

Moderating Effect of CEO Gender Diversity on the Relationship Between Board Academic Qualifications and Earnings Management of Listed Non-Financial Services Sector in Nigeria

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Abstract

This study investigates the influence of board academic qualifications and the moderating effect of CEO gender diversity on earnings management in Nigeria's non-financial services sector. Drawing on a population of 105 listed non-financial firms, a sample of 72 firms was selected over a ten-year period (2013–2022). The study employs a correlational and ex post facto research design, utilizing secondary data obtained from corporate financial statements and the Nigerian Exchange Group website. A longitudinal dataset was constructed and analyzed using panel regression techniques via Stata 17. The findings reveal that both board academic qualifications and CEO gender diversity have a positive and significant association with earnings management. However, CEO gender diversity negatively moderates the relationship between board academic qualifications and earnings management. This suggests that while highly educated boards may be associated with increased earnings management practices, the presence of gender-diverse leadership at the CEO level can mitigate this tendency. The study concludes that board academic qualifications significantly influence earnings management among Nigeria's non-financial firms, but CEO gender diversity serves as an effective governance mechanism, reducing opportunistic financial reporting behaviors. Accordingly, the study recommends that regulatory authorities and shareholders actively promote gender diversity, particularly at the CEO level, to enhance corporate governance

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structures and discourage earnings management. Additionally, firms should incorporate ethical leadership training into board development initiatives to complement academic expertise with sound ethical judgment.

Keywords: board academic qualification, CEO gender diversity and earnings management.

INTRODUCTION

Earnings management, the strategic manipulation of financial reporting to achieve specific managerial objectives, undermines the reliability of corporate financial statements and presents a persistent concern for stakeholders, especially in developing economies such as Nigeria (Olayemi et al., 2020). Corporate governance mechanisms, particularly the composition and expertise of the board of directors, play a crucial role in mitigating such unethical practices. One emerging area of interest is the academic qualification of board members, which is believed to enhance oversight capabilities due to board members' critical thinking skills, analytical training, and adherence to professional and ethical standards (Jiang et al., 2018). Academically qualified board members are expected to better understand complex accounting systems, challenge aggressive financial reporting, and promote transparency (Mohammed & Garba, 2021).

However, the relationship between board academic qualifications and earnings management may be influenced by other factors, including the gender of the Chief Executive Officer (CEO). CEO gender diversity has been associated with improved ethical decision-making and conservative financial strategies, as female executives are often seen to exhibit higher levels of risk aversion and corporate integrity (Lückerath-Rovers, 2013; Peni & Vähämaa, 2010). In the context of Nigeria's male-dominated corporate leadership environment, the presence of a female CEO could further enhance or moderate the effectiveness of academically qualified board members in curbing earnings manipulation. Despite growing literature on gender diversity and board competence, empirical evidence remains sparse regarding how these elements interact to influence earnings management, particularly within Nigeria's non-financial services sector.

The educational qualifications of board members, namely individuals with academic backgrounds and doctoral degrees, can impact a board's capacity to supervise financial reporting procedures and limit the potential for earnings manipulation. Additionally, it is imperative to acknowledge that although education holds significant value, other attributes such as autonomy, practical knowledge, and moral principles are equally essential in ensuring proficient corporate governance. The amalgamation of heterogeneous abilities and

varied experiences among board members has the potential to enhance the comprehensiveness and efficacy of strategies employed to mitigate earnings management (Bala et al., 2023). Additionally, the academic qualifications of board members are seen as essential for improving supervision and reporting quality. Directors with academic qualifications are perceived to contribute significant competence, analytical skills, and ethical principles that may mitigate earnings manipulation (García-Meca & Sánchez-Ballesta, 2009). A CEO possessing a robust ethical foundation and dedication to transparency can enhance the beneficial impacts of academically qualified directors; however, a CEO with diminished transparency requirements may reduce the significance of these credentials in regulating earnings management (Huang & Rose-Green, 2015).

Earnings management (EM) remains a pervasive issue in corporate financial reporting, especially in emerging markets like Nigeria where institutional frameworks are relatively weak and enforcement mechanisms are inconsistent (Okolie, 2014; Iredele, 2021). Despite the introduction of corporate governance codes and reforms by regulatory bodies such as the Financial Reporting Council of Nigeria (FRCN) and the Nigerian Exchange Group (NGX), listed firms in the non-financial services sector continue to engage in income-smoothing and other EM practices (Uwuigbe et al., 2015).

Although corporate governance literature has extensively examined traditional board attributes such as board independence, size, and ownership concentration as mechanisms for curbing EM, relatively little empirical attention has been paid to the academic qualifications of board members. The educational background of directors could significantly influence their ability to interpret complex accounting reports, understand financial risks, and perform effective oversight functions (Salihu et al., 2015; Iredele & Akinyemi, 2019). Highly educated boards are expected to be better equipped to detect manipulative financial practices and uphold the integrity of financial reporting (Uwuigbe & Uadiale, 2011). However, empirical investigations into this relationship within the Nigerian context are limited and inconclusive.

Furthermore, the role of CEO gender diversity in corporate governance outcomes has gained prominence in global discourse. Female CEOs are often associated with ethical decision-making, lower risk tolerance, and stronger stakeholder orientation (Fodio & Oba, 2012; Adebayo & Olayinka, 2021). Yet, the interaction between board academic qualifications and CEO gender has been largely underexplored in existing Nigerian studies. It remains unclear whether the presence of a female CEO enhances the board's ability particularly an academically qualified board to constrain earnings management.

In practice, the governance structure of many listed Nigerian companies is influenced more by political affiliations, ethnic considerations, and personal networks than by

meritocratic principles such as educational and professional competence (Okike, 2007; Olayiwola, 2010). Despite regulatory frameworks, board appointments often prioritize shareholding interests over strategic oversight, undermining accountability and financial integrity (Adegbite, 2015). Similarly, female representation at the CEO level remains disproportionately low, with entrenched patriarchal norms, cultural barriers, and a weak leadership pipeline limiting gender diversity in executive positions (Iwu, Kapondoro, Twum-Darko, & Tengeh, 2016). These structural realities raise practical concerns about whether the composition of corporate boards—particularly in terms of academic strength and gender diversity can effectively safeguard against earnings manipulation in Nigeria’s non-financial sector. Despite its importance, there is scant research on the effect of CEO attributes on the efficacy of board members’ academic qualifications in mitigating earnings manipulation, especially within Nigeria’s diverse regulatory landscape. This study aims to address this gap by examining the moderating influence of CEO attributes on the link between board academic qualification and earnings management in Nigerian non-financial companies. By doing so, it contributes to the understanding of how board expertise and executive gender dynamics interact to shape financial reporting behavior in an emerging market context.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Board Academic Qualification

According to a study by Bala et al. (2023), midcap and small-cap companies are more likely than other types of businesses to seek out professors’ expertise. Additionally, the financial market’s response to the appointment of professors with a background in science, medicine, and engineering was found to be positive on average, although not statistically significant. According to the findings of Francis, et al. (2015), there is a positive correlation between the presence of a professor and a company’s financial performance. Additionally, organizations that employ professors with expertise in business-related fields tend to exhibit superior performance. In their study, Cho, et al. (2017) conducted an evaluation comparing organizations that employ directors who hold professorial positions with those that do not. The study’s findings suggest that organizations with directors who hold professorial positions tend to exhibit superior performance across all performance rating metrics as compared to companies without such directors. In their study titled “Managerial Academic Experience, External Monitoring, and Financial Reporting Quality,” Ma, et al. (2019) conducted research in China. The primary purpose of the study was to investigate the influence of managerial academic experience on the financial reporting quality of enterprises over a six-year period (2008-2013). The results of the study indicate that companies managed by

managers with a greater degree of academic experience tend to engage in less accrual and actual earnings management. Additionally, these companies have a lower likelihood of experiencing restatements in the future. An examination of the existing body of scholarly literature indicates a dearth of research pertaining to the impact of academic directors on the practice of profit management. The study conducted by Ma et al. (2019) focused on examining the impact of managerial academic qualifications on the quality of financial reporting. Therefore, the examination of board academic is a significant aspect of the present research, as it serves as a determining factor in the practice of earnings management within non-financial enterprises in Nigeria. This study uses the measurement adopted by Ma et al. (2019) and Bala et al. (2023) as board with foreign qualification.

Board Academic Qualification and Earnings Management

A growing corpus of empirical research has looked into the impact of board academic credentials on financial reporting outcomes, specifically earnings management. Ma et al. (2019) studied the impact of managerial academic experience on financial reporting quality over a six-year period, using data from Chinese publicly traded companies. Their findings demonstrated that organisations managed by managers with strong academic degrees were less likely to practice accrual-based and real income management. Furthermore, such organisations were less likely to restate their results, indicating a greater level of reporting honesty. Similarly, in an Iran-focused study, Salehi et al. (2018) discovered a positive association between board member educational credentials and corporate success. Their findings suggest that academically competent directors help to improve openness and governance, which indirectly lessens the likelihood of earnings manipulation.

However, not all research has found gender diversity to have the same effect. Dang et al. (2020) conducted a multi-country study to determine how women in executive leadership influence the link between governance procedures and corporate social responsibility (CSR) disclosure. Their findings revealed that CEO gender acted as a moderator, magnifying or lowering the impact of governance variables depending on the firm's institutional and cultural context. The moderating role of CEO gender is conceptually similar to the framework proposed in the current study, but it focuses on CSR rather than earnings management.

In the Nigerian context, research addressing the link among these variables is relatively sparse but emerging. Uwuigbe et al. (2014) investigated the impact of corporate governance systems on earnings management in Nigerian-listed companies. They discovered that audit committee independence, board composition, and ownership structure had a considerable impact on earnings management methods. However, they did

not expressly investigate board academic credentials or CEO gender as focus variables. More immediately relevant, Olayemi and Adeniyi (2021) examined CEO characteristics such as gender, age, and tenure and their impact on earnings management in Nigerian enterprises. Their findings showed that CEO gender had a significant impact on discretionary accruals, but they did not investigate how this factor would interact with board credentials or other governance systems.

Ma et al. (2019) looks into how management education can affect the accuracy of company financials. Using Chinese data, they found that companies with senior managers who had academic experience had lower levels of accrual and real earning management and were less likely to need to restate their financial statements in the future. Financial reporting quality appears to be largely explained by managers' internal incentives to report truthfully, and this effect is more pronounced for businesses with weak external control. Firm fixed-effect regressions, instrumental variable two-stage regressions, and propensity score matching (PSM) were employed to address omitted variable and endogeneity concerns. According to our findings, academic experience can provide essential skills to corporate executives. This study generates a contextual information vacuum that the current study tries to fill because it was conducted in China, and thus the study's findings cannot be extended to Nigeria.

The study conducted by Bala et al. (2023) examines the correlation between board academic and earnings management among deposit money banks that are listed on the Nigeria exchange group. The research spans a duration of ten years, namely from 2010 to 2019. A census sampling approach was employed to select a sample of fourteen deposit money institutions from the list provided by the NGX as of December 31, 2019. The presence of board academics has been observed to have a limited effect, somewhat increasing such predisposition. Consequently, it is recommended that the regulatory bodies overseeing Nigerian listed deposit money institutions should not promote the increase of a board academic. This study addresses a gap in contextual knowledge by focusing on the banking sector in Nigeria, while the current study examines listed non-financial firms. Additionally, the current study adopts one of the most recent models of real earnings management proposed by Gilliam (2021).

H₀₁: Board academic has no significance effect on earnings management of listed non-financial service firms in Nigeria.

Several research studies have examined how CEO gender affects financial reporting methods, despite evidence suggesting that board academic qualifications may reduce earnings management. Alves (2018) found that the representation of women in senior executive roles, especially on boards, correlated with reduced levels of earnings

management in Portuguese firms. This phenomenon was attributed to the elevated ethical standards and increased risk aversion of female directors. Peni and Vähämaa's (2010) research revealed that firms led by female CEOs or CFOs had significantly fewer discretionary accruals, suggesting a more conservative approach to financial reporting. This discovery underscores the influence of gender-specific behavioral traits on corporate governance outcomes.

Despite these insights, empirical evidence on whether CEO gender moderates the association between board academic credentials and earnings management is limited, particularly in Nigeria's non-financial services industry. While the individual effects of academic qualification and gender diversity have been studied, their combined or interactive effects remain unexplored. This study aims to close that gap by empirically investigating whether CEO gender moderates the influence of board academic qualifications on earnings management, with a focus on Nigerian publicly traded non-financial enterprises. *H₀₂: CEO gender has no moderating effect on the relationship between board academic qualification and earnings management of listed non-financial service firms in Nigeria.*

Human Capital Theory

Adam Smith, a well-known Scottish economist who lived in the 18th century, is credited as being the person who first used the word “human capital” in his written works. Greg Becker, an American economist, made significant scholarly contributions that may be partially responsible for the development of the idea of human capital. Through the economic publications that he contributed to; he played an important part in the promotion of the concept of investing in human capital.

Also, according to Alqatan (2019), the human capital theory, which is based on the seminal work of Gibbons and Waldman (2004), increasing levels of formal education can increase a population's productive capacity. In essence, the hypothesis posits those higher levels of education in a community correlate with higher levels of productivity. As a result, education improves a company's output and efficiency by increasing the reservoir of intellectual and interpersonal talents that contribute to economic progress. Terjesen et al. (2009) discovered in their study that the inclusion of both male and female members on a board of directors was connected with a higher level of human capital diversity. Similarly, including board members from various cultural backgrounds broadens the talent pool (Burgess & Tharenou, 2002, referenced in Alqatan, 2019). Individuals who achieve success frequently have exceptional human capital, which includes advanced levels of education and professional expertise. According to Adams and Ferreira (2009), the company's performance is

improving. Age diversity within a firm, according to Luckerath-Rovers (2013), adds to a broader spectrum of human capital, which is critical for establishing organizational success. Furthermore, according to the tenets of human capital theory, an individual's income is contingent upon their educational attainment, as it serves as a determinant of their marginal productivity of labour. Since the 1960s, this idea has significantly influenced the fields of economics, policy, and public understanding of the interrelationship between educational institutions and the labour market. The primary determinant of graduation outcomes is widely believed to be an individual's educational attainment, rather than their family's socioeconomic background. This perspective stems from the prevailing notion that intellectual development serves as a sort of economic capital. Due to methodological deficiencies, such as those aforementioned, along with the improper use of mathematical techniques and the analysis of interrelated variables, human capital theory fails to meet the criteria of realism. The concept of human capital theory seeks to streamline the complex process of transitioning from diverse educational experiences to the realm of employment by advocating for a singular, linear trajectory. The text fails to provide a clear explanation of the good impact of education on productivity, the increase in income disparity, or the importance of social status. Marginson (2019) uses research on social class, employment, income, and education as illustrative examples to highlight these limitations.

METHODOLOGY

This study adopts an ex-post factor and correlational research design, which is appropriate for examining the relationship between audit quality and earnings management, and how CEO share ownership moderates this relationship. The correlational design enables the researcher to determine both the direction and strength of relationships among the variables using quantitative data from listed firms. The population of the study comprises all 105 non-financial services firms listed on the Nigerian Exchange Group (NGX) as of December 31, 2022. Financial services firms (e.g., banks and insurance companies) are excluded due to their distinct regulatory environments and financial reporting structures. A purposive sampling technique was employed to select firms that meet the following criteria: Availability of consistent annual reports for the study period, non-financial nature of operations and disclosure of CEO share ownership and audit-related information. Based on these criteria, a sample of 72 non-financial firms listed between 2013 and 2022 was selected for the analysis. The study used secondary data obtained from: Published annual financial statements of the sampled companies and the Nigerian Exchange Group (NGX) website. Data will be extracted on:

Board academic qualification (Measured as number of board members with foreign qualification).

By Bala et al. (2023).), CEO gender (1 for female CEO while 0 for non-female CEO by Musa et al. (2023), Earnings management proxies (real earnings management measured by Gilliam, 2021 model), Control variables used was leverage (Total debt / Total assets as measured by Fali et al. 2020) and audit quality (The number 1 is given if the company is audited by Big 4, and the number 0 is audited by other companies as measured by Aleqab, & Ighnaim, 2021).

Model Specification

To examine the direct and moderating effects, the following **panel regression models** will be employed:

Model 1:

$$REM_TOTAL_{it} = \beta_0 + \beta_1 BAQUA_{it} + \beta_2 CEOGENDER_{it} + \beta_3 LEV_{it} + \beta_4 AQUA_{it} + E_{it}$$

Model 2:

$$REM_TOTAL_{it} = \beta_0 + \beta_1 BAQUA_{it} + \beta_2 CEOGENDER_{it} + \beta_3 (BAQUA \times CEOGENDER)_{it} + \beta_4 LEV_{it} + \beta_5 AQUA_{it} + E_{it}$$

The Regression Model Specification

Whereas:

REM = Real Earnings Management, BACA = Board Academics, CEOGENDER= Chief Executive Officer Gender, LEV = Leverage, AQUA = Audit Quality, ε_{it} = Error term, β_0 = is the intercept and $\beta_1 - \beta_{16}$ = are the parameters to be estimated in the equation.

RESULTS AND DISCUSSION

The presentation, analysis, and interpretation of the data are detailed in this section. This part includes testing hypotheses, conducting diagnostic tests, analyzing regression data, and discussing the results. The descriptive statistics of the data presented in Table 1. It displays the observations together with the mean, standard deviation, minimum, and maximum means.

Table 1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
REM	720	-1.90	2.13	-25.17	8.29
BAQUA	720	4.47	2.36	0	13
CEOGENDER	720	0.09	0.28	0	1

LEV	720	59.77	19.89	12.42	96.67
AQUA	720	0.53	0.50	0	1

Source: STATA 17 Output

Table 1 displays a cumulative total of 720 observations, derived from the multiplication of the number of firms (72) by the number of years (10). The real earnings management (REM) averages -1.90 with a standard deviation of 2.13, signifying considerable variability in REM, hence validating its designation as the dependent variable in this study. The REM varies from a low of -25.17 to a maximum of 8.29. The average board qualification (BAQUA) is 4.47, with a standard deviation of 2.36, indicating low disparities among companies. The least reported value for BAQUA is 0, while the greatest is 13. Furthermore, CEO gender (CEOGENDER) possesses a mean value of 0.09 and a standard deviation of roughly 0.28. The least value for CEOGENDER is 0, and the maximum is 1, reflecting diverse levels of CEO gender among the firms. Also, leverage (LEV) has a mean of 59.77 and standard deviation of 19.89 with a minimum of 12.42 and maximum of 96.67. The average audit quality (AQUA) is 0.53, with a standard deviation of 0.50, indicating low disparities among enterprises. The least reported value for AQUA is 0, while the greatest is 1. The results of heteroskedasticity test are contained in Table 3 for the model.

Table 2 Cameron & Trivedi's decomposition of IM-test

Source	chi2	Df	P
Model	12.90	12	0.3767

Source: STATA 17

Table 2 shows that the model's p-value is 0.3767, which is statistically not significant as it falls above the 0.05 threshold. This indicates there is no presence of heteroskedasticity in the data, even with that, we assumed there is a problem of hetero in the model and that necessitating the use of a robust model to ensure reliable estimates. Table 3 shows the results of the multicollinearity test for the model, giving more information about the relationships between the independent variables.

Table 3 Results of Multicollinearity Test

	Mean VIF
Direct Model	1.01

Source: STATA 17

The results in Table 3 indicate the absence of multicollinearity, as the mean Variance Inflation Factors (VIF) are below the threshold of 3.3 (Gujarati, 2005), confirming that multicollinearity is not a concern in the model. Additionally, Table 4 also presents the results of the Hausman specification test, providing further validation of the model selection.

Table 4 Results of Hausman Specification Test

	Chi ²	p-Value
Direct Model	5.68	0.224

Source: STATA 17

The findings in Table 4 indicate that the suitable analytical method for the model is the Random Effects Model (REM). The Breusch and Pagan Lagrangian Multiplier test for random effects reveals significance, evidenced by a Chi² value of 378.01 and a p-value of 0.000. The regression outcomes for REM in the direct model are displayed in Table 5.

Table 5 Results of REM Regression (Without Moderation)

REM	Coef.	Robust St.Err.	Z-val.	p-val.		Sig
BAQUA	0.004	0.003	1.48	0.140		
CEOGENDER	- 0.146	0.273	-0.54	0.592		
LEV	0.004	0.002	2.22	0.026		**
AQUA	-.0886	0.156	-5.70	0.000		**
Constant	-1.773	0.186	-9.54	0.000		**
F – Stat	14.07			0.000 **		

Source: STATA 17

Similarly, the results of ROA regression for Model 2 are reported in Table 6.

Table 6 Results of REM Regression (With Moderation)

REM	Coef.	Robust St.Err.	Z-val.	p-val.		Sig
BAQUA	0.006	0.000	1.92	0.055		***
CEOGENDER	0.823	0.375	2.20	0.028		***
CEOGENBAQUA	-0.103	0.003	-3.37	0.000		
LEV	0.004	0.002	2.37	0.018		

AQUA	-0.895	0.154	-5.82	0.000			
Constant	-1.809	0.184	-9.81	0.000			***
F-test	55.77		Prob > chi²		0.0000		

Source: STATA 17.0							

From Tables 5 and 6, the probability values (prob > chi²) for both models were found to be significant, indicating that the results are statistically reliable for explaining the relationships in the models. Additionally, board qualification and CEO gender is not significant in direct model but is significant at moderated model. Furthermore, when CEO gender (proxied by female CEO) was introduced as a moderating variable, there was a changes in the coefficient values were observed, confirming the moderating effect.

Thus, the study concludes that CEO gender, as measured by dichotomy of CEO female gender, act as a moderating factor for board qualification. Board qualification exhibited a positive and significant impact on earnings management (measured by real earnings management), with a coefficient value of 0.006 and a p-value of 0.055. Furthermore, CEO gender had a significant effect on real earnings management, with a coefficient value of 0.823 and a p-value of 0.028. The moderated variable also demonstrated a significant negative influence on the relationship between board qualification and earnings management.

Accordingly, the study rejects the null hypothesis, which states that CEO gender has no significant moderating effect on the relationship between qualification and earnings management of listed non-financial services firms in Nigeria. Instead, it concludes that board qualification has a positive and significant impact on earnings management. These findings are consistent with prior studies by Salehi et al. (2018) and Me et al. (2019) but contradict the results of Bala et al. (2023), who reported an insignificant relationship between board qualification and earnings management and the result is in line with agency theory. Furthermore, the moderating role of CEO gender has a moderating effect on the relationship between board qualification negatively and significantly influences earnings management in Nigerian non-financial firms.

CONCLUSION AND RECOMMENDATIONS

This study analyzed the moderating effect of CEO gender on the relationship between board qualification and earnings management of listed non-financial firms in Nigeria. The board qualification is the independent variable, and CEO gender is the moderated variable while dependent variable is proxy by real earnings management. The study is conducted

from 2013 to 2022. The study, therefore, concludes that CEO gender is a determinant factor in the nexus between board qualification and earnings management. Therefore, the study concludes that board academic qualifications play a significant role in influencing earnings management in Nigeria's non-financial firms. However, CEO gender diversity demonstrates a valuable moderating effect, reducing the tendency for boards with higher academic qualifications to engage in earnings management. Thus, gender diversity in leadership positions is a crucial mechanism for enhancing ethical financial practices and corporate governance. Based on the findings, it is recommended that Regulatory bodies and shareholders should promote greater gender diversity, particularly at the CEO level, to strengthen corporate governance frameworks and curb earnings management and Firms should also, integrate ethical training into board development programs to complement academic expertise with strong ethical considerations. Policymakers should encourage diversity policies that support balanced representation in leadership roles to improve transparency and accountability in financial reporting. Future research could explore other board characteristics, such as professional experience and international exposure, to further understand their impact on earnings management.

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