational firms in Nigeria. Panel regression analysis was employed and broader correlation (pairwise) concept was used to make the work robust.

Odunze and Maduike (2018) researched the impact of environmental auditing on pollution, sustainable development, and health in organizations in Port Harcourt, Nigeria. Using a randomized questionnaire survey of 235 employees and Spearman's rank order coefficient for analysis, they found significant relationships between environmental auditing and sustainable development, pollution reduction, and a healthy environment. Thou the previous studies consider Environmental auditing but not with sustainability report quality which makes this study unique in topic, style, scope and proxies employed to measure the subject matter.

Polycarp (2019) investigated environmental accounting and financial performance among Nigerian oil and gas firms, using secondary data from 2015-2017 for eleven companies. The study employed multiple regression analysis to examine the impact of environmental costs, such as water and air pollution expenses, along with employee and community welfare costs, on financial performance indicators like ROCE, NPM, DPS, and EPS. The findings showed minimal correlation between these performance metrics and environmental costs. The current study is richer in scope and methods, the population is also higher than the previous.

Erhinyoja and Marcella (2019) researched the effect of corporate social sustainability reporting on financial performance in Nigeria's oil and gas industry. Analyzing data from ten companies listed on the Nigeria Stock Exchange. The study sampled ten (10) oil and gas companies and it make use of secondary information gathered through content analysis, individual company accounts, and financial ratios. They found that social sustainability reporting negatively impacted returns on equity, assets, and capital employed, with a statistically significant effect only on return on equity. The current study is in no doubt superb because of its methodology and proxies used to measure dependent and independent variables.

Chowdhury et al. (2020) examined the relationship between the quality of environmental reporting and company characteristics in Bangladesh. Using an ex-post facto design and secondary data from 70 firms, they found that the level of environmental disclosure (LED-1) was significantly related to firm size, but not to profitability, leverage, or production attributes. The current study examined environmental audit and sustainability report quality in Nigeria.

Marwa et al. (2020) studied the link between environmental auditing and environmental disclosure quality in 81 French non-financial companies from the SBF 120 index (2012-2017). The study used a multiple

theory frame work and it was discovered that factors like the presence of an environmental audit committee, a BIG 4 auditor, a CSR committee, earnings management, business size, and industry positively influenced voluntary environmental disclosure. However, there was no significant link between the CSR committee and disclosure levels. This current study is unique in the area of the topic, location and proxies.

Ogoun and Ekpulu (2020) analyzed the impact of environmental reporting on the operational performance of Nigerian manufacturing companies, using return on total assets as a proxy. Employing the Hausman test to select the appropriate model, their ten-year study (2009-2018) found that environmental reporting positively affects a company's operational and financial performance. The current study examine environmental audit and sustainability report quality in listed multinational firms in Nigeria using environmental audit scope and materiality of environmental disclosure to proxy the topic.

Nkwoji (2021) assessed the influence of environmental accounting on the profitability of Nigerian oil and gas companies from 2012-2017. Using correlation, historical, and explanatory designs with secondary data, the regression analysis revealed an insignificant relationship between environmental costs and net profit for these companies.

Uniamikogbo and Ifeanyichukwu (2021) explored the correlation between environmental accounting disclosure and financial performance in Nigerian manufacturing firms. Utilizing ex-post facto design and convenience sampling, they analyzed data from 40 firms over 2010-2019. The study found that environmental accounting disclosure significantly affected share price, return on assets, and return on equity. The current study is far better in that it consider environmental audit and sustainability report quality in Nigeria multinational firms. The study employ longitudinal research design and census sampling.

Ezekwesili and Ezejiofor (2022) examined how firm characteristics influence environmental performance in Nigerian conglomerates. Using ex-post facto design and data from 2011-2020 for five firms, their analysis showed that firm size and leverage did not significantly affect waste management expenditure. The current study is far richer in population which is 37 listed multinational firms.

Okafor et al. (2022) studied the effects of leverage, firm size, and audit committee size on environmental disclosure in eleven Nigerian oil and gas firms over thirteen years (2008-2020). Their panel least square regression analysis indicated that leverage and audit committee size positively influenced effluent disposal, while firm size had a negative effect. The current study investigate environmental audit and sustainability reporting quality in a listed multinational firms in Nigeria which make it unique from the previous.

2.4 Gap in Literature

Despite the importance of environmental audits and sustainability reports, there is a significant void in the literature regarding their application and impact on multinational corporations listed in Nigeria. While numerous researchers have investigated environmental audits and their implications, the majority of studies primarily concentrate on environmental accounting, financial performance, or other facets of environmental disclosure, neglecting the wider influence on sustainability in multinational firms. Moreover, the quality of sustainability reporting has been insufficiently examined, with only a handful of studies venturing into this field.

Most of the existing research on environmental audits and sustainability has been carried out in developed countries or regions other than Nigeria. Exceptions, such as Odunze and Maduike (2018), have depended on primary data from surveys, which hinders the identification of explanatory variables and restricts the applicability of their conclusions. Additionally, there is a lack of research on environmental audits and sustainability reporting in multinational firms listed in Nigeria, especially concerning the materiality of environmental disclosure and the scope of environmental audits. This void persists despite the relevance of these subjects to governments, multinational company management, and other stakeholders, and there is a dearth of research establishing a linear relationship between the dependent variable (sustainability reporting) and the independent variable (environmental audit: materiality of environmental disclosure and the scope of environmental audits), thereby creating a gap this research aims to bridge.

This literature gap underscores the necessity for more thorough studies that take into account Nigeria's unique environmental, regulatory, and economic contexts. Filling these gaps is vital for offering insights that are pertinent to governments, multinational company management, and other stakeholders who are committed to promoting sustainability practices and reporting standards in Nigeria.

Hypothesis Development

The study tested the following hypothesis in their null forms.

Ho1: Environmental audit scope has no significant effect on sustainability report quality in listed multinational firms in Nigeria.

Ho2: Materiality of environmental disclosure has no significant effect on sustainability report in listed multinational firms in Nigeria.

3. Methodology

This study utilized a quantitative approach using longitudinal research design. Secondary data were collected from the published annual reports of these firms over a period of seven years covering 2016 to 2022 coinciding with the release of new standards environmental audits. The study population included 37 multinational corporations in Nigeria, all of which had complete financial reports for the period, thus allowing for census sampling. Content analysis was used to generate data for the study variables. The research model was estimated and analyzed using a panel regression method.

3.1. Model Specification

The model is adapted from the study of Erin et al. (2021). The initial model states that sustainability reporting quality is a function of corporate governance. The basic model is stated as;

$$SRQ_{it} = ß0 + ß_1BODSIZE_{it} + ß_2\ BODINDP_{it} + ß_3BODGEN_{it} + ß_4BODEXP_{it} + ß_5ACSIZE_{it} + ß_6ACFE_{it} + ß_7ACMEET_{it} + ß_8GROWTH_{it} + ß_9ROE_{it} + ß_{10}LEV_{it} + Ɛ_{it} \quad \text{..... (1)}$$

In the extension of the basic model, the independent variable was changed from corporate governance measures to environmental audit so as to match the study objectives as they provide evidence that may help to explain quality of sustainability reporting. The panel regression model employed is then formulated as:

$SRQ_{itt} = \alpha + \beta_1EASC_{i,t} + \beta_2MEVD_{i,t} + \beta_3FSZ_{i,t} + e_{i,t}$ ……..equation 1

Where,

SRQ = Sustainability reporting quality; EASC = Environmental Audit Scope

MEVD = Materiality of Environmental disclosure; FSZ = Firm Size.

The prior expectation based on literatures reviewed is that environmental audit will have positive effect on sustainability reporting quality. It is shown statistically as $\beta_1 > 0$, $\beta_2 > 0$ $\beta_3 > 0$

Table 2 shows the operational definitions and measurements of the research variables.

Table 1: Measurement of Study Variables

S/N	Variables	Description	Measurements	Sources
1	Sustainability reporting quality	The quality of sustainability report disclosure	A scoring system, which ranges between 0 and 4. Score 4 - When sustainability reporting is independently assured by an audit Firm; Score 3 – if there is stand-alone sustainability report; Score 2 – If there is a separate section for sustainability report in the annual report; Score 1 – If sustainability report is made in directors' report; Score 0 – If there is absence of sustainability reporting.	Erin et al (2021)

2	Environmental Audit Scope	Determination of how well the environmental management systems and equipment are performing	A scoring system, which ranges between 0 and 1. Score 1 - When the firm has ISO 4001 certification; Score 0 – if there is no ISO 4001 certification which is the evidence of environmental audit.	Ngu & Amran (2021)
3	Materiality of Environmental Disclosure	It refers to the significance of an ESG issue to a company's business and its stakeholders (Not all ESG issues equally affecting the organisation or the society).	Weighted score of materiality of information disclosed/ maximum score available for the industry	Ngu & Amran (2021)
4	Firm Size	It is the business scale and operating capacity.	Measured as the log of total Assets	Liu (2020)

Source: Authors' Compilation (2026)

4. Data Analysis and Discussion of Findings

4.1 Descriptive Statistics

The descriptive analysis of variables is outlined in Table 2. The mean score for sustainability reporting quality (SRQ) among the selected firms is 1.54, with a standard deviation of .881. It is suggested that most banks include a separate section for sustainability in their yearly reports, given that the mean score is nearing two on the scoring scale. The standard deviation, being moderate, shows a medium level of difference in sustainability reporting quality among the selected firms. The small standard error of the mean (0.054) signifies that the sample mean is a good representation of the population mean. The minimum and maximum SRQ are 0 and 3 respectively, implying that sustainability reporting is done in a separate report but isn't independently verified by an auditing firm. The total sum of SRQ is 399, with the data showing a positive skew and following a normal distribution.

Table 2 illustrates that the mean score for environmental audit scope (EASC) for the selected firms is 0.2162, with a standard deviation of 0.4124. The big standard deviation shows a high level of difference in the frequency of environmental audits among the firms. The small standard error of the mean (.025629) signifies that the sample mean is a good representation of the population mean. The minimum and maximum EASC are 0 and 1 respectively, with a total sum of 56. The data is positively skewed and normally distributed.

In addition, the mean score for materiality of environmental disclosure (MEVD) among the selected firms is 2.184, with a standard deviation of 0.100. The low standard deviation shows a small level of difference in the materiality of environmental disclosure among the firms. The small standard error of the mean (.00622) signifies that the sample mean is a good representation of the population mean. The minimum and maximum MEVD are 1.832 and 2.471 respectively, with a total sum of 565.75. The data is positively skewed and follows a normal distribution, with a kurtosis value of 3.363.

Lastly, the mean score for firm size (FMS) among the multinational corporations is 7.3842, with a standard deviation of 1.023. The moderate standard deviation shows a medium level of difference in firm size among the selected firms. The small standard error of the mean (.1386) signifies that the sample mean is a good representation of the population mean. The minimum and maximum FMS are 5.24 and 10.09 respectively, with

a total sum of 1912.515. The data is positively skewed and follows a normal distribution, with a kurtosis value of .150277.

Table 2: Descriptive Statistics

Variables	SRQ	EASC	MEVD	FSZ
Observations	259	259	259	259
Mean	1.540541	.2162162	2.184385	7.384226
Std. Deviation	.8811645	.4124604	.1001241	.023737
Coeff. Var	.571984	1.90763	.0458362	.1386384
SE(Mean)	.0547529	.025629	.0062214	.0636119
Minimum	0	0	1.832456	5.24
Maximum	3	1	2.471979	10.09806
Sum	399	56	565.7556	1912.515
Skeweness	.3192459	1.378718	.0858709	.1502775
Kurtosis	2.227233	2.900862	3.363975	2.552295

Researcher's Computation (2026)

4.2 Correlation Analysis

Table 3 shows the results of a pairwise correlation coefficient test to determine the linear relationship between sustainability reporting quality and Environmental Audit. The data revealed a direct and significant relationship between sustainability reporting quality (SRQ) and environmental audit scope (EASC), as evidenced by the coefficient value of 0.6157* and probability of 0.0000. Furthermore, it is demonstrated that, for the multinational corporations, there is a positive correlation between materiality of environmental disclosure (MEVD) and sustainability report quality (SRQ), with a coefficient value of 0.0018 indicating a direct relationship because an increase in materiality of environmental disclosure (MEVD) will results to an increase in sustainability report quality but the relationship is insignificant. Furthermore, Table 3 shows a direct and positive linear association between the size of the multinational corporations and sustainability report quality. The results is evidenced with a coefficient of 0.5395* and p-value of 0.000. The overall implication of this relationships is that environmental audit improves the quality of environmental sustainability which will bring improvement in sustainability reporting practice to make it of good quality

Table 3: Correlation Analysis of Study Variables

Variables	Pairwise Correlation	SRQ	EASC	MEVD	FSZ
SQR	Coefficient Sig.	1.0000 -			
EASC	Coefficient Sig.	0.6157* (0.0000)	1.0000 -		
MEVD	Coefficient Sig.	0.0018 (0.9764)	0.0001 (0.9981)	1.0000 -	
FSZ	Coefficient Sig.	0.5395* (0.000)	0.1634* (0.6401)	-0.2450* (0.0001)	1.0000 -

Source: Researchers' Computation (2026)

4.3 Post-Estimation Tests

To assess the error test for model's specification, the Ramsey RESET test was conducted. The results showed a probability of 0.0036, indicating the presence of omitted variable bias and model misspecification. The Breusch-Pagan/Cook-Weisberg test was employed to examine the homoscedasticity assumption, which assumes constant variance in the residuals. The data revealed an absence of heteroscedasticity, given the probability value of 0.2892, which exceeds the 0.05 threshold.

Additionally, the Wooldridge test for autocorrelation in panel data was performed to evaluate the correlation of variable values across time. The result, with a probability of 0.3419, was insignificant, indicating no first-order autocorrelation issue, and the null hypothesis of no autocorrelation was accepted.

Furthermore, a cross-sectional dependence test was conducted, and the result rejected the null hypothesis of no cross-sectional dependence, with a statistic of 8.533 and a probability value of 0.000. This suggests that environmental audit under fixed-effect conditions exhibits cross-sectional dependence. However, the observed cross-sectional dependence estimation problem was corrected using panels corrected standard errors (PSCE) with the option of independent-corrected standard errors.

Finally, the Hausman test was performed to determine the appropriate model between fixed-effect and random-effect models. The result favored the fixed-effect model, with a probability of 0.0037, implying a systematic difference in coefficients.

Table 4: Summary of Post Estimation Test Results

Ramsey RESET test		
Null Hypothesis	F-Statistics	Probability
Ho: model has no omitted variables (P>0.05)	4.63	0.0036
Tolerance and VIF Value		
Null Hypothesis	VIF	Mean VIF
There is no multicollinearity among the variables (1/VIF >0.10)	-	1.06
Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity		
Null Hypothesis	Chi2 Statistics	Probability
Constant variance across the variables residuals (P>0.05)	1.12	0.2892
Wooldridge test for autocorrelation		
Null Hypothesis	F-Statistics	Probability
No first-order autocorrelation (P>0.05)	0.928	0.3419
Pesaran's test of cross sectional independence		
Null Hypothesis	Statistics	Probability
There is no cross-sectional dependence (P>0.05)	8.533,	0.0000
Hausman Test		
Null Hypothesis	Statistics	Probability
Difference in coefficients not systematic (P>0.05)	11.20	0.0037

Source: Researcher's Computation (2026)

4.4.2 Environmental Audit and Sustainability Report Quality

The model specification test showed that a fixed-effect model is more appropriate for interpretation. To address a statistical issue that led the model to contradict the assumption of linear regression, the impact of the environment was represented by the scope of environmental audits and the significance of environmental disclosures, with firm size also influencing sustainability hardware, as inferred from the Prais-Winsten regression results. This analysis utilized a panel corrected standard error regression, computed following the correction of identified statistical issues in the pre and post estimation tests. The regression addressed the issue of cross-sectional dependence, making it more appropriate for interpretation. The linear relationship was interpreted using probability values and Z-statistics. The overall findings suggest that environmental audits significantly affect the quality of sustainability reports. This is supported by the significant Wald chi2, indicating the model's significance at the 5% level. It was determined that 59.04% of the variance in sustainability report quality can be attributed to environmental audits, considering firm size.

The regression outcomes indicate that Environmental Audit Scope (EASC) has a positively significant effect on Sustainability Report Quality (SRQ), with a Z-statistic of 13.31 and a probability of 0.000. This suggests that regular, objective audits of an organization's operations for environmental compliance can significantly improve sustainability reporting quality. Additionally, since environmental audits aid managers in controlling environmental actions, this boosts their incentive to report thoroughly and provide relevant information. Table 5 shows that Materiality of Environmental Disclosure (MEVD) has a Z-statistic of 2.91 and a P-value of 0.004, indicating a positive and significant impact on SRQ. This suggests that focusing on significant environmental issues in sustainability reports enhances their quality by addressing societal impacts. Table 5 also indicates that Firm Size (FSZ) has a significant positive effect on SRQ, as shown by a Z-statistic of 11.56 and a probability value of 0.000, implying that available resources contribute to better environmental auditing, disclosure, and report quality.

The study's findings align with those of similar research, such as Nwatwu and Oluka (2018), who found that adequate environmental cost disclosure and compliance significantly improve financial performance in Nigerian oil and gas firms. Polycarp (2019) also found a negligible connection between environmental accounting and financial performance in Nigerian oil and gas companies, which contrasts with other findings. Chowdhury et al (2020) revealed a significant association between the level of environmental disclosure and firm size, supporting Marwa et al (2020) findings on the relationship between environmental auditing and disclosure quality. Ogoun and Ekpulu (2020) found that environmental reporting positively impacts a company's operational performance in Nigeria. Uniamikogbo and Ifeanyichukwu (2021) found that environmental accounting disclosure significantly affects the financial performance of Nigerian manufacturing firms. Odunze and Maduike (2018) found significant relationships between environmental auditing and sustainable development, environmental pollution, and healthy environment.

Conversely, the study contradicts Ezekwesili and Ezejiofor (2022), who found that firm size does not significantly affect environmental performance, and Nkwoji (2021), who found an insignificant relationship between environmental cost and net profit in Nigerian oil and gas companies listed on the stock exchange.

Table 5: Panels Corrected Standard Errors Regression

		Indep-corrected		
SQR	Coef.	Std. Err.	Z	P>z
EASC	1.147307	.08619313.31	0.000	
MEVD	1.052724	.3613102	2.91	0.004
FSZ	.4140627	.0358184	11.56	0.000
_cons	-4.064614	.8917475	-4.56	0.000
Number of obs = 259		Number of groups = 37		
R-squared = 0.5904				
Wald chi2(3) = 373.30		Prob > chi2 = 0.0000		

Source: Researcher's Computation (2026)

4.5 Policy Implication of Findings

The implication of this finding should motivate management of multinational firms providing to be at the forefront of sustainability practice and invest heavily in it in order to consistently deliver quality sustainability report that cut across spheres of operation and as well provide sustainability report of high relevance through its materiality. This is because environmental audit is not yet a compulsory practice in the country but its influence on quality sustainability report as revealed by the study is positive and it is capable of boosting the firms' legitimacy and good reputation with its stakeholders which in turn can lead to achievement of organizational objectives. With environmental management certification that imply the scope of environmental audit and its effectiveness in an organization, it will be easier to correctly make sustainability decisions for the business that will give confidence of producing enough and comprehensive information concern sustainability practice of the organization. Since firm size is a significant contributor to sustainability report quality, management of multinational corporations can invest more on their total assets to boost their capacity for environmental audit practice and to help the organization complete task efficiently in a sustainable manner. This could support them more by ensuring sustainable policies that gives quality sustainability reports.

5. Conclusion and Recommendations

The study examined the effect of environmental audit on sustainability report quality of multinational corporations in Nigeria. In this era of heightened awareness of Sustainability practice, the possible intertwined relationship between environmental audits which is a strange practice to many Nigeria companies due to its voluntary nature can be important guide on how organizations can consolidate, manage, and disclose environmental concerns, ultimately promote efficiency. Employing longitudinal research design and sourcing data secondarily from annual reports, obtained data for 37 firms was analyzed and the findings shows that environmental audits have positive and significant effect on sustainability report quality of multinational firms in Nigeria.

The study concluded that the audit coverage of sustainability reports and the material value of the components of the disclosures have ability to influence the quality of sustainability report disseminated by multinational firms. The study recommends that regulators should widen the audit net; and focus more on the material value

of items disclosed in the sustainability report to ensure that impactful environmental responsibility functions is performed by firms in Nigeria.

REFERENCES

Adriani M., & Mahayana A., (2021). Enhancing transparency and accountability on sustainability reporting. *Journal of Environmental and Sustainability Studies*, 22(4), 456-472.

Alshbili, I., Elamer, A., & Moustafa, M. (2021). Social and environmental reporting, sustainable development and institutional voids: Evidence from a developing country. *Corporate Social Responsibility and Environmental Management*. https://dx.doi.org/10.1002/csr. 2096.

Angulo-Chavez (2021). Environmental audit as a tool for management and sustainability.

Asrori,A., A., Amal, M.I., & Harjanto, A.P. (2019). Company characteristics on the reporting index of corporate social and environmental disclosure in Indonesian public companies. *International Journal of Energy Economics and Policy*, *9* (5), 481-488.

Ballou ,B.,Chen, P.C.,Grenier,J.H., and Heitger, D.L. (2018). Corporate social responsibility assurance and reporting quality: Evidence from restatements. *Journal of Accounting and Public Policy*, *37*(2), 167-188. *http://dx.doi.org/10.1016/j.jaccpubpol.2018.02.001*

Braam, G. & Peeters, R. (2018). Corporate sustainability performance and assurance on sustainability reports: Diffusion of accounting practices in the realm of sustainability development. *Corporate SocialResponsibilityandEnvironmentalManagement,25*(2),164-181. *http://dx.doi.org/10.1002/csr.1447*

Brunelli S., (2022). Environmental auditing in rural areas. Current pattern and future challenges in central Asia.

Chen & Chen (2018). Global warming and climate change :Challenges and impacts. Doi:10.4018/978-1-5225-3379-5 choo4.

Chowdhury, M. A., Mohammed, M. R., & Hossain, S. K., (2020). Perceived pressures and motivations for environmental disclosure: Role of certification.

Erhinoja, E. F., & Marcella, E. C., (2019). Corporate social sustainability reporting and financial performance of oil and gas industry in Nigeria. *International Journal of Accounting Finance and Risk Management. 4*(2),54 doi:10..11648/j.ijafrm.20190402.12

Erin, O., Adegboye, A., & Bamigboye, O. A. (2021). Corporate governance and sustainability reporting quality: Evidence from Nigeria. *Sustainability Accounting, Management and Policy Journal*, *13*(3), 680-707. Doi:10.1108/SAMPj-06-2020-0185.

Erinoso O.M. & Godwin, E.O. (2022). Environmental disclosure audit and financial performance of listed oil and gas companies in Nigeria.

Ezekwesili, T., & Ezejiofor, R.,(2022). Firm characteristics and environmental performance: A study of listed conglomerates in Nigeria innovations, *68*(1), 69-82.

Farooqi, Z. U., Makhdum, M. S. A., & Yaseen, M. R. (2020). Impact of information and communication technology (ICT) investment on different components of human development in developing countries. *International Review of Management and Business Research*, *9*(4), 108-129.

Fasan, M., Mio, C., & Costantini, A., (2019). Materiality in integrated and sustainability reporting: A paradigm shift? *https://doi.org/10.1002/bse.2390.*

Ferreira, A., Carly, M., Bayu, H., (2023). Environmental management accounting and innovation: An exploratory analysis. Doi:10.1108109513571011080180

Giron, A., Amirreza K., Antonella C., & Panetti E.,(2021). Sustainability reporting and firms economic performance: Evidence from Asia and Africa. *Journal of the Knowledge Economy.* 12(6). Doi:10.1007/S13132-020-00693-7

Hassan, M. H., & Rabia, M., S.,(2021). Sustainability reporting disclosure and value relevance on listed Saudi firms. Doi.10.4236/ojbm.2021.94097.

Joshua, O., Theresa, S., Frank, S., Janna, A., (2023). The concept of material on sustainability reporting from essential contestations to research opportunities. *SSRN, electronic journal*. Doi:10.2139/ssrn.4323836

Liu, F., Fu, L., Sun, Z., & Zha, L., (2019). Environmental awareness and pro-environmental behavior within China's road freight transportation industry: Moderating role of perceived policy effectiveness.

Liu Y., (2020). Firm size, firm age and firm profitability: Evidence from China.

Lubinger, M., Judith, F., & Dorothea, G.,(2019). Assessing the materiality of university G4 sustainability reports. Doi:10.1108/jpbafm-10-2018-0117.

Marwa, M., Bassem, S., & Anis J.,(2020). Environmental audit and environmental disclosure quality. *Scientific Annals of Economics and Business*. *67*(1), 1-23. Doi: 10.2478 saeb-2020-0007.

Mion, G., & Adaui, C.,R. (2020). The effect of mandatory publication of non- financial disclosure in Europe on sustainability report quality: First insights about Italian and German companies. *Journal of Business Research New York*. Doi:10. 1108/ s1479-351220200000034005

Moses, E., Elaigwu, M., Ayoib, C., Salau O., & Collins G. (2020). Board governance mechanism and sustainability reporting quality: A theoretical framework. https://doi.org/10.1080/23311975.2020.1771075.

Naseem, M.A., Lin, J., Rehman, R.,U., Ahmed, M., I., & Ali, R.,(2019). Moderating role of financial ratios in corporate social responsibility disclosure and firm value. PLOS one, *14*(4), eo215430. http://dx.doi.org/10.1371/journal.pone.0215430.

Nazarova (2021). Environmental audit in the sustainable development of green economy. Doi :https://doi.org/10.14207/ejsd.2021.vion3p273.

Naz, M.A., Rizwan A., Ramiz U.R., & Collins G. N., (2021). Corporate governance, working capital management and firm performance: Some new insight from agency theory. *Management and decision economics 43*(3). Doi:10.1002/mde.3466

Ngetich J., & Ndiema A., (2020) Challenges and opportunity in environmental impact assessment and environmental audit practice in Kenya. Vol *13* (3), pp.70-76, July 2020. https://doi.org/10.5897/J GRP2019.0753

Ngu, S. B., & Amran, A. (2021). Materiality disclosure in sustainability reporting: Evidence from Malaysia. *Asian Journal of Business and Accounting*, *14*(1), 225-252. Doi:10.22452/ajba.vol 14 no 1.9

Nwaiwu & Oluka (2018). Effect of environmental cost disclosure on corporate performance of quoted Nigeria construction firms.

Nwoji N., (2021). Environmental accounting and profitability of selected quoted oil and gas companies in Nigeria.

Odunze, W., C., & Maduike, B.O. (2018). Impact of environmental auditing on environmental pollution, sustainable development and healthy environment of some organizations in Port Harcourt, Nigeria. *Journal of Applied Sciences and Environmental Management 22*(4) 541. Doi: 10. 4314/jasem V22i4.19.

Ogoun, I., & Ekpulu, G. (2020). Environmental reporting and operational performance: A study of listed manufacturing firms in Nigeria. *International Journal of Intellectual Disclosure*, *3*(1), 381-396.

Polycarp, S.,(2019). Environmental accounting and financial performance of oil and gas companies in Nigeria. *Research Journal of Finance and Accounting*. *10*(10), 192-200.

Saravan, K., Geoffrey, F., & Prakash R. (2019). Agency theory in political science circular economy for Indian: Perspectives on stewardship principles, waste management and energy generation: Modernization and Accountability in the Social Economy Sector. Doi.10.4018/978-1-52258482-7. Cho15.

Serena, S., Francesca c., Beatriz, C., Marco, B., (2020). Financial determinants in local re-election rates: Emerging research and opportunities. Doi.10.4018/978-1-5225-7820-8 choo2

Sergio, R., et al., (2020). Competitiveness organizational management and governance in family firms. Doi. 10.4018/978-1-7998-1655-3 choo8

Talha, A., Muhammed U. F., Hamza A., & Abdul A. (2021). The impact of firm size on profitability. A case study on the top ten cement companies of pakinstan. Doi. 10. 51263/jameb.v6i 1-137.

Uniamikogbo, E., & Ifeanyichukwu, A., (2021). Environmental accounting disclosure and financial performance of manufacturing firms in Nigeria. *Journal of Economics and International Business Management*, *9*(2), 71-81.

Xinyi, Z., (2023). Principal agent relationship and agency problem: Advance in economics management and political sciences.