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Female Board Participation and Earnings Management

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Abstract: This study examines the impact of female board participation on earnings management in Nigerian manufacturing firms between 2014 and 2024. Drawing from annual reports of sixteen listed companies, female CEO power and female board size were used as measures of board gender participation, while earnings variability served as a proxy for earnings management. Employing a static panel regression under an ex-post facto research design, the results indicate that female CEO power has a negative but statistically insignificant association with earnings management, whereas female board size shows a positive and marginally significant effect at the 10% level. These findings suggest that while the presence of women in top leadership positions may not independently deter earnings manipulation, larger female representation on boards could be linked to increased earnings management activities, potentially reflecting contextual and governance factors in the Nigerian corporate environment. The study recommends appointing more qualified women as CEOs, enhancing their ownership stakes to strengthen influence, and ensuring that female board members are empowered to contribute effectively. These insights contribute to corporate governance debates and offer guidance for policy reforms aimed at improving board diversity and financial reporting integrity.

Keywords: Earnings variability, Earnings management, Female Board Size. Female Board Participation, Female CEO power.

I. Introduction

Financial reporting strives to present a truthful picture of company finances, equipping users with the knowledge to make wise decisions. Financial reports are like mirrors for businesses, showing their true financial health. Accurate financial reporting provides a reliable snapshot of a firm's financial standing, empowering users of financial statements (e.g. investors, creditors, management) to make informed decisions based on relevant and trustworthy data. It also gives a clear picture of a company's finances (Qawasmeh & Azzam, 2020). While financial information strives for transparency, it is susceptible to distortion and the financial information can be subject to manipulation by firm managers seeking to achieve specific performance goals (Anaike & Okegbe 2023). This opens the door to a practice known as earnings management (EM), where firm managers, within the bounds of accounting discretion, may engage in actions to portray a desired financial picture to stakeholders, potentially obscuring the true performance of their organizations (Deegan, 2014).

The Chief Executive Officer (CEO) of a company possesses the power to obtain all pertinent details about the company's operations and activities. This access to comprehensive information enhances their propensity to manage earnings. Stakeholders such as investors and creditors rely heavily on financial statements, prioritizing specific information within them. Reported earnings, crucial for their concreteness, significantly impact choices in business, investment, and management. This creates a potential conflict of interest for CEOs, who may feel pressure to manipulate profits for personal gain, jeopardizing stakeholder trust and the integrity of financial reporting. An implicit consensus amongst research, analysis (Dalton & Kesner, 1995) positions the CEO as the pivotal figure in corporate policymaking, held accountable and responsible for its direction. Using accounting methods to inflate profits, hide losses, or meet analyst expectations for personal gain or strategic advantage are all considered EM practices (Bermejo-Sánchez et al., 2015). Given the significant influence CEOs exert on corporate decision-making, Bouaziz, Salhi and Jarboui (2020) argue for further investigation into the link between CEO traits and earnings management practices, as these can potentially impact the accuracy of financial reporting.

Corporate governance also plays a crucial role in ensuring transparency and accountability within organizations. Board composition has therefore emerged as a significant factor influencing corporate decision-making and financial reporting practices. Chijoke-Mgbame, Boateng, and Mbame (2020) suggested that the presence of women on corporate boards may influence how firms are managed and monitored. This could lead to the application of different ethical standards in decision-making, potentially impacting broader economic outcomes.

Statement of the problem

The financial scandals of Enron, Arthur Andersen, and WorldCom continue to serve as cautionary tales, but more recent events like the collapse of FTX in 2022 demonstrate the ongoing need for vigilance in financial reporting and internal controls. A recent example involves GlaxoSmithKline's China subsidiary. In 2014, Glaxo China was fined £320 million for engaging in significant corporate corruption through poor financial reporting practices. These scandals severely eroded public trust in the accuracy of financial reporting and the effectiveness of internal controls. Investors, creditors, and other stakeholders questioned the reliability of financial statements and the ability of companies to safeguard their assets. Beyond global examples, Nigeria has its own history of major business scandals and these scandals in Nigeria have significantly impacted public trust in businesses and exposed weaknesses in existing governance frameworks. In 2015, the Financial Reporting Council of Nigeria (FRCN) took a significant

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

step towards ensuring financial reporting quality by suspending the CEO, Chairman, and two directors of Stanbic IBTC Bank over concerns about the accuracy of their financial statements (Olowookere, Ajiboye, & Ibrahim, 2021). These multiple instances of financial collapse in Nigeria, including the multi-billion naira losses at Savannah Bank in the 1990s, have also underscored the crucial need for robust corporate governance in the country's financial institutions. Alleged mismanagement, inadequate risk controls, and potential fraud contributed to Savannah Bank's downfall, impacting thousands of depositors and eroding public trust (Yahaya, 2022).

CEOs' superior access to information gives them an influence over company decisions, and their position allows them to potentially manipulate earnings for personal gain (Musa, Abdul Latif & Abdul Majid, 2023). While female representation on boards in Africa is on the rise, with an annual growth rate of 20% reported by the African CEO Forum (2017), it still lags behind the levels observed in developed economies. Ogbonna (2016) reports that Nigeria has the fewest female parliamentarians in sub-Saharan Africa and ranks 133rd globally for female political representation. Companies that foster balanced leadership teams with equitable representation of women on boards are positioned to benefit from a wider range of perspectives, potentially leading to more informed decision-making and innovative strategies. The concept of gender diversity in boardrooms is defined as having women represented on the board of directors (Anaike & Okegbe 2023).

The level of ownership power held by a CEO emerges as a significant determinant of their capacity to influence the reported financial performance of the firm. This influence may manifest in the form of earnings management practices, highlighting the potential agency conflict arising from misaligned interests between managers and shareholders (Qawasmeh & Azzam, 2020).

Research Gap & Justification

Although previous studies have examined the relationship between board characteristics and earnings management, there remains limited understanding of how gender diversity on boards shapes these practices, particularly when interacting with other leadership traits. Much of the literature (e.g., Qawasmeh & Azzam, 2020; Musa, Abdul Latif & Abdul Majid, 2023; Oradi, Asiaei & Rezaee, 2020; Ali & Zhang, 2015) isolates single CEO attributes, such as gender or power, without considering how these characteristics may operate jointly to influence managerial decisions. This leaves unanswered questions about whether, for example, female CEOs with significant decision-making authority approach earnings management differently from their male or less powerful counterparts.

The issue is especially timely in light of global and national calls for greater gender representation in corporate leadership. Nigeria, in particular, has seen growing advocacy for more inclusive boardrooms, yet evidence on whether such diversity translates into improved financial reporting integrity is scarce. The absence of empirical insights in this context is problematic because earnings management can erode investor confidence, distort market signals, and undermine corporate governance reforms.

Addressing this gap is essential for both scholars and policymakers. By investigating how female board participation alone and in combination with CEO power affects earnings management in Nigerian companies, this study not only adds to the theoretical understanding of leadership dynamics and financial reporting but also offers practical implications for board composition policies. In doing so, it challenges the tendency in prior research to treat leadership traits in isolation and advances a more integrated perspective on corporate governance and accountability.

Research Objectives

- Evaluate the effect of Female CEO power on earnings variability of manufacturing companies in Nigeria.
- Examine the effect of Female board size on earnings variability of manufacturing companies in Nigeria.

Research Questions

- How does Female CEO power affect earnings variability of manufacturing companies in Nigeria?
- How does Female board size affect earnings variability of manufacturing companies in Nigeria?

Research Hypotheses

H_{01}: Female CEO power does not have a significant effect on earnings variability of manufacturing companies in Nigeria.

H_{02}: Female board size does not have a significant effect on earnings variability of manufacturing companies in Nigeria

II. Literature Review

Conceptual Review

Female Board Participation

Boards of directors act as the guiding force for a company's trajectory. They chart the overall strategic direction, establish key policies, select capable executives, and safeguard the ethical and responsible execution of major decisions. They play a key role in shaping the company's future by setting ambitious goals, supporting executive leadership, and ensuring responsible

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

management of resources. Board gender diversity is considered an important aspect of board composition and can influence how the board functions, potentially leading to positive impacts on a firm's performance (Anaike & Okegbe 2023). The concept of female participation in boardrooms is defined as having women represented on the board of directors and as a CEO since the CEO is also a member of the board. There is a positive correlation between a higher number of female directors and stronger corporate governance practices. These boards may also demonstrate a greater focus on stakeholder needs compared to those with limited or no female representation (Orazalin, 2020). Female directors contribute a valuable array of soft skills to leadership roles, potentially translating into stronger leadership competencies (Zenger & Folkman, 2012). Companies with a higher proportion of women on their boards are more likely to exhibit ethical behavior and prioritize good corporate citizenship (Aziekwe & Okegbe, 2024)

Female CEO Power

CEO power refers to the influence and control a CEO exerts within the organization which is characterized by their ownership in the company. CEO ownership intensifies their grip on reported results, potentially paving the way for accounting irregularities as their stake in the company grows. This phenomenon, explored by Sharma and Kuang (2014), suggests a direct link between ownership percentage and the likelihood of CEOs manipulating financial statements for personal gain. In other words, increased power can provide opportunities for earnings management as it might create motivations to manipulate earnings through discretionary accruals, aiming to present a more favorable financial picture. Despite increasing global attention to gender diversity in leadership, little is known about how female CEO power interacts with earnings management practices in emerging economies like Nigeria, where corporate governance environments differ significantly from those in developed markets.

Female Board Size

The board's size, or composition, is defined by the total number of members or directors serving on the board. Female Board size is therefore defined as the total number of female directors on the board. Female directors on a corporate board act as elected representatives for the shareholders' interests. They play a pivotal role in setting ambitious goals, supporting executive leadership, and safeguarding the company's resources through responsible management. Additionally, female directors hold responsibility for ensuring the company has sufficient and well-managed resources to achieve those goals (Al-Absy, 2022). Organizations with a larger female presence on their boards exhibit stronger corporate governance practices. Research suggests these boards may also demonstrate a broader stakeholder focus compared to those with limited or no female directors (Orazalin, 2020).

Earnings Management

Earnings management encompasses the intentional manipulation of financial statements to achieve specific goals, often deviating from Generally Accepted Accounting Principles (GAAP). The practice of earnings management entails the intentional manipulation of financial statements by managers through the exercise of judgment in both reporting practices and the structuring of corporate transactions. This manipulation aims to achieve objectives such as deceiving specific stakeholders about the company's true economic performance or influencing contractual outcomes contingent upon reported accounting figures (Musa, Abdul Latif & Abdul Majid, 2023). Corporate financial reporting practices often utilize two distinct forms of earnings management: Accrual Earnings Management (AEM) and Real Earnings Management (REM). Accrual earnings management (AEM) involves manipulation of accounting estimates and techniques to present a distorted financial picture, while REM, on the other hand, entails deliberate deviations from standard business operations practices to deceive stakeholders about a firm's true performance, such as altering sales terms or delaying expenses, to distort the true performance of the company (Healy & Wahlen, 1999).

Earnings Variability

This study measures earnings variability by adopting the method developed by Leuz, Nanda, and Wysocki (2003). Their work highlights the potential for insiders to manipulate a firm's reported financial health through both operational adjustments and accounting decisions. According to their argument, insiders can conceal changes in their firm's economic performance through both operational and financial decisions. These decisions are used to "smooth" earnings. Smoothing refers to the practice of manipulating accruals (non-cash accounting entries) to reduce the fluctuation of reported earnings. One way to identify potential accounting manipulation is by calculating the ratio that compares the variability of a company's operating earnings to the variability of its cash flow from operations. To ensure a fair comparison across companies, both figures are scaled by the company's total assets. The rationale behind this is that cash flow from operations is generally considered a more reliable indicator of a company's true performance compared to operating earnings, which can be influenced by accounting choices. A lower ratio suggests a higher discrepancy between the variability of these two measures. This, in turn, could indicate that company insiders might be using accounting discretion to smooth out reported earnings, potentially reducing the quality of the financial statements.

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

Theoretical Review

Agency Theory

Michael Jensen and William Meckling are widely credited with formalizing agency theory in their 1976 paper. According to Jensen and Meckling (1976) Agency theory delves into the complex relationship between two parties: a principal and an agent. The principal hires the agent to act on their behalf, delegating decision-making authority. This creates a potential conflict of interest, as the agent might prioritize their own goals over the principal's. At its core, agency theory explores the principal-agent problem. This problem arises because the principal might not have complete information about the agent's actions or motivations, this problem is known as information asymmetry. Another problem is the difference between the principal's desires and the agent's desires that could lead to conflict (Lopes, 2016). At the heart of agency theory lies information asymmetry. This describes a situation where some individuals (like CEOs) possess superior information not readily available to others (like shareholders). Deegan (2014) highlights this asymmetry. CEOs, aware of this information advantage, might be tempted to manipulate a company's earnings reports to maximize their own personal benefits.

Upper Echelons Theory

The Upper Echelons Theory was developed by Donald Hambrick and Phyllis Mason in their 1984 paper titled "Upper Echelons: The Organization as a Reflection of Its Top Managers." Upper echelons theory suggests that top executives' individual characteristics influence organizational outcomes, including financial reporting practices (Hambrick & Mason, 1984). The theory proposes that a company's strategic decision-making and overall performance can be partially predicted by the characteristics and experiences of its top management team. In simpler terms, the theory suggests that whoever is at the top shapes what the company does and its financial results. The theory provides a valuable lens for analyzing how leadership characteristics influence organizational behavior and a framework for understanding strategic decision-making beyond just industry factors or market conditions. Although critics argue that the theory oversimplifies the complex dynamics at play in organizational decision-making and focuses primarily on top management, neglecting the influence of middle managers and other stakeholders. Upper Echelons Theory suggests CEO attributes like age, gender, experience, personality traits, risk tolerance, cognitive abilities, values and financial expertise influence decision-making and can shape corporate culture and decision-making, including the use of earnings management. CEOs and boards with a higher risk tolerance or those facing pressure to meet certain financial targets might be more likely to engage in earnings management practices while those with high levels of ethical commitment may be less likely to engage in manipulative practices and those with a strong focus on short-term performance may be more prone to earnings management (Chowdhury, Gul & Wu 2023).

This study is anchored on this theory.

Empirical Review

The increasing number of female CEOs (FCEOs) globally highlights the growing importance of women in leadership roles. Research has focused on understanding how FCEOs might influence company performance due to their distinctive leadership styles.

Anaike and Okegbe (2023) results from their study on female boardroom participation and earnings management showed that female chief executive officers and female directors had a strong significant but negative effect on earnings management.

Chu, Liu and Chiu (2023) found a negative relationship between female CEOs and earnings management and that it is stronger in countries with higher gender-role egalitarianism.

Chowdhury et al. (2023) report no significant difference in earnings management practices between female and male CEOs in US firms, suggesting the gender effect may be context-dependent.

Heathfield and Rubin (2022) suggest that FCEOs may exhibit characteristics such as risk awareness, deliberate decision-making, calibrated confidence, and strong emphasis on monitoring. Women at the top of corporations can have a distinct impact on corporate decision-making and overall corporate behavior compared to their male counterparts (Hussain et al., 2022).

Gul et al. (2022) found that female CEOs are more likely to engage in real activities manipulation compared to male CEOs, possibly due to greater pressure to meet performance target but found that female CEOs are less likely to engage in accrual-based earnings management compared to male CEOs.

Li et al. (2021) findings show that firms with powerful CEOs exhibit higher levels of earnings management, with the effect being more pronounced during economic downturns.

Investigating the relationship between female directors and earnings management in Turkey, Arioglu (2020) analyzed secondary data from financial statements of all non-financial companies listed on Borsa Istanbul and found no significant relationship between female CEOs and earnings management.

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

Kontesa, Chai, Brahmana, and Contesa (2020) examined the relationship between female board representation and earnings management in 263 Malaysian firms listed on Bursa Malaysia. Analyzing data from annual financial reports between 2013 and 2017 using multiple regression, the study found a positive association between female directors and earnings management.

Dong, Wu and Wang (2020) examined the relation between gender characteristics of CFO and earnings management of listed companies in Shanghai and Shenzhen Stock Exchange and found that CFO gender has a significant impact on earnings management in line with the upper echelons theory. Compared with the companies with male CFO, the company with female CFO has a lower overall level of earnings management.

Qawasmeh and Azzam (2020) results show that the EM practices of CEOs were higher in the early years of their service compared with later years. The results also show that CEOs' ownership plays an important role in increasing the magnitude of EM to maximize their compensation.

Anazonwu, Egbunike, and Gunardi (2018) examined the connection between the diversity of a company's board and its sustainability reporting practices in Nigeria. Focusing on 43 firms in the conglomerate, consumer goods, and industrial goods sectors, they analyzed data extracted from annual financial reports. Their findings, based on a statistical technique called fixed effects panel regression, revealed a positive association between the percentage of female directors on a board and the extent of sustainability reporting by the company.

Nekhili, Nagati, Chtioui, and Nekhili (2017) investigated the relationship between board gender diversity and voluntary corporate social responsibility (CSR) reporting with external assurance. Their research focused on companies listed on the SBF 120 index from 2001 to 2011. The study found that for companies without female directors on the board, using an external auditor to verify their CSR reports was associated with greater perceived value by stakeholders. However, for companies with female directors, external assurance of CSR reports did not appear to have a significant impact on perceived value.

Arun, Almahrog, and Aribi (2015) examined the link between the presence of female directors and earnings management practices in UK companies. Their study focused on firms listed in the FTSE 350 index, utilizing data from 2005 to 2011. Through multiple regression analysis, the study found a positive and statistically significant relationship between the number of female directors and the level of earnings management, meaning the presence of female directors was linked to higher earnings management.

Although prior research investigates CEO attributes, the combined effect of gender and other attributes remains largely unexplored. Existing research often examines CEO attributes in isolation, neglecting the potential influence of gender when combined with other characteristics such as power. The existing literature on the issue of female directors and board participation presents mixed results, highlighting a conceptual gap that this study aims to address. Furthermore, studies on gender and earnings management have largely concentrated on developed economies. This study aims to bridge these gaps by investigating the impact of female CEO power and female board size on earnings management practices in manufacturing companies in Nigeria.

III. Research Method

Research Design

The research approach used for this study is Ex-post facto research design as archival data were used which were obtained from the Nigerian exchange group. Secondary data from annual financial reports was used for this research work which are sourced from the Nigerian exchange group. The target population for this research encompasses all sixty six (66) manufacturing firms within the Nigerian Exchange Group (NXG) from 2014 to 2024. This was chosen because the most recent available data of firms listed on the NGX was for the year 2024. This study employed purposive sampling, selecting a sample of sixteen (16) manufacturing companies listed on the Nigerian Exchange Group (NXG). These companies were chosen because they represent key drivers of the Nigerian economy, and fluctuations within the companies in these sectors significantly impact the overall economic performance. The selection is also based on companies that are active on the Nigerian exchange, also subject to the availability of required data and the ease with which information may be obtained.

Selected companies for this study

1. Champion Breweries
2. Dangote Sugar
3. Flour Mills of Nigeria
4. Guinness Nigeria
5. Mcnichols Consolidated
6. Ardova Plc
7. Honeywell Flourmill
8. International Breweries

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9. Japaul Gold and Ventures Plc
10. Nascon Allied
11. Nigeria Breweries
12. Nigerian Northern Flourmill
13. Conoil
14. Eterna Oil
15. MRS (Texaco Chevron)
16. TotalEnergies Marketing Nigeria

Method of Data Analysis

Based on the empirical data structure involved herein, the study utilizes the panel data methodology. Thus, empirical data analysis stages include preliminary analysis, model estimation stage and post estimation tests. Following the study's data structure, static panel data analysis was utilized to examine the effects of CEO attributes, board participation on earnings management of selected manufacturing companies in Nigeria. The static panel estimators are more suitable for short panel were the number (N) of cross-sections is large relative to the time period (T), that is, $T = 11, N = 16$. More explicitly, the panel static estimators, mainly common effect (CE) estimator (pooled OLS), random effect (RE) and fixed effect (FE) static panel estimation methods were employed. Thus, the most efficient estimator was selected.

Measurement of Variables

The independent variable is female board participation and the dependent variable is earnings management.

Table 1: Variables Measurement

S/N		VARIABLES	MEASUREMENT
		Independent Variables	
1		FCEO power	the percentage of the CEO's shares to the total equity of the firm
2		Female Board Size	No of females directors on the board /Total Board size
		Dependent Variable	
1		Earnings Variability	STD of EFOPS / STD of CFFOPS Where: STD: Standard deviation, EFOPS: Earnings from operations and CFFOPS: Cash flow from operations
		Control Variables	
1		Firm Size	Log of total assets of the firm
2		Firm Leverage	Ratio of debt to Total Asset

Model Specification

This study adapted and modified the model of Anaike and Okegbe (2023) in determining the effect of Female board participation on earnings management.

$DA = \beta0 + \beta1FCEOit + \beta2FNEDit + \beta3FEDit + \beta4FSZit + \beta5LEVit + \mu it$

where:

DA = Discretionary Accruals of firm í in period t

FCEOit = Female Chief Executive Officer of firm í in period t

FNEDit = Female Non-Executive Director of firm í in period t

FEDit = Female Executive Director of firm í in period t

FSZit = Firm Size of firm í in period t

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

LEVit = Leverage of firm ί in period t

The modified model is given as:

$$EVAR_{it} = f(FCP_{it},\ FBS_{it},\ FSZ_{it}, LEV_{it}) \quad (1)$$

Where:

$EVAR$ = Earnings Variability

FCP = Female CEO Power

FBS = *Female Board size*

FSZ = Firm Size

LEV = Leverage

Thus, the panel data regression model is expressed as follows:

$$EVAR_{it} = \beta_0 + \beta_1 FCP_{it} + \beta_2\ FBS_{it} + \beta_3 FSZ\ + \beta_4 LEV_{it} + \mu_{it}$$

t = 2014 … 2024 (annual time series)

Subscript ***i*** = 1, 2, …, 11

β_0 = intercept coefficient

β_1 = Partial Regression coefficient of ***FCT*** with respect to ***EVAR***

β_2 = Partial Regression coefficient of ***FBS*** with respect to ***EVAR***

β_3 = Partial Regression coefficient of ***FSZ*** with respect to ***EVAR***

β_4 = Partial Regression coefficient of ***LEV*** with respect to ***EVAR***

Data Analysis

Summary Statistics

The summary or descriptive statistics reveal the statistical conditions of the variables under study, which include earnings variability (*EVAR*, a measure of earnings management), female CEO power (*FCP*), female board size (*FBS*), firm leverage (*FLEV*) and firm size (*FSZ*).

Table 4.1-: Summary Statistics

Sample Structure: *N* = 16, *T* = 11 (2014 – 2024)

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
EVAR	176	.859	1.322	.002	15.031	7.487	76.981
FCP	176	.966	3.399	0	15.487	3.449	13.283
FBS	176	1.449	1.089	0	5	.504	2.783
FSZ	176	9.863	6.452	.378	19.545	.315	1.425
FLEV	176	.77	3.887	-1.579	44.352	9.168	95.855

Source: Researcher's computation (2025)

As displayed in table 4.1, it could be observed that earnings variability (*EVAR*), female CEO power (*FCP*) as well as firm leverage (*FLEV*) demonstrate high variability in their fluctuations having standard deviations above their respective means. The foregoing statistical narrative suggests that the variables may have low predictive capacity. On the contrary, low variability prevails in the distribution of female board size (*FBS*) and firm size (*FSZ*) having standard deviations below their respective means. It could be inferred from the foregoing that the fluctuations of the variables may be accompanied with high predictive power, thus demonstrating stability in the distribution of the variables. It could also be inferred that the selected manufacturing companies have been consistent with their boards composition. Furthermore, it could be observed that all the panel variables appear to have a positively skewed distribution. Based on the kurtosis coefficients, the distribution of the *EVAR*, *FCP* and *FLEV* series appears to be peaked (leptokurtic) with kurtosis coefficients above the 3-mark threshold for a normal distribution. However, *FBS* and *FSZ* appear to be flat-topped (platykurtic) in their distribution having their kurtosis coefficients below the

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

threshold of 3 following a normal distribution. Apparently, the statistics demonstrate consistency in the distribution of the variables.

Test of Multicollinearity

The correlation matrix and variance inflation factor (VIF) were employed to test for the existence or otherwise of multicollinearity among the policy variables. The VIF indicates the level by which the variance of estimate of an explanatory variable may get inflated resulting from any collinearity among the explanatory variables. In other words, the VIF demonstrates the presence or otherwise of multicollinearity between/among the policy variables. Meanwhile, the correlation matrix shows the pairwise correlation coefficients among the explanatory variables in order to inspect the presence or otherwise of multicollinearity.

Table 4.2-: Variance Inflation Factor

Sample: *N* = 16, *T* = 11 (2014 – 2024)

Variable	VIF	1/VIF
FSZ	1.149	.871
FCP	1.146	.872
FBS	1.032	.969
FLEV	1.016	.984
Mean VIF	1.**086**	.

Source: Researcher's computation (2024) using of Stata.

Table 4.2 shows the VIFs and the tolerance (1/VIF) among the explanatory variables. Following the rule of thumb, a variance inflation factor below the VIF coefficient of 10 indicates the absence of multicollinearity among the variables. Therefore, all the VIF coefficients are less than 10, thus, suggesting that there is no presence of multicollinearity (strong relationships) among the explanatory variables.

Table 4.3-: Pair-Wise Correlation

Sample: *N* = 16, *T* = 11 (2012 – 2022)

Variables	EVAR	FCP	FBS	FSZ	FLEV
EVAR	1.000				
FCP	-0.050	1.000			
	(0.513)				
FBS	0.142	-0.107	1.000		
	(0.061)	(0.158)			
FSZ	0.005	-0.332*	-0.074	1.000	
	(0.946)	(0.000)	(0.327)		
FLEV	-0.013	-0.019	-0.086	0.100	1.000
	(0.865)	(0.804)	(0.257)	(0.187)	

( ): *p-value*, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4.3 presents the pair-wise correlation coefficients among the variables. As a rule of thumb, a correlation coefficient above the threshold of 0.8 indicates the existence of multicollinearity (Gujarati& Dawn, 2009). Consequently, all pair-wise correlation coefficients are less than 0.8. Thus, adjudging by the correlation coefficients, there is no presence of multicollinearity (strong relationships) among the policy variables. Evidently, both the variance inflation factor and correlation matrix demonstrate the non-existence of high multicollinearity among the policy variables.

Model Estimation and Results

The study employed the static panel data estimators such as common effect (CE) using least square dummy variable (LSDV), random effect (RE) and fixed effect (FE), with panel data structure of 15 listed manufacturing companies (N = 16) and a 11-year time period (T = 11) between 2012 and 2022.

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

Table 4.4 presents the summary of the estimates and statistics obtained from the estimation of the model using the pooled OLS or common effect (CE), random effect (RE) and fixed effect (FE) estimators. Following the fixed effect test result (F-stat. = 1.3400, p = 0.1837 > 0.05) between the CE and FE estimators, the common effect estimator appears to be more efficient as compared with the fixed effect estimator. The random effect test (BP-LM stat. = 0.3100, p = 0.2873 > 0.05) between the CE and RE estimators, the common effect (CE) estimator is also found to be more efficient as compared with the random. Meanwhile, the Hausman test result (χ^2 = 1.810, p = 0.7699 > 0.05) indicates that the RE effect estimator appears to be more efficient than the FE estimator. Largely, the **common effect estimator (CE)** appears to be the most efficient estimator among the three (3) competing static panel estimators, and thus, selected in conducting the inferential analysis.

Table 4.4-: Panel Model Estimation Results

Panel Structure: *N* = 16, *T* = 11 (2014 – 2024) Dependent Variable: *EVAR*

Estimator	CE Estimator	FE Estimator	RE Estimator
Independent Variable			
Intercept	0.620**	1.593	0.648**
	(0.0166)	(0.560)	(0.0314)
FCP	-0.0130	0.0871	-0.0114
	(0.680)	(0.556)	(0.767)
FBS	0.168*	0.0889	0.148
	(0.0738)	(0.484)	(0.140)
FSZ	0.000935	-0.0953	0.00105
	(0.955)	(0.733)	(0.959)
FLEV	-0.000715	-0.00897	-0.00446
	(0.978)	(0.751)	(0.865)
Further Statistics and Tests			
Effect Tests			
Fixed Effect test (F-Stat.)	-	1.3400**	
		(0.1837)	
BP-LM Test (X^2)	-		0.3100
			(0.2873)
Hausman Test (X^2)	-		1.810
			(0.7699)
Explanatory Power			
R-squared	0.2130	0.0069	0.1764
Adj. R-squared	0.1600	-	-
F-statistic (or Wald Test)	0.9300	0.2700	2.480
	(0.4478)	(0.8975)	(0.6489)
Diagnostics: CD Tests			
Friedman's test		3.744	7.925
	-	(0.9985)	(0.9268)
Specification test (RESET)	0.6100	-1.255	-0.710
	(0.6118)	(0.2095)	(0.4780)

Source: Researcher's computation (2025) with aid the of Stata

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***Note*:** The values in the parentheses **()** are *p*-values of the respective coefficients and statistics while ***, ** & * denote statistical significance at the conventional 1%, 5% and 10% levels of significance, respectively.

Individual Tests of Significance

As revealed in Table 4.4, the individual test of significance is captured by the individual coefficients and the corresponding *p*-values (in parentheses). Thus, the test of individual significance evaluates the study's hypotheses using the common effect estimation result.

Under the CE estimator in Table 4.4, it could be seen changes in female CEO power (*FCP*) exert negative and statistically insignificant effect (β_1 = -0.0130, p = 0.680 > 0.1) on earnings variability (*EVAR*, a measure of earnings management) of the selected listed manufacturing companies in Nigeria. The partial slope coefficient indicates that a 1-unit point increase (decline) in *FCP* will, on average, yield about -0.013-units decline (increase) in *EVAR*. The foregoing statistical narratives implies that *EVAR* (for earning management) responds negatively and inconsequentially to female CEO power of the selected manufacturing firms in Nigeria. Thus, the statistically insignificant state of the foregoing empirical test indicates the retention of the null hypothesis, that is, $H_0: \beta_1 = 0$ is maintained.

However, Table 4.4 reveal that changes in female board size (*FBS*) exert positive and statistically significant (though weakly) effect (β_2 = 0.1680, p = 0.0738 < 0.1) on earnings variability (*EVAR*, a measure of earnings management) of the selected listed manufacturing companies in Nigeria. The partial slope coefficient indicates that a 1-unit point increase (decline) in *FBS* will, on average, yield about 0.168-units increase (decline) in *EVAR*. The foregoing statistical narratives implies that *EVAR* (for earning management) responds positively and consequentially to female board size of the selected manufacturing firms in Nigeria. Thus, the statistically significant state of the foregoing empirical test indicates the rejection of the null hypothesis, that is, $H_0: \beta_2 = 0$ is rejected.

Meanwhile, changes in firm size (*FZ*, β_3 = 0.0009, p = 0.955 > 0.1) and firm leverage (*FLEV*, β_4 = -0.0007, p = 0.304 > 0.01), respectively, exert positive and negative statistically insignificant effect on earnings variability (*EVAR*) of the selected listed manufacturing companies in Nigeria.

Explanatory Power

Table 4.4 under the CE estimator shows that the adjusted R-squared statistic of 0.1600 indicates that about 16.00 percent of the variations in the response variable (*EVAR*) can be explained by the explanatory variables (*FCP*, *FBS*, *FSZ* and *FLEV*) included in the EVAR-model. Thus, the EVAR-model possesses low predictive power.

Global Test of Significance

As shown in table 4.4 under CE estimator, the F-statistics (0.9300) indicates that the included independent variables (*FCP*, *FBS*, *FSZ* and *FLEV*) appear to have combined insignificant impact on earning management (using earnings variability as a measure) having a *p*-value (0.4478) below 0.05 level of significance.

Model Adequacy Validation

The post estimation tests herein include model specification test using Ramsey RESET test. Table 4.4 displays the results of the specification error test. The null hypothesis of " model has no omitted variables or is correctly specified" cannot be rejected as the test statistic (0.6100) is insignificant. This suggests that the estimated model is correctly specified. Following the post estimation test result, the estimated parameters of the *EAVR*-model are valid for inferences as well as policy making.

IV. Discussion of Findings

Utilizing panel data methodology, this study examines the nexus between female board participation and earnings management of selected manufacturing companies in Nigeria.

Hypothesis One

Ho: Female CEO power does not have a significant effect on earnings variability of manufacturing companies in Nigeria. Table 4.4 indicates from the CE estimator of FCEO (-0.0130) that female CEO power is negative and insignificant. The foregoing suggests that the ownership capacity of female CEOs do not significantly influence the manipulation of earnings of manufacturing firms in Nigeria. Since p-value obtained is more than 0.05 (p-value 0.680 > 0.05) the null hypothesis is therefore accepted.

The findings are in line with the findings of Chowdhury et al., (2023) and Arioglu, (2020). This suggests that female CEOs with higher ownership are not manipulating earnings to a statistically significant degree in the investigated manufacturing firms. These findings also do not align with the upper echelons theory.

Hypothesis Two

Ho: Female board size does not have a significant effect on earnings variability of manufacturing companies in Nigeria. Table 4.4 indicates from the CE estimator of FBS (0.168) that female board size is positive and significant at 10%. The foregoing suggests

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue X, October 2025

that female members in the board could exert significant influence on earnings manipulation. Since p-value obtained is more than 0.05 but more than 0.10 (p-value 0.0738) the null hypothesis is therefore rejected.

This is in line with the findings of Kontesa, Chai, Brahmana, and Contesa (2020) and Arun, Almahrog, and Aribi (2015) and in disagreement with Anaike and Okegbe (2023). This could infer that a board with more women may be associated with a greater risk-averse approach. This could translate to a preference for more conservative accounting practices, potentially leading to practices like accrual adjustments or delaying bad news to smooth out earnings (another form of earnings management). These findings could also be specific to the Nigerian manufacturing sector.

V. Conclusion and Recommendation

The thrust of this study is to ascertain the effect of female board participation on earnings management of listed manufacturing firms in Nigeria. The study obtained data from annual reports and publications from the Nigerian Exchange (NGX) Group for the manufacturing firms that operated during 2014-2024 period.

The dearth of women in CEO positions in listed Nigerian manufacturing firms could be a contributing factor to the insignificant effect of female CEO power on earnings management. The study also found from data collected that many female CEOs do not have as much ownership power represented by the number of shares they own.

Interestingly, the study found a potentially relevant relationship between female board size and earnings management. Companies with a larger proportion of female board members displayed a positive influence on earnings management practices at 10% level of significance meaning the more the women on the board, the higher the earnings management.

Therefore this study concluded that female CEO power has a negative and insignificant effect on earnings management while female board size has a positive and significant effect on earnings management.

The following recommendations were made in line with the findings and conclusion of this study:

- While this study did not find a significant influence of female CEO power on earnings management probably due to the shortage of women in CEO positions, and the low level of ownership capacity of these female CEOs the presence of female CEOs in leadership positions should be encouraged and more female CEOs should be enriched with more ownership (in shares) capacity.
- Due to the positive relationship between the female board size and earnings management, boards are advised to reduce the number of women on the boards that are not effective.
- Boards are to note that it is not just about having women on the board to fulfill all “gender diversity righteousness” boards should ensure that the women on the board are qualified for board positions by ensuring clear and inclusive recruitment processes
- Also emphasis should be placed on ensuring the women on the board are financially educated.
- Policymakers should promote best practices for board composition, committee structures, and director training to ensure boards fulfill their oversight responsibilities effectively.
- Boards can create an environment that values the strengths and perspectives of female directors. This could involve fostering open communication, encouraging diverse viewpoints, and ensuring female directors have the opportunity to contribute meaningfully to board discussions on financial reporting and strategic decision-making.
- While female board representation offers potential benefits, for investors interested in quality financial reporting, it's important not to rely solely on director or CEO r or CEO gender as a factor. Investors should consider the overall board composition, experience of individual directors, and the company's broader corporate governance practices before making investment decisions.

Suggestion for further study

This study opens doors for further investigation into female leadership and board composition. Further areas are:

1. Examining how other sectors and industries might influence the relationship between female leadership, board composition, and earnings management practices.
2. Investigating the long-term consequences of female leadership and board composition on company performance and shareholder value.
3. Exploring other earnings management proxies as apart from earnings variability

Contribution to Knowledge

This study sheds light on the complex relationship between female board participation and earnings management practices in the context of Nigerian manufacturing companies. It has also extended the body of literature on this discourse and adds to the

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ongoing debate about the impact of female leadership on corporate financial practices. The study challenges the assumption that female CEO ownership influences earnings management. It also identifies a potentially significant relationship between a larger proportion of female board members and earnings management practices and suggests that female board presence increases earnings management practices in Nigerian manufacturing companies. Thus this study contributes to the understanding of how female leadership might shape corporate governance practices and earnings management.

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