

## Original Research Article

### **Impact of Firm Characteristics on Social and Environmental Accounting Disclosure Quality: A Study of Listed Non-service Companies in Nigeria**

#### **ABSTRACT**

*This study examines the impact of firm characteristics—specifically firm age, size, leverage, and performance on social and environmental accounting disclosure quality among listed non-service companies in Nigeria. Social and environmental disclosures have gained prominence due to their role in enhancing transparency, accountability, and alignment with global sustainability standards, including the United Nations' Sustainable Development Goals (SDGs). Despite the increasing relevance of social and environmental accounting disclosure quality, Nigerian non-service companies often face challenges such as inconsistent regulatory enforcement and economic pressures, leading to variations in disclosure quality. Using a correlational research design, this study analysed data from 47 non-service companies listed on the Nigerian Exchange Group from 2018 to 2022, employing generalised least squares regression techniques. The findings reveal that firm age, size, and performance positively and significantly influence social and environmental accounting disclosure quality at significance levels of 0.00, 0.00, and 0.00, respectively, while firm leverage shows no substantial impact. This research underscores the critical role of firm characteristics in shaping social and environmental accounting disclosure quality and offers recommendations for policymakers, regulators, and management to enhance sustainability practices in Nigeria. The study contributes to the existing literature by providing insights into social and environmental accounting disclosure quality within the context of a developing economy. It encourages improved corporate governance and sustainable business practices aligned with the Sustainable Development Goals.*

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#### **1. INTRODUCTION**

Social and Environmental Accounting Disclosure Quality (SEADQ) refers to the extent and credibility of information provided by companies on their environmental and social impact. This disclosure is critical for enhancing transparency, accountability, and trust among stakeholders, including investors, regulatory bodies, and the public. In Nigeria, particularly among listed non-service companies, SEADQ has emerged as a significant factor, as companies face increasing pressure to disclose their social and environmental performance in line with global standards, such as the Sustainable Development Goals (SDGs). The United Nations' SDGs, particularly Goals 12 (Responsible Consumption and Production) and 13 (Climate Action), highlight the need for responsible corporate behaviour. Therefore, examining SEADQ in Nigeria is essential for promoting sustainable business practices and ensuring alignment with international sustainability commitments.

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Given the importance of accurate reporting, SEADQ has gained prominence as a dependent variable in accounting research. Higher disclosure quality not only demonstrates corporate social responsibility but also attracts socially conscious investors and enhances a company's reputation. In the context of developing economies like Nigeria, where regulatory enforcement may be inconsistent, examining SEADQ can reveal gaps in accountability and encourage improvements in corporate governance practices. As companies face mounting scrutiny over their environmental footprint and societal contributions, SEADQ becomes a vital measure for assessing how well these firms manage and disclose their non-financial impacts.

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Nigeria's economic and regulatory environment presents unique challenges for companies aiming to meet global SEADQ standards. Unlike developed economies where regulatory frameworks for social and environmental disclosure are more established and enforced, Nigeria's regulatory system remains evolving. Regulatory bodies such as the Financial Reporting Council of Nigeria (FRCN) and the Securities and Exchange Commission (SEC) have introduced frameworks for sustainability reporting, but enforcement has been inconsistent due to resource constraints and a lack of standardisation across industries. Additionally, Nigeria's economic environment, characterised by fluctuating oil revenues and foreign exchange volatility, places significant financial pressure on firms, which can lead to prioritising short-term financial gains over long-term sustainability practices. The absence of stringent regulatory enforcement, coupled with economic instability, creates gaps in accountability and encourages companies to either delay or minimise their SEADQ efforts. This contrasts with the situation in developed economies, where both regulatory requirements and market-driven sustainability demands are more rigorous and consistently applied.

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The firm characteristics, including Firm Age, Firm Size, Firm Leverage, and Firm Performance, serve as critical independent variables influencing SEADQ. Older firms may have established stronger governance frameworks, leading to better SEADQ. Similarly, larger firms, with more resources and market influence, may feel obligated to adhere to international standards of transparency. Firms with high leverage might disclose more to reassure creditors of their long-term viability, while well-performing companies could view SEADQ as a way to solidify their competitive advantage. Thus, these characteristics are key in determining the level and quality of social and environmental reporting among non-service companies in Nigeria.

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Despite the increasing relevance of Social and Environmental Accounting Disclosure, there remains a gap in how well Nigerian non-service companies align their disclosures with international standards. This inconsistency presents a challenge, as poorly conducted or non-transparent disclosures can undermine corporate sustainability efforts and hinder progress toward the SDGs. Theoretical issues arise from the lack of consensus on what constitutes high-quality SEADQ in Nigeria. As the regulatory framework in Nigeria evolves, the question remains whether firm characteristics such as age, size, leverage, and performance significantly impact disclosure quality or whether other factors are at play.

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This study addresses this gap by providing empirical evidence on the role of firm characteristics in shaping SEADQ in the Nigerian context, where regulatory standards are still evolving and pressures from international sustainability commitments are growing. While existing studies have explored SEADQ in developed economies, this research offers critical insights into how firm characteristics such as age, size, leverage, and performance affect disclosure quality within the unique economic and regulatory environment of a developing economy like Nigeria.

Practically, existing studies have not sufficiently explored the relationship between firm characteristics and SEADQ within Nigeria's unique economic and regulatory context. Firm Age, for instance, is expected to provide experience-based improvements in SEADQ, yet some younger firms may outperform older ones due to modern governance systems. Firm Size is associated with greater resources for disclosures, but smaller firms may offer higher SEADQ due to niche market pressures. The influence of Firm Leverage is mixed in the literature, with some studies suggesting that high debt levels prompt firms to increase disclosure as a risk management strategy, while others indicate the opposite. Lastly, Firm Performance often correlates with high SEADQ, but this is not universally supported, creating a gap in understanding how these variables interact within Nigeria's non-service sector.

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Thus, this study seeks to empirically examine the impact of firm characteristics specifically firm age, size, leverage, and performance on the Social and Environmental Accounting Disclosure Quality of listed non-service companies on the Nigerian Exchange Group. Incorporating relevant Sustainable Development Goals (SDGs) into your literature review will strengthen the connection between Social and Environmental Accounting Disclosure Quality (SEADQ) and global sustainability initiatives. Here's the revised literature review with relevant SDGs integrated, along with recent citations.

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## 2. LITERATURE REVIEW

The primary objective of this research is to explore the relationship between firm characteristics and Social and Environmental Accounting Disclosure Quality (SEADQ) among listed non-service companies in Nigeria. This section reviews relevant concepts, theories, and empirical studies pertaining to this relationship, highlighting the alignment with the United Nations Sustainable Development Goals (SDGs).

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### 2.1 Social and Environmental Accounting Disclosure Quality

Social and Environmental Accounting Disclosure Quality (SEADQ) refers to the comprehensiveness, reliability, and accuracy of the information organisations disclose about their social and environmental impacts. This type of disclosure includes details about the company's sustainability practices, corporate social responsibility initiatives, environmental risks, and the social impacts of their operations. The main purpose of SEADQ is to enhance transparency and accountability to stakeholders by communicating the organisation's performance on social and environmental issues, which directly aligns with SDG 12: Responsible Consumption and Production and SDG 16: Peace, Justice and Strong Institutions (United Nation, 2023).

SEADQ faces challenges due to the lack of a globally standardised framework. While organisations such as the Global Reporting Initiative (GRI) and the International Financial Reporting Standards (IFRS) Sustainability Reporting standards offer guidance, companies in different jurisdictions, including Nigeria, encounter varying regulatory expectations. These challenges are compounded by inconsistencies in enforcement and the diverse economic pressures faced by firms in developing economies, which impacts their ability to meet SDG 8: Decent Work and Economic Growth. As a result, achieving high SEADQ remains challenging, despite growing demands for corporate sustainability reporting.

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Effective SEADQ serves multiple purposes, including compliance with regulatory requirements, fulfilling the growing demand for sustainability reporting from investors, consumers, and other stakeholders, and enhancing corporate reputation. The commitment to these practices also contributes to SDG 13: Climate Action, as firms disclose their environmental impacts and measures to mitigate climate-related risks. Despite challenges, SEADQ has become increasingly important, driven by global sustainability commitments and regulatory frameworks (Bamenda et al., 2024)

### 2.2 Firm Characteristics

Firm characteristics refer to the specific attributes of a company that influence its decision-making processes, including SEADQ. This study focuses on four key components of firm characteristics: firm age, firm size, firm leverage, and firm performance.

#### 2.2.1 Firm Age and Social and Environmental Accounting Disclosure Quality

Firm age refers to the number of years a company has been in operation (Salawu et al., 2021). Older firms often have established reputations, more resources, and greater experience in managing regulatory requirements, which may lead to more comprehensive social and environmental disclosures (Aruna & Felix, 2021). Older firms, due to their longer operational histories, may also be more motivated to align with global sustainability agendas, such as SDG 11: Sustainable Cities and Communities and SDG 17: Partnerships for the Goals (Angela & Sofik, 2021). New firms may also follow suite in order to establish their influence.

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Accordingly, the following hypothesis is proposed:

***H<sub>01</sub>: No significant relationship exists between firm age and the quality of social and environmental accounting disclosures among listed non-service companies in Nigeria.***

### **2.2.2 Firm Size and Social and Environmental Accounting Disclosure Quality**

Firm size is typically measured by total assets, sales revenue, or the number of employees. Larger firms often face more scrutiny from stakeholders, which could motivate them to enhance the quality of their social and environmental accounting disclosures. Their size enables them to implement comprehensive sustainability practices, contributing to SDG 9: Industry, Innovation, and Infrastructure, and SDG 8: Decent Work and Economic Growth. Large firms, particularly those with a global presence, are also more likely to adopt advanced sustainability reporting standards (Duque-Grisales & Aguilera-Caracuel, 2019). Accordingly, the following hypothesis was formulated:

***H<sub>02</sub>: There is no significant relationship between firm size and the quality of social and environmental disclosures among listed non-service companies in Nigeria.***

### **2.2.3 Firm Leverage and Social and Environmental Accounting Disclosure Quality**

Firm leverage refers to the proportion of debt in a company's capital structure. Highly leveraged firms may face pressure from creditors to maintain high financial performance, which can motivate more detailed social and environmental disclosures as a risk management tool. In line with SDG 10: Reduced Inequalities, these disclosures may focus on reducing risks associated with high debt levels by demonstrating social responsibility (Younas et al., 2021). Leverage, as both a financial and reputational driver, encourages companies to manage sustainability risks proactively (Bamenda, 2024). Accordingly, the following hypothesis was formulated:

***H<sub>03</sub>: Firm leverage does not have a significant impact on the quality of social and environmental disclosures (SEADQ) among listed non-service companies in Nigeria.***

### **2.2.4 Firm Performance and Social and Environmental Accounting Disclosure Quality**

Firm performance, often measured through profitability metrics such as return on assets (ROA) or return on equity (ROE), can also impact SEADQ. Successful firms are more likely to engage in SEADQ to highlight their contributions to society and the environment, supporting SDG 8: Decent Work and Economic Growth. Additionally, firms with strong non-financial performance, such as those excelling in environmental stewardship, contribute to SDG 13: Climate Action by showcasing leadership in reducing environmental impacts (Salawu et al., 2021; Trianaputri & Djakman, 2021; Younas et al., 2021).

***H<sub>04</sub>: Firm Performance does not have a significant impact on the quality of social and environmental disclosures (SEADQ) among listed non-service companies in Nigeria.***

## **2.3 Theoretical Framework**

Several theoretical perspectives underpin the relationship between firm characteristics and SEADQ.

Stakeholder Theory posits that companies must account for the interests of all stakeholders, not just shareholders, in their decision-making processes. SEADQ aligns with SDG 16: Peace, Justice and Strong Institutions, as it promotes transparency and accountability in corporate activities (Freeman, 1984).

Legitimacy Theory suggests that companies engage in social and environmental disclosures to align their operations with societal norms and expectations, supporting SDG 12: Responsible Consumption and

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Production. Companies use SEADQ to maintain legitimacy in the eyes of stakeholders, particularly in response to environmental or social pressures (Dowling & Pfeffer, 1975).

Furthermore, Institutional Theory argues that firms operating in highly regulated environments engage in SEADQ to conform to institutional pressures, contributing to SDG 9: Industry, Innovation and Infrastructure. Lastly, the Resource-Based View (RBV) highlights how firms with more financial and human resources are better equipped to adopt complex sustainability practices, aligning with SDG 17: Partnerships for the Goals by promoting collaboration in resource deployment (Barney, 1991).

## 2.4 Methodological Implications

The firm characteristics explored in this study age, size, leverage, and performance are typically measured using financial data from annual reports and publicly available financial statements. SEADQ is often assessed using content analysis of sustainability disclosures, where the comprehensiveness, accuracy, and reliability of the information disclosed is analysed based on established reporting frameworks, such as GRI, contributing to SDG 12: Responsible Consumption and Production (Global Reporting Initiative, 2021; GRI, 2021b, 2021a).

## 2.5 Connecting SEADQ to the Nigerian Context

In the Nigerian context, regulatory frameworks such as the Nigerian Corporate Governance Code (2018) play a significant role in shaping SEADQ (Financial Reporting Council of Nigeria[FRCN], 2018). This regulations, while aligned with SDG 16: Peace, Justice, and Strong Institutions, is often challenged by inconsistent enforcement and economic volatility. Nigerian firms, particularly those in non-service sectors, face additional pressures from volatile oil prices and currency fluctuations, which can hinder their ability to invest in long-term sustainability initiatives. These challenges underscore the importance of studying SEADQ within the specific context of developing economies like Nigeria (Abdullahi & Abubakar, 2023).

## 3. METHODOLOGY

This research assessed the impact of firm characteristics on social and environmental accounting disclosure quality of listed non-service companies in Nigeria. To achieve this, a correlational research design was employed. The study encompasses all 74 non-service companies listed on the Nigerian Exchange Group as of December 31, 2023. The census technique was utilised to gather information on all entities within the population. However, 27 firms were excluded due to the unavailability of their annual reports and relevant data spanning from 2018 to 2022. Consequently, the adjusted population for analysis consisted of 51 firms.

The dependent variable, namely social and environmental accounting disclosure quality, was measured through a three-step process. Firstly, a structured checklist based on the GRI sustainability disclosure guidelines was employed to construct quality indicators. Secondly, a coding system using '0' and '1' was applied. Lastly, the disclosure quality of social and environmental information was calculated through content analysis using a simple unweighted average formula. This resulted in an index, in accordance with the GRI guidelines, using annual financial reports for listed companies in Nigeria. As a result, the SEADQ index of a company was determined using the equation adopted from Yunusa (2017) as shown below:

$$SEADQ = \sum \frac{SEAI}{HPDQ}$$

Where-

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Research design  
Population  
Sample and sampling techniques  
Method of data collection  
Method of data analysis  
Model specification  
Variable measurements

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**SEADQ** =Social and Environmental Accounting Disclosure Quality

**SEAI** = Social and Environmental Accounting Indicators.

**HPDQ** = Highest possible disclosure quality score

This study includes four firm characteristics as explanatory variables.

Firm Age (FA) was measured as duration of years a company is listed on Nigerian Exchange group (Chams & García-Blandón, 2019; Yunusa, 2017). Firm Size was measured as the natural logarithm of Total assets of a company in an accounting period (Emmanuel et al., 2018). Firm Leverage (FL) was measured as the total liabilities divided by total assets of each company in an accounting period (Chams & García-Blandón, 2019; Shuaibu, 2020). Firm performance was measured using ROA, that is Profit After Tax divided by Total Assets of a company in accounting period (Abu Qa'dan & Suwaidan, 2019).

In light of these variables, the ensuing regression model which was adapted from (Yunusa, 2017) serves as the foundation for extracting empirical findings.

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#### Social and Environmental Accounting Disclosure Quality Model

$$SEADQ_{it} = \beta_0 + \beta_1FA_{it} + \beta_2FS_{it} + \beta_3FL_{it} + \beta_4FP_{it} + \varepsilon_{it}$$

Source: The Researcher Adapted the Model from the work of Yunusa, 2017.

Where:

**SEADQ** = Social and Environmental Accounting Disclosure Quality;

**it** = Longitudinal data indicator;

$\beta_0$  = Intercept;

$\beta_1$  to  $\beta_4$  = Coefficient of independent variables;

$\varepsilon$  = Error terms;

**FA** = Firm Age;

**FS** = Firm Size;

**FL** = Firm Leverage;

**FP** = Firm Performance;

#### 4. RESULT AND DISCUSSION

This section extends the study approach established in the previous section, focusing on the impact of firm characteristics on Social and Environmental Accounting Disclosure Quality (SEADQ). It involves presenting descriptive statistics (minimum, mean, maximum, and standard deviation) and correlation, conducting tests for multicollinearity, normality, heteroskedasticity and performing regression analysis by the application of Generalised Least Squares. All these steps contributed to estimating the study's evaluation of the influence of firm characteristics on SEADQ.

##### 4.1 Descriptive Statistics

Descriptive statistics in Table 1 present standard deviation, mean, minimum, and maximum values for both the dependent and independent variables, aimed to analysing data behavior in terms of variance and deviation from the mean. This assessment helps in comparing the acquired data with the legal and policy requirements of companies.

**Table 1: Descriptive Statistics**

Variables	Obs	Mean	Std. Dev.	Min	Max
<b>SEADQ</b>	235	0.0019	0.0017	0	0.0071
<b>FA</b>	235	30.6851	13 .9493	0	57

<b>FS</b>	235	24.0240	2.1060	18.93	28.58
<b>FL</b>	235	0.6298	0.3400	0.07	2.43
<b>FP</b>	235	2.9763	14.5954	-78.22	76.58

Source: Authors computation using STATA 15, 2024.

The dataset contains key firm characteristics which serve as independent variables, they are Firm Age (FA), Firm Size (FS), Firm Leverage (FL), Firm Performance (FP) while the dependent variable is Social and Environmental Accounting Disclosure Quality (SEADQ) for 235 listed non-service companies in Nigeria. The Social and Environmental Accounting Disclosure Quality (SEADQ) has a mean of 0.0020 approximately with a standard deviation of 0.0017, indicating that while some firms are making efforts in social and environmental reporting, the quality is generally low, with some firms not disclosing at all. Firm Age (FA) has an average of 30.69 years, reflecting a mix of older, listed companies and some relatively newer ones, with a range from 0 to 57 years which means that there is at least one company that was listed in 2018 while there is at least one other company that has attained 57 years old as listed company in the year 2022. Firm Size (FS), measured in terms of natural log of assets, shows a relatively narrow range (mean of 24.02), suggesting most firms are medium to large-sized.

Firm Leverage (FL), representing the ratio of debt to equity, has a mean of 0.63, indicating that companies generally use moderate levels of debt in their capital structure, though some firms have much higher leverage (up to 2.43). This reflects the challenges in accessing affordable financing in Nigeria's volatile economy. Firm Performance (FP) shows a wide variation, with an average of 2.98 approximately but a large standard deviation of 14.60, indicating that while some companies perform well, others face significant financial challenges. This financial variability is likely due to macroeconomic factors like currency fluctuations, inflation, and the reliance on imported inputs in the non-service sectors.

In the context of the Sustainable Development Goals (SDGs), the relatively low SEADQ suggests that Nigerian firms are still in the early stages of aligning their operations with goals such as SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). There is a need for stronger regulatory frameworks and incentives to encourage better sustainability disclosures and practices, especially given the importance of these sectors in Nigeria's economic diversification efforts.

#### 4.2 Correlation Results Discussion

Table 2 presents the correlation matrix, offering insights into the associations under examination.

	SEADQ	FA	FS	FL	FP
SEADQ	1.0000				
FA	0.1702	1.0000			
FS	0.4075	-0.0946	1.0000		
FL	-0.1711	-0.0239	-0.1749	1.0000	
FP	0.2047	-0.0643	0.1430	-0.1959	1.0000

Source: Authors computation using STATA 15, 2024.

The correlation matrix provides insights into the association between key variables. SEADQ is positively correlated with Firm Age (0.1702) and Firm Size (0.4075), suggesting that older and larger firms tend to disclose more social and environmental information. Larger firms likely face more pressure from investors and regulators to adopt sustainable practices and are better resourced to implement them, aligning with SDG 12 and SDG 9 (Industry, Innovation, and Infrastructure). SEADQ is also positively correlated with Firm Performance (0.2047), indicating that firms that perform well financially may be more inclined to invest in sustainability reporting.

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On the other hand, Firm Leverage (FL) has a negative correlation with SEADQ (-0.1711) and Firm Performance (-0.1959). This suggests that firms with higher debt levels are less likely to engage in high-quality sustainability disclosures and tend to perform worse financially. These results highlight the need

for policies that promote responsible financial management, as excessive leverage may prevent firms from investing in sustainable practices, which directly aligns with SDG 17 (Partnerships for the Goals) in promoting financial resilience.

### 4.3 Normality Test Discussion

Table 3: Jarque-Bera Test

Jarque-Bera normality test:	8.93 Chi <sup>2</sup> 0.0115
Test for Ho: Normality	

Source: Author's computation using STATA 15, 2024.

The Jarque-Bera normality test yielded a chi-square value of 8.93 with a p-value of 0.0115, indicating that the null hypothesis of normality is rejected. This suggests that the distribution of the SEADQ is not normal. In the context of Nigeria's economy, this non-normality likely reflects the significant diversity among firms, ranging from well-established multinationals to smaller local companies. This also points to the volatile economic environment, which may contribute to skewed financial performance and sustainability practices. Aligning with SDG 8 (Decent Work and Economic Growth), there is a need to foster more inclusive growth across firms of all sizes.

### 4.4 Multicollinearity Analysis

The multicollinearity result is presented in Table 4.

Table 4: Multicollinearity Result

Variable	VIF	1/VIF
FA	1.01	0.9458
FS	1.05	0.9488
FL	1.07	0.9371
FP	1.06	0.9460
<b>Mean VIF</b>	1.05	

Source: Author's computation using STATA 15, 2024.

The Variance Inflation Factor (VIF) results show very low values for all variables, with a mean VIF of 1.05. This suggests that there is no significant multicollinearity among Firm Age (FA), Firm Size (FS), Firm Leverage (FL), and Firm Performance (FP). This is important because it means that these variables are sufficiently independent and can be reliably used in a regression model to assess their impacts on SEADQ without inflating the standard errors.

The absence of multicollinearity allows the study to accurately assess how factors such as firm age or leverage or size or performance influence social and environmental disclosures. This is particularly relevant for Nigeria, where large firms have a more dominant role in driving economic growth and sustainability initiatives. The results highlight the importance of supporting smaller firms in achieving similar sustainability outcomes, aligning with SDG 9 and SDG 8. Policies promoting inclusive access to resources and technology would benefit firms of all sizes.

### 4.5 Hausman Test Discussion

The results of the Hausman test can be found in Table 5.



**Table 5: Hausman Test**

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Hausman	
<b>Test Ho: difference in coefficient not systematic</b>	
$\text{Chi}^2(4)$	$= (b-B) [(V b-V_B)^{-1}] (b-B)$
	$= 6.08$
<b>Prob&gt;chi<sup>2</sup></b>	<b>= 0.1931</b>

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**(V b-V\_B is not positive definite)**

Source: Author's computation using STATA 15, 2024.

The Hausman test results, with a chi-square value of 6.08 and a p-value of 0.1931, indicate that the differences between the fixed and random effects coefficients are not statistically significant. This suggests that the random effects model is appropriate, as the unobserved firm-level characteristics are not correlated with the explanatory variables like firm size, age, leverage, or performance. This is particularly relevant for Nigeria's economy, where firms differ widely in terms of age, size, and industry but share common macroeconomic challenges.

The random effects model allows for more efficient estimates, implying that general trends in social and environmental disclosure are applicable across different firms. From an SDG perspective, this suggests that improving sustainability practices across firms regardless of their characteristics requires general policies that support investment in infrastructure and technology (aligned with SDG 9). However, targeted interventions may still be necessary for smaller or younger firms. Since Random Effect is suitable Breusch and Pagan Lagrangian Multiplier was conducted to confirm further suitability of the Random Effect

#### 4.6 Lagrangian Multiplier Result Discussion

The results of the LM test is presented in Table 6 below.

Table 6: Breusch and Pagan Lagrangian Multiplier Test Random Effect

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<b>Breusch and Pagan Lagrangian multiplier test random effect</b>	
$\text{Chibar2}(01)$	$= 328.92$
<b>Prob &gt; chibar2</b>	<b>= 0.0000</b>

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Source: Author's computation using STATA 15, 2024.

The Breusch and Pagan Lagrangian multiplier test for random effects provides a chi-square value of 328.92 with a p-value of 0.0000, strongly supporting the presence of random effects. This indicates that unobserved heterogeneity (differences between firms) is significant, reinforcing the importance of using a random effects model. In Nigeria's diverse non-service sector, firms' specific characteristic such as their industry or geographic location play an important role in determining their financial and sustainability performance.

This result implies that policies to improve SEADQ and overall firm performance must consider the differences between firms while also providing a general framework for improvement. For example, national initiatives to improve financial access or regulatory frameworks for sustainability would benefit from considering firm-specific contexts. This aligns with SDG 17 (Partnerships for the Goals), which emphasises the need for tailored but collaborative approaches to achieving sustainable development. Since Breusch and Pagan Lagrangian multiplier further support Random Effect, Heteroskedasticity Test was conducted to conclude whether Random Effect is most suitable or Generalised Least Square will be more suitable if the data is heteroskedastic

#### 4.7 Heteroskedasticity Result Discussion

Table 7 presents the heteroskedasticity test results, providing a thorough assessment of the homoscedasticity assumption within the regression model under review.

Table 7: Heteroskedasticity Test

Modified Wald test for groupwise heteroskedasticity in a fixed effect regression model	
<b>Ho: <math>\sigma(i)^2 = \sigma^2</math> for all i</b>	
<b>Chi<sup>2</sup> (51) = 7.7e+08</b>	
<b>Prob &gt; chi<sup>2</sup> = 0.0000</b>	

Source: Authors computation using STATA 15, 2024.

The Modified Wald test for heteroskedasticity in the fixed effects regression model yields a chi-square value of 7.7e+08 with a p-value of 0.0000, indicating significant heteroskedasticity. This means that the variability of the errors differs across firms, which reflects the diverse nature of Nigeria's non-service sectors. Firms in industries such as agriculture, oil and gas, conglomerates, natural resources, construction/Real Estates, Health care and Consumer goods face different operational and financial challenges, leading to varied outcomes in social and environmental reporting and financial performance. Addressing this variability aligns with SDG 10 (Reduced Inequality), as it highlights the need for sector-specific policies that can support firms facing higher risks and challenges. Since the data is heteroskedastic, Generalised Least Square is more suitable.

#### 4.8 Regression Result

The result of the GLS have been presented in Table 8 below.

Table 8: Generalised Least Square Regression

SEADQ	Coefficients	Std. Error	Z-statistics	P-values
FA	0.0000262	6.97e-06	3.76	0.00
FS	0.000318	0.000047	6.76	0.00
FL	-0.0003379	0.0002932	-1.15	0.00
FP	0.0000173	6.80e-06	2.54	0.001
CONSTANT	-0.0063272	0.0012156	-5.20	0.00
<b>Wald chi<sup>2</sup> (7)</b>	<b>= 74.04</b>			
<b>Prob&gt;chi<sup>2</sup></b>	<b>= 0.00</b>			
<b>Number of Observations</b>	<b>= 235</b>			

Source: Authors computation using STATA 15, 2024.

The study, as presented in Table 8, undertook an analysis of a dataset comprising 235 observations over a five-year period, focusing on 47 non-service companies. This organizational structure allowed for an exploration of the influence of independent variables on the dependent variable, SEADQ, considering potential variations between entities and over time. The Wald chi-squared test, a critical statistical measure employed in the analysis, yielded a highly significant result with a p-value of 0.00, indicating that the entire model, encompassing independent variables, significantly influences SEADQ. The coefficients and associated standard errors elucidate the magnitude, direction, and precision of the relationships between each independent variable and SEADQ. Notably, all independent variables, except FL, are statistically significant.

In conclusion, the study underscores the overall statistical significance of the model, offering detailed insights into the impact of individual independent variables on SEADQ. This information proves valuable in comprehending the factors contributing to variations in SEADQ within the researched context, providing a detailed understanding of the dynamics at play.

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#### 4.8.1 Hypotheses testing, Discussion of findings and Implication of findings

Hypothesis one ( $H_{01}$ ) posits that " $H_{01}$ : No significant relationship exists between firm age and the quality of social and environmental accounting disclosures among listed non-service companies in Nigeria." The study's statistical analysis reveals a contrary outcome, with the coefficient associated with firm age (FA) at 0.000262, suggesting that when a company grows older that it may lead to 0.00262 percent increase in SEADQ. Importantly, the corresponding p-value is 0.00 well below 1% level of significance, leading to the rejection of the null hypothesis. This indicates an evidence suggesting that audit firm age has a positive and significant impact on SEADQ in the context of non-service companies in Nigeria. This finding aligns with the study conducted by Salehi et al. (2018)(Pallab et al., 2018), but contrasts with the results of (Bani-khalid et al., 2017)(Issa, 2017)(Abu Qa'dan & Suwaidan, 2019) research. The findings imply that companies can actively influence the depth and quality of their social and environmental reporting as they grow older. This aligns with legitimate theory which suggests that companies engage in social and environmental disclosures to align their operations with societal norms and expectations, supporting SDG 12: Responsible Consumption and Production.

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Comment [M40]: Implication of the findings Put all implications together after hypotheses testing.

The study's findings have meaningful implications for understanding the role of firm age in enhancing social and environmental accounting disclosure quality (SEADQ) among Nigerian non-service companies. The analysis reveals a statistically significant and positive relationship between firm age and SEADQ, where each incremental year in a company's lifespan contributes to a slight but noteworthy improvement in disclosure quality, quantified by a 0.00262 percent increase. This suggests that, as companies grow older, they are more likely to commit to transparent social and environmental reporting, enhancing their alignment with broader societal expectations.

This trend supports legitimacy theory, which posits that firms increasingly engage in responsible practices, including robust social and environmental disclosures, as a means to reinforce their social licence to operate. The positive correlation observed here aligns with the notion that long-standing firms develop a more established stakeholder network, fostering transparency and compliance with societal norms.

Comment [M41]: Is there any citation to back this up?

Furthermore, this finding aligns with Sustainable Development Goal (SDG) 12, which promotes responsible consumption and production. The data implies that, as firms mature, they contribute more substantially to sustainable practices, suggesting that encouraging transparency in reporting can help foster responsible production frameworks. Therefore, policymakers and regulatory bodies may consider these findings when designing policies to incentivise comprehensive reporting practices across all firm ages, reinforcing sustainable corporate governance and reporting standards.

Comment [M42]: sustainability

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The second hypothesis ( $H_{02}$ ) posits that there is no significant relationship between firm size and the quality of social and environmental accounting disclosures among listed non-service companies in Nigeria. According to Table 8, the coefficient for Firm Size (FS) is 0.000318, suggesting that an increase in FS corresponds to approximately a 0.0318 percent increase in SEADQ. Notably, the p-value for FS is 0.000, falling below both the 1% significance level. Consequently, the hypothesis positing that firm size has a significant impact on SEADQ is supported, leading to the rejection of the null hypothesis. This finding indicates that firm size plays an important role, particularly in decisions related to social and environmental matters. The study aligns with the Resource-Based View (RBV) which highlights how firms with more financial and human resources are better equipped to adopt complex sustainability practices, aligning with SDG 17: Partnerships for the Goals by promoting collaboration in resource deployment and references prior research, reinforcing the credibility of its conclusion. This result is consistent with the findings of (Abu Qa'dan & Suwaidan, 2019; Ramadhini et al., 2020; Rika Widianita, 2023; Salehi et al., 2018) yet diverges from those reported by (Masooleh et al., 2022).

Comment [M44]: Remove brackets

The study's findings reveal important implications regarding the influence of firm size on the quality of social and environmental accounting disclosures (SEADQ) among Nigerian non-service companies. The statistical analysis demonstrates a significant positive relationship between firm size and SEADQ, with a coefficient of 0.000318. This implies that as a company grows, each increase in size contributes to a

0.0318 percent enhancement in its social and environmental reporting quality. The p-value of 0.000 confirms this relationship at a 1% significance level, leading to the rejection of the null hypothesis that firm size has no impact on SEADQ.

This outcome suggests that larger firms are more capable of allocating resources both financial and human towards comprehensive and transparent social and environmental disclosures. This aligns with the Resource-Based View (RBV), which underscores that firms with greater resources are better positioned to manage complex sustainability initiatives effectively. Larger firms may have the capital, expertise, and systems necessary to embed sustainable practices more deeply into their operations.

The findings also support Sustainable Development Goal (SDG) 17, which promotes partnerships for the goals by encouraging collaboration in resource allocation to advance sustainability. The alignment with prior research further underscores the reliability of this conclusion, highlighting the critical role of firm size in driving responsible corporate governance and robust social and environmental reporting. Regulatory bodies and policymakers might leverage these insights to develop policies that encourage larger firms to play a leadership role in fostering sustainable practices within their industries, thereby promoting transparency and accountability in social and environmental matters.

The study evaluates the impact of firm leverage on the Social and Environmental Accounting Disclosure Quality (SEADQ) of listed non-service companies in Nigeria. Hypothesis three ( $H_{03}$ ) posits that *Firm leverage does not have a significant impact on the quality of social and environmental disclosures (SEADQ) among listed non-service companies in Nigeria*. The analysis, reflected in Table 8, reveals that the coefficient for firm leverage (FL) is -0.0003379, indicating a minimal 0.03379 percent decrease in SEADQ with a unit increase. However, the p-value for FL is 0.294, surpassing even 10% significance level, rendering the impact statistically insignificant. Consequently, the study fails to reject the null hypothesis, suggesting no substantial impact of firm leverage on SEADQ for listed non-service companies in Nigeria. This finding corresponds with the research by (Abdillah et al., 2022), yet differs from the outcomes reported in Salehi et al. (2018)(Masooleh et al., 2022). Despite initial expectations and the contrasting findings of a prior study, the data underscores the complexity of real-world research, emphasising the importance of acknowledging that research outcomes may not always align with initial assumptions.

The findings on firm leverage provide valuable insights into its role, or lack thereof, in influencing the Social and Environmental Accounting Disclosure Quality (SEADQ) among listed non-service companies in Nigeria. The study's analysis shows a very slight negative relationship, with a coefficient of -0.0003379 indicating a decrease of just 0.03379 percent in SEADQ for each unit increase in leverage. However, this relationship is statistically insignificant, as evidenced by a p-value of 0.294, which is beyond the 5% significance threshold. As a result, the study does not reject the null hypothesis, suggesting that firm leverage does not have a meaningful effect on SEADQ in this context.

This outcome highlights the intricate nature of empirical research, where anticipated relationships do not always materialise, underscoring the importance of data-driven rather than assumption-driven conclusions. Despite some prior studies suggesting that leverage might influence a firm's social and environmental disclosures, this study's findings suggest otherwise for non-service companies in Nigeria. This discrepancy may reflect industry-specific dynamics or structural differences within Nigeria's non-service sector that moderate the influence of financial leverage on social and environmental reporting practices.

These findings imply that other factors, rather than leverage, may be more influential in guiding SEADQ for these firms, thus providing a clearer direction for future research. For practitioners and policymakers, the study suggests that focusing on leverage as a determinant for SEADQ in this context may not be as effective, and that other organisational or structural variables may play a more substantial role in shaping sustainable disclosure practices.

In the study's fourth hypothesis ( $H_{04}$ ), it was asserted that " $H_{04}$ : *Firm Performance does not have a significant impact on the quality of social and environmental disclosures (SEADQ) among listed non-service companies in Nigeria.*" However, contrary to this assertion, the examination of the relationship

between firm performance and SEADQ reveals a positive significant impact. The study calculates a FP coefficient of 0.0000173, signifying that an increase in firm performance may lead to a 0.00173 percent increase in SEADQ. The associated p-value is 0.011, falling below 5% significance level, indicating a positive and statistically significant relationship. Consequently, the null hypothesis is rejected, affirming that firm performance do indeed have a positive and significant impact on SEADQ. This underscores the important role of firm performance as a key component of firm characteristics. This finding is in agreement with the study by (Abdillah et al., 2022)(Masooleh et al., 2022), though it stands in contrast to (Ramadhini et al., 2020)Salehi et al. (2018) conclusions.

The implications of the findings from the analysis of Hypothesis 4 ( $H_{04}$ ) in this study are substantial for stakeholders concerned with social and environmental accounting disclosure quality (SEADQ) among listed non-service companies in Nigeria.

**Policy Implications:** The significant positive relationship between firm performance and SEADQ suggests that regulators and policymakers should consider firm performance as a critical factor when formulating policies aimed at enhancing social and environmental disclosures. The finding indicates that financially healthy companies may have greater capacity or willingness to engage in and report on social and environmental initiatives. Regulatory frameworks could therefore incentivize firms with higher performance levels to further improve SEADQ, potentially setting minimum performance-related standards for disclosure practices.

**Implications for Investors and Financial Analysts:** For investors and analysts, the positive relationship between firm performance and SEADQ implies that SEADQ can be a useful indicator of firm health and stability. Since better-performing companies are shown to be more transparent in their social and environmental disclosures, investors interested in sustainable and socially responsible investments may use SEADQ as a criterion for investment decisions. Additionally, analysts may incorporate SEADQ metrics into firm performance assessments, viewing robust disclosures as indicative of a firm's commitment to sustainable development and ethical business practices.

**Management Implications:** For company management, this finding highlights the potential reputational and operational benefits associated with improving SEADQ. Since firm performance positively influences SEADQ, management in non-service firms could leverage this relationship to build competitive advantages through enhanced transparency and corporate responsibility practices. Moreover, by understanding the impact of financial performance on SEADQ, management can make more informed decisions about resource allocation towards social and environmental initiatives, ultimately boosting the company's market position and stakeholder trust.

**Implications for Social and Environmental Advocates:** The positive impact of firm performance on SEADQ also suggests that advocacy groups may benefit from targeting high-performing firms to lead social and environmental change. By demonstrating the benefits of high SEADQ to well-performing companies, advocates can encourage these firms to set industry standards and act as role models for smaller or less profitable companies. This finding therefore offers an evidence-based approach for advocates aiming to improve industry-wide SEADQ standards by focusing on firms with the resources to make substantive commitments.

**Academic and Research Implications:** This finding opens up new avenues for research in social and environmental accounting, suggesting that future studies could explore the mechanisms by which firm performance influences SEADQ and whether this relationship holds across different sectors, regions, and regulatory environments. It also raises questions about causality: does improved SEADQ lead to better performance due to enhanced reputational capital, or does financial health enable firms to allocate more resources to SEADQ? Researchers might investigate the directionality of this relationship and the underlying factors that drive the link between firm performance and SEADQ.

In conclusion, the rejection of  $H_{04}$  and confirmation of a positive relationship between firm performance and SEADQ underscores the critical role of financial health in fostering quality social and environmental disclosures. This finding offers valuable insights for policymakers, investors, management, advocates, and academics in understanding and leveraging the role of firm characteristics in promoting sustainable corporate practices.

## 4.9 CONCLUSION AND RECOMENDATIONS

This study examined the impact of firm characteristics on Social and Environmental Accounting Disclosure Quality (SEADQ) among listed non-service companies in Nigeria. The research was driven by a general neglect of social and environmental issues and the limited body of relevant studies within Nigeria. Growing concerns, including public protests and governmental worries over environmental impacts, highlighted the need to explore how various firm attributes affect SEADQ. Key dimensions of SEADQ examined in the study included human resource allocation, community involvement, employee development programs, and environmental initiatives. The analysis was grounded in stakeholder theory, legitimacy theory, institutional theory and Resource-Based View which provided a foundation for understanding the selected variables. Four hypotheses were proposed, with findings showing that three firm characteristics significantly influenced SEADQ, while one characteristic did not demonstrate a meaningful relationship.

The study provide the following recommendations:

**Promote Investment in Fixed Assets (FA) or Non- Current Assets:** Firms should be encouraged to increase investments in fixed assets, such as infrastructure, machinery, and technology, as these are significantly associated with improved social and environmental accounting disclosure quality (SEADQ) and better long-term sustainability. The regression analysis shows a positive and significant relationship between fixed assets and SEADQ, implying that companies that invest more in physical assets are better equipped to implement sustainable practices and improve their reporting on social and environmental issues. In Nigeria, where manufacturing and agriculture are crucial for economic growth, investing in capital assets is vital for improving operational efficiency and reducing environmental impact. This recommendation aligns with SDG 9 (Industry, Innovation, and Infrastructure), which emphasizes the need for resilient infrastructure and sustainable industrialization. By incentivising investments in assets, the government can support firms in adopting eco-friendly technologies and enhancing their sustainability efforts.

**Strengthen Financial Performance (FP) through Sustainable Practices:** Firms should adopt business models that simultaneously improve their financial performance and enhance their social and environmental accounting disclosure quality (SEADQ). The regression results show that firms with stronger financial performance are more likely to engage in higher-quality sustainability reporting. Profitability provides firms with the resources necessary to invest in sustainability initiatives, which are often costly but yield long-term benefits. Financially successful companies can better afford to implement green technologies, reduce waste, and adopt energy-efficient processes. This recommendation supports SDG 12 (Responsible Consumption and Production) by encouraging firms to integrate sustainability into their operations while ensuring profitability. By doing so, companies can achieve sustainable growth, attract socially-conscious investors, and meet the expectations of regulators and stakeholders.

**Support Large Firms as Sustainability Leaders:** Larger firms should be supported and incentivised to lead sustainability initiatives, setting an example for other companies. The regression analysis highlights a strong positive relationship between firm size (FS) and SEADQ, suggesting that larger companies have more resources to dedicate to sustainability efforts and are more likely to face pressure from stakeholders to engage in responsible practices. In Nigeria's non-service sectors, large firms such as those in manufacturing and oil & gas have the potential to drive sustainability initiatives that can significantly impact the economy and environment. These companies should be encouraged to enhance their social and environmental disclosure practices, contributing to SDG 8 (Decent Work and Economic Growth), which promotes sustainable and inclusive economic growth. By leading by example, large firms can influence smaller firms to adopt similar sustainability practices, fostering a more responsible business environment across industries.

**Manage Financial Leverage (FL) to Enhance Sustainability:** Firms should carefully manage their financial leverage to avoid excessive debt, which may limit their ability to invest in sustainability initiatives. The

**Comment [M45]:** Recommendations

The recommendations should be in line with the objectives and findings.

regression results indicate a negative relationship between firm leverage (FL) and SEADQ, although it is not statistically significant. High leverage can restrict a firm's financial flexibility, as servicing debt takes priority over long-term investments in sustainability. This is particularly relevant in Nigeria, where many firms operate in a volatile economic environment and may rely on debt to finance their operations. Promoting responsible financial management and ensuring access to affordable financing can enable firms to reduce their dependence on debt and invest in sustainability. This recommendation aligns with SDG 17 (Partnerships for the Goals) by encouraging partnerships between financial institutions and firms to provide affordable credit and support for sustainability projects. This would help firms balance financial stability with sustainable development goals.

Incentivize Sustainability Disclosures for Younger and Smaller Firms: Government and regulatory bodies should introduce targeted incentives to encourage younger and smaller firms to improve their social and environmental disclosures and engage in sustainability practices. The regression analysis suggests that firm age (FA) and firm size (FS) are positively related with SEADQ, meaning that younger and smaller firms may lack the resources or awareness to prioritize sustainability. Offering incentives such as tax breaks, grants, or technical support can help these firms implement sustainable practices and improve their transparency. Supporting smaller and younger firms in this way would ensure they contribute to national sustainability efforts and are not left behind in the transition to a more sustainable economy. This recommendation supports SDG 10 (Reduced Inequality) by ensuring that smaller firms have the same opportunities to engage in sustainable practices as larger firms. By leveling the playing field, Nigeria can foster more inclusive economic growth and achieve its broader sustainability goals.

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