

## **ENVIRONMENTAL DISCLOSURE, AUDIT COMMITTEE ATTRIBUTES AND EARNINGS MANAGEMENT: EVIDENCE FROM LISTED MANUFACTURING FIRMS IN NIGERIA**

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### **Abstract**

The study examines the nexus between audit committee features, environmental disclosure and earnings management (EMA) of listed Nigerian manufacturing firms. Specifically, it investigates how audit committee female gender diversity, audit committee meeting frequency, audit committee independence, and environmental practice disclosure, alongside firm-specific variables such as returns on assets, leverage, firm size, and revenue growth, influence earnings management, proxied by the Modified Jones model. Using panel data from thirty-six selected manufacturing firms over a specified period from 2015 to 2024. The study employed regression analysis to test the relationship between the variables. From the fixed effect model, the findings revealed that environmental disclosure practices have a negative but statistically insignificant effect on EMA, which suggests that increased disclosure does not necessarily constrain opportunistic reporting practices. Among the governance variables, audit committee female gender diversity exhibits a significant negative effect on EMA, indicating that greater female representation enhances monitoring and reduces earnings manipulation. In contrast, the frequency of audit committee meetings is positively related to EMA at a marginal level of significance. Also, audit committee independence shows a significant positive effect on EMA, which implies potential limitations in the effectiveness of independent members. Regarding the control variables, revenue growth significantly reduces earnings manipulation, while firm size demonstrates a weak negative relationship with earnings management. Leverage also shows a significant negative relationship with earnings management. Conversely, return on assets is positively and significantly associated with earnings management, suggesting that more profitable firms may engage in income smoothing. The study concludes that certain audit attributes are effective in constraining EMA while others highlight the need for stronger enforcement.

**Keywords:** Audit committee female gender diversity, audit committee independence, au committee meetings, earnings management, environmental disclosure index

### **1.0 Introduction**

Earnings management has emerged as a vital issue in corporate governance, which often undermines stakeholders' trust and the reliability of financial reporting. The practice involves manipulating financial statements to meet specific targets, thereby distorting a company's true financial health (Pathak et al., 2014). Earnings management (EMA) refers to the ability of managers to influence reported financial outcomes by exercising discretion in accounting policies. Many executives employ this practice to shape the firm's financial outcomes through strategic accounting decisions and the manipulation of discretionary accruals (Alqatamin et al., 2017; Ogundele et al., 2024). In recent decades, corporate reporting has evolved beyond traditional financial statements to include broader disclosure relating to environmental, social and governance (ESG) issues.

Environmental disclosure, often driven by regulatory requirements or voluntary initiatives, serves as a critical tool for communicating environmental performance and commitment to sustainability of a firm. Akinadewo et al., (2023) states that corporate environmental disclosure practice is, thus, believed to manifest through companies' environmental practices implementation in their daily operations and strategic planning procedure. Environmental disclosure has become a vital component of corporate transparency because stakeholders

increasingly demand information about how organizations manage environmental risk and contribute to sustainable development. Companies adhering to sound environmental practices not only promote the development of equitable and sustainable financial returns but also fulfil their environmental responsibilities (Bankole et Al., 2025). Stakeholders, which include regulators, investors and civil society, are progressively concerned about how firms manage and report their environmental impacts, especially within environmentally sensitive sectors like the manufacturing sector. As a result, the manufacturing industry is increasingly expected to disclose environmental policies and sustainability initiatives in its corporate reports. The manufacturing industry plays a significant role in Nigeria's economic growth, contributing to employment, Gross Domestic Product, and industrial development (Ewesesan et al., 2026).

Environmental disclosures are a key component of corporate social responsibility. It is designed to enhance accountability and transparency. It may paradoxically be used as tools to mask earnings manipulation, raising concern about their effectiveness and accountability (Mohd-Sabrun & Muhamad, 2023). However, evidence advocates that these disclosures could be used opportunistically to obscure earnings manipulation, especially in sectors with high environmental sensitivity (Brahmana et al., 2018). For instance, companies in environmentally sensitive industries tend to engage in EMA when compared to their counterparts in less sensitive sectors (Mohd-Sabrun & Muhamad, 2023). Environmental disclosures involve the reporting of sustainability practices such as waste management, renewable energy use, carbon emissions and water consumption, which are increasingly demanded by stakeholders and regulatory bodies (Emmanuel et al., 2024). Environmental disclosure practices among listed Nigerian manufacturing industries remain largely voluntary and inconsistent across institutions. Evidence indicates that many manufacturing firms do not fully comply with internationally recognised reporting framework such as the Global Reporting Initiative (GRI), partly due to weak regulatory enforcement and inadequate monitoring mechanisms (Kameel & Festus, 2023). However, concerns persist regarding the effectiveness of these governance mechanisms in limiting EMA and ensuring the credibility of environmental disclosures among listed manufacturing firms.

Corporate governance mechanisms play a critical role in mitigating EMA and improving the credibility of corporate disclosures. Among these mechanisms, the audit committee is particularly significant because it oversees financial reporting processes, internal control systems, and the relationship between management and external auditors. An effective audit committee is characterised by financial expertise, independence and frequent meetings. This can strengthen monitoring functions and limit managerial opportunistic behavior. The audit committee plays a vital role in mitigating EMA by ensuring robust oversight of financial reporting processes. Audit features have been shown to influence their effectiveness. However, the effect of these characteristics varies across different contexts, with some studies reporting positive and negative effects while others found no significant relationship (Hakim et al., 2022; Jameel et al., 2024). It is expected of audit committees to enhance governance and financial oversight; their effectiveness is influenced by factors such as independence, size, and meeting frequency (Adegboye, 2020; Kaoje et al., 2023).

Despite the growing emphasis on sustainability, Nigerian companies often fail to provide comprehensive environmental risk information, focusing instead on less relevant disclosures such as general statements and backward-looking data (Adamu,2020). This limits stakeholders'

ability to assess the sustainability efforts and environmental impacts of manufacturing firms in Nigeria. The adoption of International Financial Reporting Standards and corporate governance reforms has heightened the focus of sustainability disclosures and audit committee effectiveness. However, challenges persist, including the prevalence of earnings management among listed firms (Kaoje et al., 2023). Hence, this study seeks to address how environmental disclosure and audit committee features influence EMA, especially in the Nigerian listed manufacturing firms.

## **2.0 Literature Review**

Agency theory explains the conflict of interest between the agents (managers) and principals (shareholders). The theory was largely developed by Michael C. Jensen and William H. Meckling (1976) in their seminal work on the agency costs and agency problems (Khandelwal et al., 2023). Agents often have superior information compared to principals, which can lead to opportunistic behavior unless monitored or incentivized effectively (Seth, 2016). In mitigating agency problems, principals use mechanisms such as bonding, monitoring and incentive alignment to ensure agent acts in the best interest of the principal (Hoskisson et al., 2009). Managers have the tendency to act opportunistically to maximize personal benefits, which includes earnings. Audit committees act as governance mechanisms to reduce information asymmetry and ensure that managers act in the best interest of shareholders. Agency theory also explains how audit committees can align managerial actions with stakeholders' interests, especially in the context of non-financial reporting (Velte, 2023). Strong governance mechanisms have the potential to reduce earnings manipulation (Choi et al., 2004; Banbhan et al., 2018). A strong audit committee are expected to mitigate earnings management, while environmental disclosure may either enhance transparency or be used opportunistically, depending on governance strength.

Stakeholder theory posits that entities are accountable not only to their shareholders but are also accountable to a broader set of stakeholders, which includes regulators, employees, communities and environmental groups. Freeman (1984) is the primary proponent of stakeholder theory. Environmental disclosure is a response to stakeholder pressure for accountability and transparency regarding environmental impacts. Audit committees with independence and diverse expertise ensure that environmental disclosures address stakeholders' concerns, thereby enhancing long-term value creation and transparency (De Almeida & Paiva et al., 2022). The theory explains the role of audit committees in balancing the interests of different groups through enhanced environmental and social governance reporting (Ruziwa & Nomlala, 2025; Boakye et al., 2025). Companies with strong governance structures and stakeholder orientation have the tendency to exhibit high-quality environmental disclosure and lower earnings manipulation. This theory underpins the role of audit committees in ensuring that environmental disclosures address the concerns of diverse stakeholders. It also explains the link between corporate governance mechanisms and the quality of disclosures (Sun, 2010; Boakye et al., 2025). Institutional theory focuses on how organisational practices, including environmental disclosure, are shaped by institutional pressures such as regulations, norms and cultural expectations. DiMaggio and Powell (1983) are key contributors to institutional theory. This theory explains how audit committees respond to regulatory frameworks and societal pressures to improve the quality of environmental disclosures and reduce earnings manipulation (Boakye et al., 2025). Institutional pressures drive firms to adopt standardized reporting practices, such as the Global Reporting Initiative (GRI), which are often overseen by audit committees (Uyar et al., 2023).

### **Empirical Review**

Empirical evidence on the relationship between environmental disclosures, audit committee attributes and earnings management presents mixed but insightful findings across different contexts. Prior studies indicate that environmental disclosure may either exacerbate or constrain earnings management, which depends on governance and institutional conditions. For instance, Brahmana et al., (2018) discovered a significant and positive relationship between corporate environmental disclosure and earnings management, which suggests that firms may engage in opportunistic reporting while projecting environmental responsibility. Similarly, Mohd-Sabrun and Muhamad (2023) reported sectoral variations, showing that environmentally sensitive firms are more prone to earnings manipulation than non-sensitive firms. In contrast, Gerged et al., (2023) found a negative relationship between environmental disclosure and earnings management, while also emphasizing the moderating role of corporate governance mechanisms in shaping this relationship. These divergent findings highlight the complexity of the environmental disclosure and earnings management nexus. It underscores the relevance of contextual factors, especially governance structures, in explaining firm behaviour.

With respect to audit committee attributes, the literature largely supports their pivotal role in constraining earnings management, although results remain inconclusive. Studies such as Choi et al. (2004), Kaoje et al. (2023) and Jameel et al. (2024) revealed that audit committee independence, meeting frequency and size influences earnings management, albeit in varying directions. While expertise and independence are often associated with enhanced financial reporting quality, some evidence suggests that certain attributes such as financial expertise or committee size, may not always be effective in reducing earnings manipulation. Additionally, gender diversity has received increasing attention, with studies like Setiawan et al. (2020) and Adegboye et al., (2020) demonstrating that female representation on audit committees enhances disclosure quality and mitigates earnings management, although Amara et al. (2025) reports mixed effects depending on demographic characteristics. Additionally, recent evidence from Mutsa Ruziwa et al., (2025) highlights the relevance of audit committee independence in enhancing Environmental Social and Governance reporting quality. Overall, the empirical literature suggests that audit committee effectiveness is multidimensional and context-dependent, reinforcing the need to jointly examine environmental disclosure and governance attributes in explaining earnings management.

### **3.0 Methodology**

The study relied on secondary data obtained from the annual reports and accounts of listed manufacturing companies in Nigeria. An ex post facto research design was adopted because the required data already exist. Furthermore, a longitudinal research design was employed to incorporate both time-series and cross-sectional dimensions of the data. Accordingly, the dataset is a panel data, which consist of 36 cross-sectional units observed over the period 2015 to 2024.

Using the purposive sampling technique, a total of thirty-six firms whose stocks were actively traded during the study period were selected, based on the availability of relevant data. The dataset covers a ten-year period from 2015 to 2024 and was sourced from the audited annual reports and accounts of the listed firms. For the analysis, the study employed panel regression techniques, supported by both descriptive and inferential statistical methods. This combination of analytical techniques enables a comprehensive examination of the relationships among the variables and enhances the robustness of the empirical findings.

**Model Specification**

In addressing the objective, the model is formulated by examining the functional relationship between environmental disclosure practices, audit committee features and EMA of listed manufacturing firms in Nigeria. This model is adapted from the frameworks proposed by Sun et al. (2010), Ghani et al. (2014) and Kaoje et al. (2023). The model is employed to quantitatively examine the influence of environmental disclosure and audit committee characteristics on earnings management by controlling for firm-specific factors and capturing both cross-sectional and time-series variations inherent in panel data of listed manufacturing firms in Nigeria. Based on the selected proxies for each independent variable, the model is expressed as a multiple regression equation, as outlined below. Equation (1) below expresses the panel data model used in this study.

$$EMA_{it} = \beta_{0it} + \beta_1ACF_{it} + \beta_2ACI_{it} + \beta_3ACM_{it} + \beta_4EDI_{it} + \beta_5LEV_i + \beta_6ROA_{it} + \beta_7FSZ_{it} + \beta_8REG_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

**Measurement of Variable and Aprior Expectation**

This study employed several variables to examine the nexus between audit committee characteristics and environmental disclosure on EMA of listed manufacturing firm. Earnings management (EMA) is considered as the dependent variable, while audit committee characteristics such as Audit Committee Female Gender Diversity (ACF), Audit Committee Independence (ACI) and Audit Committee Meeting (ACM), together with Environmental Disclosure Index (EDI), constitute the main explanatory variables. Using content analysis, the study developed an environmental disclosure index based on eight selected items (Material Disclosure, Energy Disclosure, Emission Disclosure, Biodiversity Disclosure, Water Disclosure, Effluents and Water Disclosure, Product and Services Environmental Impact Disclosure). In addition, firm- specific features such as Leverage (LEV), Return on Assets (ROA), Firm Size (FSZ) and Revenue Growth (REG) are included in the control variables to account for variations across firms.

EMA is proxied using the Modified Jones Model. Audit Committee Female Gender Diversity (AUF) is a proxy as the proportion of female members on the audit committee in relation to the total number of audit committee members. It captures the extent of gender inclusiveness within the audit committee. A priori, a negative relationship is expected between AUF and EMA as increased female representation is associated with stronger ethical orientation, reduced opportunistic behavior and stronger ethical values. Audit committee independence (ACI) is proxied as the proportion of independent directors on the audit committee. Independent members are presumed to be less influenced by management and more objective, thereby enhancing oversight functions. It is expected to have a negative relationship with EMA. Audit committee meetings (ACM) are measured by the number of meetings held by the audit committee within a financial year. It is expected that more frequent meetings will enhance oversight and reduce earnings manipulation; hence, a negative relationship is anticipated between the two variables (ACM and EMA). The Environmental Disclosure Index (EDI) is proxied using a disclosure scoring approach based on the extent of environmental information disclosed in the annual reports of the selected manufacturing firms. The index typically ranges between 0 and 1, with

higher values indicating more comprehensive disclosure. This study uses content analysis to measure the risk reporting. A negative relationship is expected between EDI and EMA. Leverage (LEV) proxied as the ratio of total debt to total equity, is included as a control variable. Leverage could be expected to have a positive or negative relationship with EMA. Managers may be incentivized to manipulate earnings upward to avoid violating debt covenants, reduce the risk of default cost, or present a stronger financial position to creditors. Conversely, the presence of debt can enhance external monitoring by creditors, thereby constraining managerial opportunism and reducing earnings. Firm Size (FSZ), measured by the natural logarithms of total assets, captures the scale of firm operations. Larger firms are subject to greater regulatory oversight and scrutiny; thus, a negative relationship is expected between FSZ and EMA. Return on assets (ROA), proxied as net income in relations to total assets, reflects firm profitability. More profitable firms are generally under less pressure to manipulate earnings, which suggests a negative relationship between ROA and EMA, although income smoothing behaviour may still occur in some cases. Finally, revenue growth (REG), proxied as the annual percentage in revenue, captures firm growth dynamics. A positive relationship is expected between REG and EMA.

#### **4.0 Results and Interpretation**

Table 4.1 presents the descriptive statistics of the variables employed in this paper, namely Earnings Management (EMA); Environmental Disclosure Index (EDI); Audit Committee Characteristics. Audit Committee Female Gender Diversity (AUF), Audit Committee Independence (ACI) and Audit Committee Meeting (ACM); and firm specific control variables such as Firm Size (FSZ), Leverage (LEV), Returns on Asset (ROA) and Revenue Growth (REG).

The result shows that earnings management has an average value of -0.37 and a median of -0.41, which suggests that, on average. Firms engage in income-decreasing EMA. This implies that managers are more inclined to reduce reported earnings, possibly for income smoothing, tax minimization or to create reserves for future periods. The standard deviation of 0.80 points to a moderate level of variability, which implies that although extreme values exist, most observations are relatively closer to the mean. Audit Committee Female Gender Diversity (ACF) reveals a mean of 13.93, which implies that, on average, female representation on the audit committee is relatively low. The median (16.67) being higher than the mean connotes some lower values pulling down the mean value. The standard deviation (15.58) reveals considerable variability. ACI has an average value of 54.11 and a median of 50.00, which indicates that more than half of audit committee members are independent in most firms. The relatively high standard deviation of 18.72 depicts notable dispersion. ACM shows a mean value of 3.81 meetings per year and a median of 4, which typically indicates that about four audit committee meetings are held annually. The range from 1 to 6 meetings indicates moderate variation.

EDI has an average and median value of 0.11 and 0.00, respectively, which indicates that most firms disclose little or no environmental information. The standard deviation (0.21) indicates limited variation. Returns on Assets (ROA) have a mean value of 4.25 and a median value of 4.35, which suggests that firms are moderately profitable on average. Revenue Growth (REG) reveals a mean and median values of 15.44 and 7.31 percent, respectively, which suggest that firms experience a high growth rate; the typical firm grows at a more modest rate.

**Table: 1**  
**Descriptive Statistics**

	EMA	ACF	ACI	ACM	LEV	EDI	FSZ	ROA	REG
Mean	-0.37	13.93	54.11	3.81	2.01	0.11	7.18	4.25	15.44
Median	-0.41	16.67	50.00	4.00	1.22	0.00	7.06	4.35	7.31
Maximum	5.41	71.43	120.00	6.00	202.90	1.00	9.38	108.90	1354.26
Minimum	-6.84	0.00	0.00	1.00	-253.83	0.00	5.24	-179.92	-100.00
Std. Dev.	0.80	15.58	18.72	0.75	19.00	0.21	0.95	16.14	90.65
Skewness	-0.42	0.97	1.43	-0.90	-2.59	2.09	0.12	-3.44	10.76
Kurtosis	32.65	3.39	5.44	6.18	132.96	6.53	2.19	54.28	146.23
Jarque-Bera	13164.34	57.92	211.34	198.29	253750.60	448.79	10.74	40159.72	312062.40
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Source:** Authors' Computation 2025.

**Correlation Analysis and Variance Inflation Factor**

The correlation matrix provides preliminary evidence on the relationships among the study variables and potential multicollinearity concerns. As a preliminary diagnostic, correlation analysis was carried to examine the degree and strength of relationships among the variables. The pairwise correlation coefficient over the ten years is presented in the asymmetrical matrix in Table 4.2. The findings show that the majority of the independent variables have weak to moderate correlations, with no coefficient rising above the typical cutoff of 0.8. This suggests that multicollinearity is not present, and the Variance Inflation Factor result confirms this.

In particular, Table 4.3's mean VIF value of 1.177 is far lower than the recognized benchmark of 10, indicating that multicollinearity is not a major issue for the model. Therefore, the estimated regression coefficient can be considered reliable as low VIF values suggest that the explanatory variables are not highly linearly related.

**Table 2.**  
**Correlation Analysis**

Probability	EMA	ACF	ACI	ACM	LEV	EDI	FSZ	ROA	REG
EMA	1.000								
ACF	-0.032	1.000							
ACI	-0.121	0.067	1.000						
ACM	0.038	0.130	0.021	1.000					
	0.472	0.015	0.693		1.000				

LEV	0.010	0.017	0.080	-0.01	1.000				
	0.848	0.755	0.133	0.791	-----				
EDI	-0.115	0.191	0.267	0.237	-0.011	1.000			
	0.031	0.000	0.000	0.000	0.833	-----			
FSZ	-0.172	0.186	0.210	0.268	0.059	0.475	1.000		
	0.001	0.000	0.000	0.000	0.272	0.000	-----		
ROA	0.094	0.125	0.044	0.281	-0.032	0.081	0.269	1.000	
	0.079	0.019	0.406	0.000	0.551	0.129	0.000	-----	
REG	-0.555	-0.05	0.107	-0.01	0.136	-0.02	0.053	0.040	1.000
	0.000	0.303	0.046	0.801	0.010	0.680	0.317	0.457	-----

Source: Authors' Computation 2025.

**Table: 3**  
*Variance Inflation Factor*

Variable	Coefficient Variance	Centered VIF
ACF	5.08E-06	1.066
ACI	3.81E-06	1.110
ACM	0.002401	1.168
LEV	3.28E-06	1.031
EDI	0.035607	1.405
FSZ	0.001853	1.442
ROA	5.09E-06	1.155
REG	1.47E-07	1.040
C	0.115107	
MEAN VIF		1.177

Source: Authors' Computation 2025.

**Lagrange Multiplier Tests and Hausman Test**

To ascertain whether a random effects model is preferable to a pooled OLS model, the study explored the Lagrange Multiplier (LM) test in Table 4.4. The null hypothesis states that no panel effect exists (i.e., pooled OLS is adequate), while the alternative suggests the presence of random effects. The test result, based on the Breusch-Pagan, Honda and King-Wu statistics, consistently indicates the presence of significant panel effects in the model. The result of the Breusch-Pagan Lagrange Multiplier test reveals the presence of significant panel effects in the model. Specifically, the cross-sectional components is statistically significant ( $\chi^2 = 134.2094$ ,  $p < 0.01$ ), which indicates substantial heterogeneity across the sample entities, while the time component is not significant ( $p=0.582$ ), suggesting the absence of time-specific effects. Similarly. The Honda and King-Wu tests confirmed the significance of cross-section effects ( $p < 0.01$ ) and the overall panel effect, further reinforcing the rejection of the null hypothesis of no random effects. Collectively, these results provide strong evidence in favor of a random effects specification, particularly one that accounts for cross-sectional heterogeneity, over the pooled ordinary least squares (OLS) model.

The results of the Correlated Random Effects (Hausman) test specify that the chi-square statistic ( $\chi^2 = 47.598$ ) is statistically significant at the 1% level ( $p = 0.000$ ), which leads rejection of the null hypothesis that the random effects estimator is consistent and appropriate. This finding suggests that there is a systematic difference between the fixed and random effects estimates, implying that the unobserved individual effects are correlated with the explanatory variables. Consequently, the random effects model is not suitable for the analysis, and the fixed effects model is preferred as it provides more reliable and consistent estimates for the panel data.

This finding suggests that there is a systematic difference between the fixed and random effects estimates, implying that the unobserved individual effects are correlated with the explanatory variables. Consequently, the random effects model is not suitable for the analysis, and the fixed effects model is preferred as it provides more reliable and consistent estimates for the panel data

**Table 4**  
***Breusch-Pagan and related tests***

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	134.209	0.303	134.513
	0.000	-0.582	0.000
Honda	11.585	-0.551	7.802
	0.000	--	0.000
King-Wu	11.585	-0.551	4.744
	0.000	--	0.000

**Source:** Authors' Computation 2025.

**Table 5.**  
***Correlated random effects-Hausman test.***

<b>Correlated Random Effects - Hausman Test</b>			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	47.598	8	0

**Source:** Authors' Computation 2025.

The panel regression results investigate the influence of environmental disclosure and audit committee characteristics on EMA, proxied by the Modified Jones Scores, using panel data from 36 manufacturing firms over the period 2015 to 2024, with a total of 343 observations. The model was estimated using panel least squares with cross-section fixed effects. The coefficient of determination ( $R^2$ ) of 0.9121 indicates that approximately 91.21 % of the variation in earnings management is explained by the explanatory variables included in the model, along with firm-specific fixed effects. The adjusted  $R^2$  of 0.8994 further confirmed the strong explanatory power of the model after adjusting for the number of predictors. The high adjusted R-squared does not indicate model overfitting but rather reflects the strong influence of unobserved heterogeneity and the suitability of the fixed effects specification of the dataset. Furthermore, the F-statistic of 72.1221 with a probability value of 0.000 shows that the overall regression model is statistically

significant, which implies that the independent variables jointly have a significant effect on earnings management.

The coefficient of environmental disclosure is -0.0398 with a p-value of 0.6028, which indicates a negative but statistically insignificant relationship with earnings management. This suggests that an increase in environmental disclosure tends to reduce EMA; however, the effect is not statistically significant. Studies have reported varied results regarding the relationship between environmental disclosure and EMA. Some research suggests no significant association, indicating that environmental disclosure may not be used as a tool to manipulate earnings (Sun, 2010; Gerged et al., 2023). The lack of a significant relationship suggests that environmental disclosure alone may not deter earnings management. Policymakers might need to integrate stricter governance frameworks or mandatory disclosure standards to ensure transparency and ethical financial practices (Sun, 2010; Mohd-Sabrun & Muhamad, 2023; Yasar & Yalçın, 2023).

The results reveal that the Audit committee female diversity shows a p-value of 0.0002 with a coefficient of -0.0034. This indicates a negative and highly significant relationship with EMA. The findings indicate that an increase in female representation on the audit committee significantly reduces EMA. The result supports the argument that gender diversity promotes ethical decision-making, enhances the monitoring effectiveness of the audit committee and improves the overall quality of financial reporting. Studies show that female audit committee members mitigate earnings management through increased oversight and ethical decision-making (Setiawan et al., 2020; Amara et al., 2025).

The coefficient for audit committee independence is 0.0017 with a p-value of 0.0078, which indicates a positive and statistically significant relationship with earnings management. This result suggests that higher levels of audit committee independence are associated with an increase in EMA, which is contrary to theoretical expectations. One possible explanation is that although audit committees may be independent in structure, they may lack the necessary firm-specific knowledge to effectively constrain managerial opportunism. Also, audit committee meetings reveal positive and significant relationship with EMA (coef = 0.019, p value = 0.076), which indicates a positive relationship with EMA that is significant at the 10% level. This suggests that an increase in the frequency of audit committee meetings is associated with higher levels of EMA. This result may imply that frequent meetings are reactive rather than preventive, which occurs more often when firms face financial reporting issues. This indicates that audit committee meetings may not effectively constrain EMA, potentially due to inefficiencies or lack of robust oversight mechanisms (Qamhan et al., 2018; Setiawan et al., 2020).

Firm size, proxied by the logarithm of total assets, has a coefficient of -0.1332 and a p-value of 0.0805, indicating a negative relationship with earnings management that is statistically significant at the 10 percent level. This suggests that larger firms are less likely to engage in earnings manipulation. Larger firms typically face greater scrutiny from investors, regulator and other stakeholders, which may discourage managers from engaging in opportunistic financial reporting practices. This aligns with findings in other studies where larger firms, due to higher visibility and scrutiny, are less likely to engage in EMA (Rahbar & Khodadady, 2015; Ghani et al., 2019). The result also reveals that Revenue growth has a negative and significant effect on

EMA (coef = -0.0020; p-value = 0.000) of listed Nigerian manufacturing firms. This implies that firms experiencing higher revenue growth are less likely to manipulate earnings.

The result of the analysis further revealed that Return on assets has a coefficient of 0.0107 and a p-value of 0.000, indicating a positive and significant relationship with earnings management, while leverage shows negative and significant effects (coef = -0.0018, p-value 0 0.0323). The result indicates that profitable firms have the tendency to engage in EMA practices to meet market expectations and maintain performance trends. Also, possibly to present an even more favorable financial position to stakeholders. The result also suggests that firms with higher leverage tend to engage less in EMA. Higher debt levels often lead to stricter monitoring by lenders and creditors, which may discourage managers from engaging in opportunistic financial reporting. The result is in alignment with Kalbuana et al. (2021) and Emudainohwo (2021).

**Table: 6**  
**Regression Analysis**

Variable	OLS			FIXED			RANDOM		
	Coef	t-Stat	Prob.	Coef	t-Stat	Prob.	Coef	t-Stat	Prob.
C	0.555	1.637	0.103	1.270	2.215	0.028	-1.443	-4.239	0.000
EDI	-0.216	-1.144	0.254	-0.040	-0.521	0.603	-0.118	-1.605	0.109
FSZ	-0.137	-3.187	0.002	-0.133	-1.753	0.081	0.223	4.984	0.000
ACF	-0.002	-1.101	0.272	-0.003	-3.758	0.000	-0.004	-4.804	0.000
ACI	-0.001	-0.542	0.588	0.002	2.677	0.008	0.000	0.690	0.491
ACM	0.055	1.113	0.267	0.019	1.782	0.076	0.008	0.793	0.428
REG	-0.005	-13.049	0	-0.002	-5.843	0.000	-0.002	-5.448	0.000
ROA	0.008	3.508	0.000	0.011	5.641	0.000	0.009	4.955	0.000
LEV	0.004	2.427	0.0157	-0.002	-2.151	0.032	-0.001	-1.630	0.104
R-squared	0.373			0.912			0.232		
Adjusted R-squared	0.358			0.899			0.214		
S.E. of regression	0.641			0.169			0.179		
Sum squared resid	141.216			8.564			10.705		
F-statistic	25.574			72.122			12.639		
Prob(F-statistic)	0.000			0.000			0.000		
Durbin-Watson stat	1.222			1.199			0.969		

**Source:** Authors' Computation 2025.

### 5.0 Conclusion and Recommendations

The study unpacked the nexus between audit committee features, environmental disclosures and earnings management of listed manufacturing firms in Nigeria using the fixed effects panel regression approach. The findings reveal that audit committee effectiveness plays a significant role in influencing financial reporting quality. Specifically, audit committee female gender diversity is associated with a reduction in EMA, which suggests that gender diversity enhances ethical and monitoring oversight. In contrast, audit committee independence and Return on Asset (ROA) exhibits significant and positive relationship with EMA, which indicates the possibility of opportunistic behaviour even in the presence of formal governance structures. Revenue growth

and those with higher obligations are likely to manipulate earnings, possibly due to increased scrutiny from the stakeholders. However, environmental disclosure was found to be statistically insignificant, which suggests that sustainability reporting practices have not yet translated into improved financial reporting quality. The study concludes that certain governance audit attributes are effective in constraining earnings management while others highlight the need for stronger enforcement.

Based on the findings, the study makes the following recommendations;

- i. Firms and regulatory authorities should promote greater inclusion of women in audit committees, as evidence suggests that female representation enhance monitoring quality and reduces earnings manipulation.
- ii. While independence of audit committee is expected to curb opportunistic behaviour, the positive relationship observed suggests the need for stricter enforcement of independence criteria and improved competence of the independent directors to ensure they effectively discharge their oversight responsibility.
- iii. Although environmental reporting disclosures were not significant, firms should move beyond symbolic reporting to more verifiable disclosures, which can enhance overall accountability and transparency.
- iv. Since more profitable firms appear more inclined toward earnings management, regulatory bodies should enforce stricter disclosure requirements and increase scrutiny for such firms to discourage opportunistic reporting.
- v. Firms should maintain and pursue optimal capital structure and sustainable growth strategies, as these factors appear to constrain managerial opportunism and reduce incentives for earnings manipulation.

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