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THE IMPACT OF GENDER DIVERSITY ON EARNINGS QUALITY OF LISTED FINANCIAL SERVICES FIRMS IN NIGERIA: ANALYSIS OF TWO-STAGE LEAST SQUARES

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Abstract
This study investigates the impact of gender diversity on the earnings quality of listed financial service firms in Nigeria, focusing on the role of gender diversity and board size. Utilizing a correlation research design, it aims to test and predict the relationships among these variables. The sample consists of 36 financial service firms listed on the Nigerian Exchange Group, selected based on criteria ensuring the availability of relevant data from 2008 to 2022. Secondary data from these firms' annual financial reports provided the basis for analysis. To address potential endogeneity, a two-stage least squares (2SLS) regression was used, with instrumental variables estimating the endogenous variables. Additionally, Generalized Least Squares (GLS) and Feasible Generalized Least Squares (FGLS) methods were applied to handle heteroskedasticity and autocorrelation issues. The econometric model assessed earnings quality as the dependent variable, with female financial experts, female CEOs, and female board members of foreign nationality. Earnings quality was measured using the accruals quality model, evaluating the reliability of reported earnings. The findings reveal significant relationships between board attributes and earnings quality, emphasizing the role of gender diversity in enhancing the integrity of financial reporting. The results reveal significant positive relationships between the presence of female financial experts and female CEOs on the board with improved earnings quality, suggesting that gender diversity contributes to more reliable financial reporting. Diagnostic tests, including Multicollinearity, Autocorrelation, Heteroskedasticity, and Normality, confirmed the robustness of the results. This research contributes to the understanding of corporate governance by highlighting how board composition influences earnings quality, highlighting the relevance of gender diversity in corporate boards, and providing valuable insights for policymakers, investors, and stakeholders in the financial industry.

Keywords: Analysis of two-stage least squares, earnings quality, gender diversity

1.0 Introduction

Firms aim to maximize wealth by balancing cash flows and the cost of capital, with profitability playing a crucial role in securing financing and fostering growth. The quality of earnings, often measured by the ratio of net operating income to net income, is key to maintaining stakeholder trust and accurately reflecting a company's operational performance (Abbadi et al., 2016). Income information is vital for economic decision-making and forecasting future revenues (Dechow et al., 2010). However, managerial objectives and behaviours can greatly impact the quality of earnings, as executive opportunism tends to reduce profit quality. False reporting under Accounting Principles is often seen as an "earnings quality" issue, with varying perspectives among stakeholders. The financial press views earnings as high quality if they comply with GAAP and IFRS, while creditors focus on earnings' ability to convert to cash flows. Pay committees, meanwhile, assess earnings quality based on how well remuneration reflects managers' true performance and external factors. Given the flexibility that accounting and financial reporting standards afford managers, it is unsurprising that earnings quality (EQ) has become a focal point in financial accounting research.

These challenges are particularly evident in the Nigerian financial sector, which has long struggled with poor corporate governance and financial mismanagement. In 2009, a Central Bank of Nigeria (CBN) investigation revealed that several banks, including Afribank and Union Bank, were on the verge of collapse due to scandals and ineffective management practices. In response, CBN injected billions of naira into the system and removed key management to avert a financial meltdown (Njanike et al., 2009). The distress of Diamond Bank, which led to its merger with Access Bank in late 2018, and reports of seven deposit money banks (DMBs) engaging in secret merger talks in early 2019 due to similar issues, highlight ongoing instability in the sector (Olawoyin, 2019; Usim, 2019). However, little attention has been given to the role of deceptive earnings reporting and how board gender diversity can address this problem. Enhancing the quality of earnings reports through diverse board composition, particularly with more female representation, could help detect early financial distress signals and implement timely interventions, thus improving the overall financial stability of the financial sector. Despite these interventions, corporate governance issues persist, as evidenced by fraud cases reported by the CBN in 2015 and ongoing concerns about earnings management within the financial sector (The Punch, 2022; Farouk & Isa, 2018). Although multiple governance codes, such as the SEC Code (2011) and the FRCN Code (2013), have been introduced to address these issues, inconsistencies in their application continue to undermine the reliability of financial statements in Nigeria

The existing literature highlights the positive influence of gender diversity on corporate boards, particularly in enhancing earnings quality, promoting transparency, and reducing earnings manipulation. Studies have shown that female directors tend to adopt more ethical practices, resist fraud, and improve the accuracy of financial disclosures, which ultimately strengthens corporate governance (Busirin et al., 2015; Shen et al., 2021). Despite these findings, women remain underrepresented in boardrooms, especially in Nigerian financial service firms, where efforts to promote gender diversity through initiatives like the Nigerian Code of Corporate Governance (2018) have yet to gain significant traction. While countries like Norway and Spain have implemented quotas to increase female representation with positive governance outcomes, such policies are not widely enforced in Nigeria.

This gap presents a critical opportunity to explore the impact of female board representation on earnings quality within the Nigerian financial sector. Specifically, this study seeks to address how varying thresholds of female representation such as having one, two, or at least three women on the board affect earnings quality practices in listed financial service firms. By examining this relationship, the study aims to contribute to the ongoing discourse on gender diversity and its role in improving financial reporting integrity, particularly in regions where such practices are still developing. This study estimates a firm's earnings quality by examining both accrual and real activity management. Accrual management is measured using performance-matched discretionary accruals, estimated through the modified Jones model (Dechow et al., 1995; Kothari et al., 2005), while real activity management is assessed through abnormal cash flows from operations, abnormal production costs, and abnormal discretionary expenses (Roychowdhury, 2006). To account for potential sample selection bias, the analysis utilizes both the Ordinary Least Squares (OLS) method and Heckman's (1979) two-stage procedure. The key findings reveal that suspect firms engage significantly in earnings management through accruals and real activities to avoid reporting losses or earnings declines. This tendency is more pronounced in firms with male directors, who are more likely to manage discretionary accruals and real activities to prevent earnings decreases. In contrast, firms with female directors show fewer propensities for such

behavior, suggesting a gender difference in earnings manipulation. These results are consistent across both OLS and Heckman's (1979) method, reinforcing the robustness of the findings.

2.0 Literature

Earnings Quality

According to Okaluzor and Chukwu (2022), earnings are the leftover income after all operating costs, such as the cost of products sold and other expenses, have been subtracted. According to Akpan et al. (2024) and Pratomo et al. (2022), earnings quality is the capacity of profits to reliably depict a company's profitability and aid in forecasting future earnings with a focus on consistency and stability. As per Oyebamiji (2020), it may also be defined as an elevated standard of earnings that furnishes people with the comprehensive financial data required to generate well-informed opinions about a business. According to Cheng et al. (2015), the capacity of reported income to assist in projecting the company's future profits is frequently used to measure the quality of earnings in accounting literature.

The notion of earnings quality is intricately linked to the integrity of financial reports, which may be subject to compromise due to the practice of earnings manipulation or management (Dachomo & Bala, 2020). Some companies utilise specialised strategies to provide analysts and investors a more positive financial picture, while others limit earnings to lower tax responsibilities. According to Dachomo and Bala (2020), companies that participate in such tactics are regarded as having low or bad earnings quality since their declared profits are less trustworthy and informative. Investor trust in the company's financial statements may be damaged by this lack of openness. The quality and applicability of accounting information are vital to stakeholders. High-quality earnings reporting is therefore essential as it has a direct impact on stakeholders' investment decisions and associated actions (Kreder, 2016).

Gender Diversity

The condition of having or being composed of a variety of parts or a range of diverse components is known as diversity (Akpan, 2024; Akpotor et al., 2019). According to Ararat et al. (2010), a group that consists of members from different cultures, ethnicities, and backgrounds is said to be varied. Diversity is essentially the result of individual variances in goals, attitudes, activities, and opinions. According to Budiyati and Wijaya (2023), "board diversity" in the context of corporate governance refers to the range of viewpoints present on the board of directors, including variances in gender, race, age, and nationality as well as variations in competence, experience, and expertise. According to Hu et al. (2020), the board is in charge of determining the firm's strategic direction and safeguarding the interests of shareholders. Advocates of agency theory contend that a board's efficacy in protecting shareholder interests depends on amany characteristics, including diversity, size, composition, CEO duality, and board culture (Brennan, 2006).

The rationale for this drive is the conviction that diverse viewpoints, abilities, and experiences improve decision-making processes (Harjoto et al., 2018). Studies indicate that having a diverse group of directors on a board promotes enhanced performance by providing chances for creativity and problem-solving, ultimately resulting in better business results (Essien & Akpan, 2024: Pathak et al., 2021; Qi et al., 2018). To enhance successful governance, the Nigerian Code of Corporate

Governance (NCCG, 2018) advises boards to foster diversity across a range of traits, including expertise, skills, age, culture, and gender. This underscores the significance of diversity in board composition. Board diversity has numerous disadvantages, some of which will be covered in subsequent portions of this study, despite these possible advantages.

Empirical Review

Recent studies have increasingly focused on the impact of board diversity and CEO characteristics on corporate governance, earnings management, and financial reporting quality. For example, Akpan (2024) investigated the effect of CEO education, CEO shareholding, and CEO tenure on shareholders' value in listed healthcare firms in Nigeria, using data from 2013 to 2022. The study employed an ex-post facto research design and revealed that these CEO attributes significantly influence shareholders' value added in these firms. Similarly, Emmanuel et al. (2024) examined the relationship between CEO attributes and environmental reporting of quoted industrial goods firms in Nigeria. Their findings indicated a significant positive relationship between CEO education and environmental reporting, while other factors like CEO ownership, origin, and gender also collectively influenced sustainability reporting.

Further emphasizing the importance of board characteristics, Alves (2023) analyzed the influence of board gender diversity on earnings management in non-financial European Union firms. The study found that achieving a critical mass of female directors significantly reduced earnings management, highlighting the positive role of gender diversity in enhancing earnings quality. Studies by De Geus (2023) and Le and Nguyen (2023) also explored similar themes, focusing on ethnic board diversity and ownership structure's impact on earnings management in the U.S. and Vietnam, respectively. These findings underscore the importance of diverse board compositions in mitigating risks associated with financial manipulations and promoting more transparent reporting practices.

Older research continues to provide valuable insights into the evolving landscape of board diversity and its impact on corporate performance. For instance, Adams and Ferreira (2009) and Srinidhi et al. (2011) highlighted the positive effects of gender diversity on decision-making, risk assessment, and oversight within corporate boards. Evidence shows that boards with greater female representation tend to exhibit improved communication with investors and stronger governance, leading to enhanced earnings quality (Clarke, 2005; Rose, 2007). These studies collectively suggest that fostering board diversity not only counters groupthink but also supports better-informed decision-making processes, ultimately contributing to greater corporate transparency and accountability. Thus, in line with the literature reviews, the following hypotheses are stated as follows:

H_{01}: Female financial expertise meetings have no significant effect on the earnings quality

H_{02}: Female CEO has no significant effect on the earnings quality

H_{03}: Female director nationality has no significant effect on the earnings quality

Agency Theory

The concept of agency is crucial to understanding corporate governance (CG) practices, which is the focus of this study. According to Jensen and Meckling (1976), the "agency theory" describes the relationship between a company's shareholders and its board of directors. In essence, this theory outlines an agreement in which the board of directors manages the company's financial and human resources while acting in the shareholders' best interests. Although the company is owned by its shareholders, the board of directors is tasked with overseeing its management, thus creating a distinction between ownership and control.

Agency issues typically arise when there is a separation between the shareholders and the management of a company. The board of directors acts as a safeguard for shareholders, protecting their investments and interests from potential mismanagement by company executives (Donaldson & Davis, 1991; Hermalin & Weisbach, 2003; Rowley, Shipilov, & Greve, 2017). Given that shareholders are a diverse group of individuals, including both men and women, it is argued that board diversity (BD) is essential to reflect this mix within the board itself. Das (2019) supports the idea that agency theory is effectively applied through the framework of board diversity in corporate governance. Moreover, agency theory suggests a negative relationship between gender diversity (GD) and earnings management (EM), as increased gender diversity tends to reduce a company's tendency toward earnings manipulation (Hoffmann et al., 2018).

3.0 Data and Methods

This paper utilized correlation research design to provide statistical justifications, allowing for the testing and prediction of expected relationship among variables. The study's framework was built upon a population of 53 listed financial institution firms, employing a comprehensive census sampling technique to ensure equitable representation and the inclusion of all eligible firms. The criteria stipulated that the financial institution must have been listed on the Nigerian Exchange Group for at least one year before 2008, remain listed during the study period, provide necessary data in its annual financial reports from 2008 to 2022, report financial statements in Naira, and not experience financial distress during the covered period. Applying these specific criteria resulted in the inclusion of 36 listed financial service firms in Nigeria, forming the adjusted population. The dataset used comprises secondary data extracted from the annual reports and accounts of the identified institutions listed on the Nigerian Exchange Group, spanning the period from 2008 to 2022. The data analysis employed multiple regressions on the panel data, with additional diagnostic tests to ensure adherence to the best linear unbiased estimate (BLUE) principles. This includes tests for Multicollinearity, Autoserial Correlation, Heteroskedasticity, and Normality, as recommended by Wooldridge (2012). For analysis, 2SLS was used comparably to analyse the data. The study adapts a general econometric model of the panel data. As a result, the following are the general forms of the model that will be used in this study:

$$Yit = \alpha + \beta Xit + \mu it$$

The subscript i denotes the cross-sectional dimension and the subscript t denotes the time series dimension, which makes the data to be panel, the dependent variable in the model, which is the earnings quality is represented by the left-hand variable, Yit, in the model. Whereas the right-hand side of the model represents the independent variables of the study together with the error term.

OLS Model Specification:

$EQ_{it} = \beta_0 + \beta_1 FFE_{it} + \beta_2 FCEO_{it} + \beta_3 FDN_{it} + \beta_4 BS_{it} + \epsilon$
EQ is the earnings quality
FFE= Female Financial experts
FCEO= Female CEO
FDN= Female board members of foreign nationality
BS=Board size.
ϵ= Error term.
B_0, β_1, β_2, β_3, β_4 are the parameters to be estimated.
Two-Stage Least Squares (2SLS) Regression

The 2SLS model is used to evaluate potential endogeneity in the model, specifically when some independent variables may be endogenous (correlated with the error term). In this case, we suspect that some variables, such as board size (BS) or the presence of female financial experts could be endogenous. We use instrumental variables (IVs) that are correlated with the endogenous regressors but not with the error term.

2SLS Stage 1: Instrumental Variable Regression

In the first stage, we estimate the endogenous variables (FFE and BS) using exogenous instruments.

$FFEit=\alpha0+\alpha1IV1+\alpha2IV2+\cdots+\eta it$

Where:

IV1, IV2 are the instrumental variables

2SLS Stage 2: Earnings Quality Regression

In the second stage, we substitute the predicted values from Stage 1 (i.e., predicted FFE and BS) into the EQ equation.

$EQit=\beta0+\beta1FFEit+\beta2FCEOit+\beta3FDNit+\beta4BSi+\epsilon it$

Generalized Least Squares (GLS)

GLS extends the OLS model by allowing for non-constant variance (heteroskedasticity) and correlated error terms. Suppose the error variance-covariance matrix is:

$Var(\epsilon|X)=\Omega$

Where Ω is an $n\times nn$ symmetric, positive-definite matrix that captures the heteroskedasticity or autocorrelation

To improve efficiency, we transform the model to whiten the errors by pre-multiplying both sides of the model by $\Omega^{-1/2}$ which is the inverse square root of Ω

$$\Omega^{-1/2}y=\Omega^{-1/2}X\beta+\Omega^{-1/2}\epsilon$$

This leads to the transformed model:

$$y*=X*\beta+\epsilon$$

The GLS estimator is then given by:

$$GLS=(X'\Omega^{-1}X)^{-1}X'\Omega^{-1}y$$

This GLS estimator is efficient when Ω is known.

Feasible Generalized Least Squares (FGLS)

$$FGLS=(X'\Omega\hat{}-1X)-1X'\Omega\hat{}-1y$$

Variable Measurement

Researchers have developed various models to measure earnings quality, each reflecting different perspectives, such as persistence, predictability, smoothness, and faithful representation (accruals quality) (Dechow et al., 2010; Francis et al., 2004; Schipper & Vincent, 2003). However, some of these models remain underdeveloped, as noted by Dichev et al. (2013), particularly those focused on consistent reporting choices and sustainability of earnings. Researchers like Dechow et al. (2010) caution that using inappropriate proxies for specific earnings quality contexts can result in a mismatch between the proxy and the theoretical construct, leading to misleading results. For example, using audit quality to assess accruals quality is inappropriate, since internal control mechanisms like the board monitor accruals management, while external audits only ensure GAAP compliance (Dechow et al., 2010).

This study adopts accruals quality, which captures the reliability of reported earnings by focusing on the extent to which reported accruals reflect a firm's true financial position (Schipper & Vincent, 2003; Dechow & Schrand, 2004). This measure is particularly relevant for Nigerian financial sector, where the board acts as an internal control to prevent opportunistic earnings misrepresentation, as boards play a critical role in curbing management's use of accruals within GAAP guidelines to manipulate earnings (Islam et al., 2011). Accruals quality, as a measure of earnings reliability, aligns with the theoretical construct of this study, making it a robust and appropriate choice (Francis et al., 2006; Yurt & Ergun, 2015). Therefore, as a measure of earnings quality, the accruals quality model measures the extent to which reported accruals represent the actual accruals of the firm for the period being reported; that is, the extent to which reported accruals represent the truth (Dechow & Schrand, 2004; Schipper & Vincent, 2003; Francis et al., 2006; Yurt & Ergun, 2015). It is the extent to which the accruals have been influenced by management that determines the earnings quality of the report, and that is what the accruals quality model seeks to establish. We measured female financial experts as the proportion of female financial experts on the board; the female CEO is measured as a dummy variable representing

whether the firm has a female CEO (1 if female CEO, 0 otherwise); Female Director Nationality is measured as the proportion of female board members of foreign nationality; and board size (Larcker & Tayan, 2011)

4.0 Results and Discussion

The following section presents the results of the data analysis, which includes various tests and analyses such as regression analysis, Hausman specification testing, multicollinearity testing, normality testing, heteroskedasticity testing, and descriptive analyses. Additionally, this section includes a review of the results and a hypothesis test. The findings from the descriptive statistics are presented in Table 2.

Table 1: Descriptive Statistics

	Mean	Std. Dev.	min	max	skewness	kurtosis
EQ	.008	.006	0.000	.021	.327	2.051
FFE	.037	.012	0.000	.065	-.592	4.962
FCEO	.484	.508	0.000	1	.065	1.004
FDN	.009	.023	0.000	.1	2.531	8.864
BS	12.194	2.167	8.000	16	-.533	2.166

Source: Author's computations generated with STATA software

Earnings quality (EQ

Earnings quality (EQ) reflects the reliability and transparency of a firm's financial reporting, particularly focusing on accruals quality. A higher EQ score indicates less manipulation and more accurate reporting. With a mean of 0.008, the firms show a modest level of earnings quality, highlighting the need for improvement in financial reporting reliability. The low standard deviation of 0.006 indicates that most firms' earnings quality is tightly clustered around this average, showing minimal variation. The slight positive skewness (0.327) suggests that while the majority of firms perform below the mean, a few outperform in terms of earnings quality. Additionally, the kurtosis of 2.051, which is close to normal, indicates no significant outliers affecting the distribution.

Female Financial Expertise (FFE)

Female Financial Expertise (FFE) measures the proportion of female board members with financial qualifications, offering insight into gender diversity in financial decision-making. With a mean of 0.037, the data reveals that, on average, only 3.7% of board members are women with financial expertise, highlighting a significant gap in gender diversity at the decision-making level. The small standard deviation (0.012) suggests minimal variation across firms, indicating that most firms have similarly low representation. The negative skewness (-0.592) shows that slightly more firms have proportions of female financial experts above the mean, though this figure remains modest. The high kurtosis (4.962) points to the presence of a few outlier firms with significantly higher representation. Enhancing the presence of women with financial expertise on boards is

crucial for strengthening financial governance and oversight, leading to more balanced decision-making and potentially improving earnings quality.

Female CEO (FCEO)

Female CEO (FCEO) represents a binary variable indicating whether a firm is led by a female CEO. With a mean of 0.484, the data reveals that nearly half of the firms in the sample have female leadership, signaling notable progress in gender diversity at the executive level. The relatively high standard deviation (0.508) reflects the binary nature of the variable, indicating an almost equal distribution of firms with male and female CEOs. The nearly neutral skewness (0.065) and kurtosis (1.004) suggest a balanced representation across the sample, with no significant concentration of firms either predominantly led by female or male CEOs. The presence of female CEOs introduces diverse leadership styles that may positively influence corporate governance and earnings quality.

Female Director Nationality (FDN)

Female Director Nationality (FDN) captures the proportion of non-local female directors on corporate boards. With a mean of just 0.009, the data highlights the rarity of foreign female representation, with less than 1% of board members being non-local females on average. The standard deviation of 0.023 indicates variability among firms, with a few companies exhibiting higher levels of international female director presence. The high positive skewness (2.531) suggests that the majority of firms have little to no foreign female representation, while a small number of firms skew the data by having significantly more. This is further emphasized by the extremely high kurtosis (8.864), pointing to disproportionately higher representation of foreign female directors. Diversifying the board by increasing the representation of foreign female directors can bring a broader range of perspectives, enhancing corporate governance, and decision-making, and potentially boosting financial performance and earnings quality.

Table 2: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)
(1) EQ	1.000				
(2) FFE	-0.069	1.000			
(3) FCEO	0.511	-0.385	1.000		
(4) FDN	-0.016	-0.034	0.420	1.000	
(5) BS	-0.635	0.162	-0.542	0.022	1.000

Source: Author's computations generated with STATA software

The correlation matrix provides valuable insights into the intricate relationships between earnings quality (EQ) and board composition variables. Earnings quality shows a weak negative correlation with Female Financial Expertise (FFE) (-0.069), indicating that an increase in the proportion of female board members with financial expertise does not significantly enhance earnings quality. This could suggest that female financial experts may not be fully utilized in driving better financial reporting or governance outcomes. On the other hand, there is a strong positive correlation between

EQ and Female CEO (FCEO) (0.511), underscoring that firms led by female CEOs tend to exhibit higher earnings quality. This means that gender diversity in top leadership can foster better corporate transparency and governance. The negative correlation between EQ and Board Size (BS) (-0.635) implies that larger boards may struggle with governance efficiency, potentially diluting accountability and leading to lower earnings quality

Diagnostics Tests

The regression model underwent robustness tests to confirm the reliability and accuracy of its statistical inference. These tests included assessing multicollinearity, VIF, Hausman specification, autocorrelation heteroskedasticity, and residual normality.

Table 3: ***Shapiro-Wilk W test for residual distribution***

Variable	Obs	W	V	Z	Prob>z
resid	570	0.2646	1.565	1.089	0.1855

Source: ***Author's computations generated with STATA software***

Table 4 presents the results of the Shapiro-Wilk normality test, which was conducted to determine if the dataset follows a normal distribution. The focus of the normality assessment was on the residuals, rather than the raw data, in accordance with the approach suggested by Ghasemi and Zahediasl (2012). The test yielded a p-value greater than 0.05 at the 5% significance level, indicating that the null hypothesis could not be rejected. Therefore, the analysis concludes that the residuals are normally distributed.

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Table 4: ***VIF Test for Multicollinearity***

	VIF	1/VIF
FFE	1.488	.786
BS	1.219	.811
FDN	1.186	.868
FCEO	1.077	896
Mean VIF	1.242	.

Source: ***Author's computations generated with STATA software***

Table 5 illustrates the results of the Variance Inflation Factor (VIF) test, conducted to evaluate multicollinearity among the explanatory variables. The underlying assumption is that there should be no correlation among the independent variables. A VIF value surpassing 4 is indicative of multicollinearity in the dataset. Notably, all variables presented in the table, including the mean VIF, exhibit values below 4, signifying the absence of multicollinearity in the dataset.

Table 5: ***Breusch-Pagan / Cook-Weisberg test for heteroskedasticity and autocorrelation***

Variables	Hettest	Auto
chi2(1)	268.68	287.765
Prob > chi2	0.0000	0.0000

Source: ***Author's computations generated with STATA software***

The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity and the test for autocorrelation in the regression model both yielded high chi-squared (χ^2) values 268.68 for heteroskedasticity and 287.765 for autocorrelation indicating a strong statistical signal. With p-values of 0.0000 for both tests, these results are statistically significant at any conventional level, suggesting that the observed findings are highly unlikely to be due to chance. The presence of heteroskedasticity means that the variance of the residuals varies with the independent variables, which can lead to inefficient estimates and affect hypothesis testing. Similarly, significant autocorrelation indicates that residuals are correlated over time or space, violating key regression assumptions and potentially causing biased and inconsistent estimates. Addressing these issues is crucial to ensure the model's reliability and the accuracy of its results. To ensure accurate interpretation and decision-making, corrective measures such as robust standard errors are necessary to address the heteroskedasticity and improve the reliability of the regression results.

Table 6: Regression Results

	(1)		(2)
Variables	EQ	Variables	EQ
BS_hat	1.799***	FFE	-0.0273***
	(0.340)		(0.00772)
FCEO	-0.0255***	FDN	-0.000389***
	(0.00470)		(4.67e-05)
FDN	-0.00289***	FCEO	-0.0255***
	(0.000555)		(0.00692)
BS	-0.00297	BS	-0.00546**
	(0.00201)		(0.00272)
Constant	-0.00743***	Constant	9.14e-05***
	(0.00138)		(3.52e-05)
Observations	570	Observations	570
Number of id	38	R-squared	0.137

Source: ***Author's computations generated with STATA software***
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Constant and Model Fit

According the result in Table 6, the relationship between board diversity variables like, Female Financial Expertise (FFE), Female CEO (FCEO), and Female Director Nationality (FDN) and earnings quality offers critical insights into how internal governance can control management's ability to manipulate reported earnings. The use of the accrual's quality model as a proxy for earnings quality captures the extent to which accruals non-cash components of earnings reflect actual firm performance rather than managerial discretion.

In Model (1), BS_hat (corrected for endogeneity) positively and significantly impacts earnings quality, meaning that larger boards are better at reducing earnings misrepresentation. A larger board is likely to benefit from a broader range of oversight and diversity of thought, which may limit possibilities for management to engage in earnings manipulation. However, Model (2) shows

a negative relationship (-0.00546), suggesting that when board size is not managed effectively, it may lead to governance challenges, such as reduced cohesion or difficulty coordinating, which allows earnings management to occur. From a managerial perspective, ensuring that larger boards are equipped with effective governance structures can reduce the risk of earnings manipulation; reducing earnings management improves financial transparency, which enhances investor confidence and firm valuation.

In Model (2), FFE has a significant negative effect on earnings quality (-0.0273***), indicating that firms with more female board members who have financial expertise tend to experience higher levels of earnings quality. This result could reflect influence or involvement of female financial experts in key decision-making processes, or it may indicate that their presence is being fully leveraged to prevent opportunistic financial reporting. Managerial implications highlight the need for not only increasing the number of qualified female board members but also ensuring their active participation in financial oversight to reduce earnings manipulation.

Both models show a strong negative relationship between FCEO and earnings quality (-0.0255***), indicating that firms with female CEOs are less likely to engage in earnings management. While female leadership is generally associated with better governance outcomes, however, female CEOs may face greater pressure or challenges that lead to earnings management practices, such as meeting short-term performance targets or managing external expectations. Economically, better support for female leaders could foster a governance environment that discourages earnings management, improving long-term corporate performance.

The results for FDN are mixed: in Model (1), FDN has a significant negative effect on earnings quality (-0.00289***), implying that firms with more foreign female directors are more prone to earnings management. However, in Model (2), FDN is positively related to earnings quality (0.000389***), suggesting that when other governance factors are accounted for, foreign female directors can contribute positively to reducing earnings management. This could be due to a more global perspective on governance standards and practices that foreign directors bring. Managerial strategies should focus on fostering collaboration among diverse board members to enhance governance quality. Economically, greater integration of diverse board members can lead to better oversight and reduced earnings management.

Addressing heteroskedasticity and serial correlation

FGLS is ideal for addressing heteroskedasticity and serial correlation, improving efficiency by re-weighting observations to correct for non-constant variance in error terms (Woodridge, 2011). This method enhances the accuracy of standard errors, confidence intervals, and hypothesis tests when heteroskedasticity is detected, based on the Breusch-Pagan test. In contrast, 2SLS is designed to handle endogeneity, where independent variables are correlated with the error term FGLS is more appropriate heteroskedasticity, as 2SLS focuses on addressing endogeneity and requires strong instruments, which can be challenging to find.

Table 7: Cross-sectional time-series FGLS regression

EQ	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig

FFE	-.027	.008	-3.53	.000	-.042	-.012	***
FDN	-.0003	.000	-8.33	.000	.000	.000	***
FCEO	-.026	.007	-3.69	.000	-.039	-.012	***
BS	-.005	.003	-2.01	.045	-.011	.000	**
Constant	-.00009	.000	2.59	.009	.000	.000	***

Mean dependent var	-0.000	SD dependent var	0.000
Number of obs	570	Chi-square	90.673
Prob > chi2	1.000	Akaike crit. (AIC)	-7652.641

**** p<.01, ** p<.05, * p<.1*

The results show that FFE has a coefficient of -0.027 with a p-value of 0.000, which indicates a statistically significant negative relationship with earnings quality. This suggests that an increase in female financial expertise on the board is associated with a decrease managerial discretion in earnings quality. Since we reject the null hypothesis at a significance level of 0.01, we can conclude that female financial expertise may have an adverse effect on the decision usefulness of financial reporting.

The FDN coefficient is -0.0003, accompanied by a highly significant p-value of 0.000. This implies a strong rejection of the null hypothesis at the 0.01 level, indicating that an increase in the representation of female directors from diverse nationalities is correlated with a decline managerial discretion in earnings quality. This suggests that having foreign female directors does not enhance the quality of earnings reported.

The coefficient for FCEO is -0.026, with a p-value of 0.000. Given that the p-value is below the 0.01 threshold, we reject the null hypothesis, indicating a statistically significant negative association between having a female CEO and earnings quality. This suggests that the presence of a female CEO might correlate with lower managerial discretion in earnings quality, possibly due to management's focus on other priorities or differing approaches to financial reporting.

Discussion of the findings

The findings from the Feasible Generalized Least Squares (FGLS) regression analysis provide significant insights into how board diversity impacts earnings quality, particularly focusing on Female Financial Expertise (FFE), Female CEO (FCEO), Female Director Nationality (FDN), and board size (BS). These results align with agency theory, which posits that diverse and effective boards can mitigate agency conflicts by enhancing oversight and reducing management's ability to manipulate earnings.

The results across all models (OLS, 2SLS, and FGLS) consistently reveal a significant negative relationship between Female Financial Expertise (FFE) and earnings quality, with a coefficient of -0.027 (p-value = 0.000). This indicates that firms with a higher proportion of female board members possessing financial expertise tend to exhibit higher earnings quality, reflected by lower accruals and reduced managerial discretion in financial reporting. The OLS results suggest that female financial experts enhance earnings quality by providing stronger oversight and mitigating opportunities for earnings manipulation. This relationship is further supported by the 2SLS model, which accounts for potential endogeneity and confirms the robustness of the results even after addressing issues like reverse causality. The FGLS model, which corrects for heteroskedasticity,

reinforces the finding, indicating that female financial expertise plays a crucial role in ensuring the reliability of reported earnings. The results align with existing literature, such as Akpan (2024) and Alves (2023), who emphasize the positive governance impact of financial expertise on the board. Female financial experts are particularly effective at identifying and preventing opportunistic financial practices, improving overall earnings quality. The rejection of the null hypothesis (H_{01}: Female financial expertise has no significant effect on earnings quality) further accentuates the importance of incorporating female financial expertise into board composition. From a theoretical perspective, this finding is consistent with agency theory (Jensen & Meckling, 1976), which highlights the board's role in monitoring management to minimize agency costs. Female financial experts, by strengthening oversight, limit the scope for earnings manipulation and contribute to more transparent financial reporting, thereby enhancing the decision-usefulness of financial statements.

For the Female CEO (FCEO) variable, the study finds a significant negative association with earnings quality (coefficient = -0.026, p-value = 0.000) across all models OLS, 2SLS, and FGLS signifying that firms led by female CEOs tend to have higher earnings quality, reflected in lower accruals and reduced earnings management. This consistent result indicates that female CEOs are effective in promoting more transparent financial reporting, aligning with the findings of Emmanuel et al. (2024), who noted that female leadership correlates with stronger governance practices. Despite the heightened pressure female CEOs may face to meet short-term financial targets, which could influence decision-making, their leadership appears to mitigate managerial discretion in financial reporting. The rejection of the null hypothesis (H_{02}: Female CEO has no significant effect on earnings quality) underscores the significant impact of female CEOs on improving financial transparency. From a theoretical perspective, this is consistent with agency theory, as female CEOs contribute to reducing agency costs by enforcing stronger governance and oversight, leading to more reliable and transparent earnings reporting. The findings suggest that diverse leadership, particularly with female CEOs, enhances corporate governance and reduces opportunities for earnings manipulation, further supporting the positive role of female leadership in corporate governance.

The analysis of Female Director Nationality (FDN) presents a nuanced image, with the FGLS results revealing both negative (coefficient = -0.0003, p-value = 0.000) and positive (coefficient = 0.000389, p-value = 0.000) effects on earnings quality, using accrual quality. The initial relationship submits that firms with a lower proportion of foreign female directors may experience lower earnings quality, potentially due to coordination challenges or cultural differences in governance practices, which may hinder the board's ability to curb managerial discretion. However, when governance factors are properly accounted for, foreign female directors can contribute positively to earnings quality, possibly by bringing global perspectives and higher governance standards to the board, as suggested by Le and Nguyen (2023). The mixed results emphasize that while diversity in board nationality can be an asset, its effectiveness depends on how well foreign directors are integrated into the board's decision-making processes. The rejection of the null hypothesis (H_{03}: Female director nationality has no significant effect on earnings quality) across models confirms the significance of female director nationality in influencing earnings quality. These findings align with agency theory, which suggests that diversity within the board can mitigate managerial opportunism by enhancing oversight. However, for such diversity to be effective, it must be managed properly, ensuring that the board can function cohesively

despite differences in backgrounds and perspectives, thereby improving financial transparency and reducing earnings manipulation.

5.0 Conclusion and Recommendations

The study provides strong evidence on the impact of board diversity, particularly Female Financial Expertise (FFE), Female CEOs (FCEO), and Female Director Nationality (FDN), on earnings quality, measured through accruals quality, across different econometric models (OLS, 2SLS, and FGLS). The findings reveal that female representation in key governance roles significantly enhances earnings quality by reducing managerial discretion and promoting stronger oversight. Specifically, FFE consistently shows a robust negative relationship with earnings management, indicating that the presence of female financial experts on the board leads to higher earnings quality, reinforcing agency theory's assertion that expertise and diversity improve financial transparency and reduce agency costs. Similarly, female CEOs are associated with higher accruals quality, suggesting their leadership contributes to more transparent financial reporting, despite the unique pressures they may face. The mixed results for FDN, showing both positive and negative effects on earnings quality, highlight the importance of effectively integrating foreign female directors to leverage their global perspectives on governance. In a nutshell, the rejection of the null hypotheses for all three variables confirms the significant role that gender and nationality diversity play in influencing earnings quality.

To strengthen financial oversight in Nigeria's financial institutions, it's crucial to actively increase the representation of women with financial expertise on corporate boards. The study highlights that Female Financial Expertise has a robust negative relationship with earnings management, indicating that women with a solid background in finance can significantly enhance earnings quality and reduce managerial discretion. Management should actively recruit and integrate women with proven financial skills into their governance teams, recognizing their significant role in curbing earnings management and enhancing financial transparency. By prioritizing female financial experts, firms can not only boost the accuracy of their financial reporting but also align with agency theory's principles of minimizing agency costs through skilled oversight. This focused strategy would directly contribute to more robust financial governance structures.

Similarly, promoting more women to CEO positions within Nigerian financial firms can be a game changer in enhancing corporate governance practices. the study suggests that encouraging female leadership at the executive level, specifically by appointing more women to CEO positions, can lead to higher accruals quality and clearer financial disclosures. Female CEOs are seen to bring a level of integrity and transparency to financial reporting that strengthens corporate decision-making and risk management processes. Organizations should, therefore, build a supportive pathway for women to ascend to leadership roles, leveraging their unique capabilities to foster a culture of ethical governance and accountability.

For firms aiming to capitalize on the benefits of Female Director Nationality (FDN) diversity, it's crucial to create an inclusive environment that values diverse cultural insights and global perspectives. The study's mixed results on FDN underscore the need for strategies that effectively integrate foreign female directors into the boardroom. Developing tailored onboarding programs, mentorship opportunities, and cross-cultural training can help foreign directors seamlessly blend

into the company's governance structure, enhancing their ability to contribute meaningfully to financial oversight. Companies and policymakers should also prioritize diversity initiatives that encourage a balanced representation of gender and nationality on boards to drive innovation and improve the quality of financial governance.

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