BOARD INDEPENDENCE AND AUDIT QUALITY OF LISTED CONSUMER GOODS FIRMS IN NIGERIA: MODERATED BY AUDIT COMMITTEE GENDER COMPOSITION

Maryam Mohammed Umar
Department of Accounting
Federal University kashere
Maryamm2mk@gmail.com

Prof Shehu Hassan
Department of Accounting
Federal University kashere
hassan@fukashere.edu.ng

Philip Jehu, PhD.
Department of Accounting
Federal University kashere
jehuphilip@fukashere.edu.ng

Bello Umar, PhD.
Department of Accounting
Federal University kashere
ubbayu@gmail.com

Corresponding Author:Maryamm2mk@gmail.com
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Abstract
Despite the implementation of the Nigerian Code of Corporate Governance (2018), Audit quality in the consumer goods sector is an important concern because of the recurring financial reporting lapses and corporate failures. While board independence is theorized to enhance oversight, the substantive impact of gender-diverse audit committees as a moderating factor in is insufficiently explored. This study examines the moderating effect of audit committee gender composition on the relationship between board independence and the audit quality of listed consumer goods firms in Nigeria. The study employs an ex-post facto research design; the study analyzed a population of 21 listed consumer goods firms. A sample of 15 firms was selected via purposive sampling, covering a ten-year period from 2014 to 2023. Secondary data were extracted from annual reports and analyzed using multiple regression techniques to test the hypothesized relationships.Findings reveal that board independence and audit committee gender composition have positive and statistically significant individual effects on audit quality. However, the interaction between board independence and gender composition exerts a negative and statistically significant influence on audit quality. This suggests that the governance variablesare effective in isolation, but their combination may lead to governance tensions or oversight redundancies that diminish overall audit efficacy.The study concludes that board independence and audit committee gender diversity align with agency theory expectations for improved monitoring. The study recommends that regulatory authorities strengthen policies regarding board independence and that firms prioritize gender diversity. However, to mitigate the observed negative interaction, firms must establish clear role definitions to prevent governance conflicts and ensure that diversity translates into substantive audit quality enhancements.

Keywords: Board Independence, Audit Quality, Audit Committee Gender Diversity

1.0 Introduction

In today's corporate world, the integrity of financial reporting and the quality of audits are crucial factors in maintaining stakeholder confidence, most especially the investors, and the efficiency of capital markets. The issue of corporate governance mechanisms is becoming increasingly important in both developing and developed markets as a way to eliminate improper financial reporting, enhance transparency, and protect investors' rights (Uwuigbe et al., 2018). In Nigeria, it continues to emerge that corporate scandals, poor implementation of accounting rules, and lapses in governance threaten the viability of oversight mechanisms, especially in the consumer products industry, which significantly contributes to the national economy (Okolie et al., 2021). Therefore, understanding the governance systems that impact the quality of audits has gained even greater importance.

The quality of an audit is usually described as the likelihood that an audit will identify material misstatements and report such findings accurately (DeFond& Zhang, 2014). A high-quality audit enhances the credibility of financial reports, boosts investor confidence, and improves the overall financial system. According to Osemene et al. (2020), audit quality is especially important for enforcing discipline and accountability in Nigeria, where enforcement mechanisms are relatively weak. Research has also indicated that the quality of an audit can be influenced by corporate governance systems within a firm, such as the independence of the board of directors and the structure of the audit committee (Alade&Otemuyiwa, 2021).

The independence of the board is also for effective corporate governance. This independence can be reflected in the percentage of non-executive or independent directors, who do not take part in the operational processes of daily management (Fodio & Oba, 2020). It is assumed that independent directors have an oversight function and that they are able to question the decisions of the executives and also can maintain a check on accounting and auditing laws. Earlier, it was concluded that the more independent the boards are, the higher the monitoring activity, a positive factor influencing the quality of the audit (Bello et al., 2023). Still, the intensity of this dependency may differ between institutional contexts and industry, including the consumer goods sector in Nigeria, where the footholds of the board are at times diminished by political connections and incompetence (Ezenwoke&Agbaje, 2019).

In addition, it is also said that having women in audit committees can improve the ethics of the process and encourage vigilant supervision (Arun et al., 2021). It can be suggested that gender-diverse, expanded committees can present a broader view, limit groupthink, and increase sensitivity towards compliance and risks, which are critical factors in the instance of enhanced audit quality. Empirical evidence indicates that gender-diverse audit committees would be interested in requiring enhanced scrutiny and reputable audit effort (Al-Dhamari&Alqaralleh, 2022). However, the representation of women in the governance of listed firms, especially within the consumer goods industry, is weak in many firms within the Nigerian market (Audu et al., 2023).

Despite the changes in regulation through the Nigerian Code of Corporate Governance (2018), the country continue to face incessant audit failures and corporate collapses. The Nigerian Exchange (NGX) reveal that between 2021 and 2024, over 15 listed firms were delisted or marked for delisting due to persistent non-compliance with listing rules which include failure to meet financial reporting deadlines and regulatory breaches (NGX Regulation, 2024). In 2024 alone, 34 listed

companies paid a cumulative ₦540.37 million in penalties for late submission of financial statements which is a clear indicator of audit inefficiencies (BusinessDay, 2024).

Furthermore, the consumer goods sector is lately suffering from a financial performance volatility. Major players like Nestlé Nigeria Plc and Cadbury Nigeria Plc reported staggering losses in 2024 totaling ₦164.6 billion and ₦10.4 billion respectively (Proshare, 2025). Their financial pressures became an avenue to create a risky environment for earnings management and "going concern" issues which tests the limits of audit quality. The FRCN's recent focus on Internal Control over Financial Reporting (ICFR) compliance mandates (updated in May 2024) further underline the regulatory anxiety regarding the robustness of internal oversight in these firms.

In addition, historical collapses and restructurings of firms like Lever Brothers (Unilever), Nigerian Bottling Company, and the delisting of Big Treat Plc and UTC serve as a backdrop to current anxieties (Okoye & Alao, 2022). Modern audit failures that manifest as "audit reporting lags," where delays in publishing audited results signal potential disputes between auditors and management or hidden financial distress. Amalikeneme and Jeroh (2025) found that transparency in financial disclosures is very inconsistent, it reveals that that inconsistency might be hindered by weak board oversight. The central tension in this study lies in the effectiveness of board independence to mitigate these risks.

The NCCG 2018 mandates a high level of board independence, its substantive impact is often questioned, this is because "independent" directors may suffer from tokenism or political affiliations, they render their oversight symbolic rather than functional (Ogbechie, 2019; Ofoegbu& Megginson, 2022). There is the need to investigate whether true independence can indeed reduce agency costs and improve audit quality through rigorous check on management's financial assertions.

Empirical evidence (Musa &Okafor, 2023; Al-Dhamari&Alqaralleh, 2022) suggests that gender-diverse audit committees have different "ethical compass" and higher levels of vigilance to the oversight process. Women on boards have associated conservative accounting practices and a lower tolerance for financial irregularities. However, in Nigeria, the corporate landscape is dominated by male. Thence, the moderating role of gender on whether it strengthens or potentially complicates the influence of board independence is an under-explored area of research.

The necessity of this study is justified by the "governance-performance gap" in Nigeria. Despite having robust codes on paper, the practical execution of audit quality is still problematic, as evidenced by recent fines and the financial distress of the sector leaders. This study examines the interaction between board independence and audit committee gender composition; the study addresses a critical knowledge gap: how demographic diversity interacts with structural independence to safeguard the interests of shareholders. This study aims to provide empirical evidence to justify stringent enforcement of diversity and independence policies, moving beyond mere compliance to substantive audit quality.

Moreover, several gaps such as geographical, sectoral and methodology have been identified and will be addressed in this study through this paper. For geographical gaps, many previous researches were conducted in contexts outside Africa, such as Wang (2025), Kalia et al. (2022), and Arif et al. (2023). These countries do not share many similarities with Nigeria in regulatory and institutional settings. Sectorially, previous studies such (Arif et al., 2023; Akono, 2020) focused primarily on non-financial sector. Lastly, Wang (2025) utilized 2SLS robust, Arif et al. (2023)

used multiple audit quality indicators, and Kalia et al. (2022) employed mixed data sources, creating a methodological gap. In addition, none of the study reviews uses audit committee gender composition as a moderator, leaving a knowledge gap. This paper addresses these gaps by examining the moderating role of audit committee gender composition on the effect of board independence on the audit quality of listed consumer goods firms in Nigeria.

Hypotheses Development

Agency Theory suggests that independent directors is an oversight mechanism that is put in place to mitigate conflicts between managers and shareholders (Jensen & Meckling, 1976). Directors that are independent of management are more likely to demand higher-quality audits to protect their reputational capital and fulfill their fiduciary duties. Empirical evidence in Nigeria, presents a dichotomy. Mustapha et al. (2021) and Maheshwari (2020) found that board independence positively affect audit quality by favoring Big 4 auditors and higher audit fees. Bakare (2019) observed a negative relationship, attributing it to "tokenism" where independence is formal rather than substantive. Given the mandate of the Nigerian Code of Corporate Governance (2018) for increased independence to curb financial scandals, it is logically expected that substantive independence will enhance audit quality. Therefore, this study proposes the following hypothesis.

H_{01}: Board independence has no significant effect on the audit quality of listed consumer goods firms in Nigeria.

Gender diversity on audit committees provides ethical perspectives that enhance monitoring (Pfeffer&Salancik, 1978). Women are found to be more risk-averse and ethically sensitive in financial oversight (Arun et al., 2021). Empirical studies in Nigeria by Uwuigbe et al. (2020) and Chijoke-Mgbame (2020) support the view that female representation on audit committees reduces earnings management and improves disclosure quality. The logical premise is that a gender-diverse committee will be more vigilant in overseeing the audit process, thereby improving audit quality. Hence, this study proposes the following hypothesis.

H_{02}**:** Audit committee gender composition has no significant effect on the audit quality of listed consumer goods firms in Nigeria.

The study can be useful to researchers since it acts to expand the literature concerning the concept of audit quality determinants in emerging economies, and particularly adds the idea of audit committee gender composition as a moderating variable. The practitioners, including the board members and auditors, are the beneficiaries of the study, as they can get to know the efficiency of the board structure and diversity in the administration of audits. The policymakers have evidence that they can use to develop the corporate governance codes, which encourage gender diversity and independence of boards.The study focuses on listed consumer goods companies in Nigeria in the period between 2014 and 2023. The sector and period were chosen by the fact that this sector is of great importance to the Nigerian economy and that the issues related to governance that are repetitively raised within it have made it an appropriate context to study the dynamics of audit quality.

2.0 Literature Review

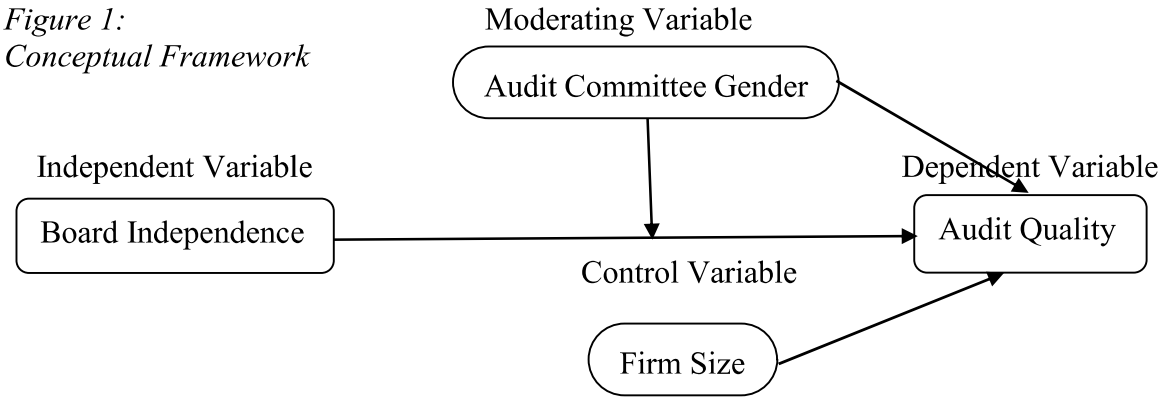
This paper covers the conceptual framework, theoretical framework and empirical review.

Conceptual Framework

The section below discusses the conceptual framework that guided the study. Relevant concepts of the study were also reviewed.

Conceptual framework is depicted in the figure 1 below:

Figure 1:
Conceptual Framework



Francis (2021) described audit quality as a result of high-quality audit inputs that is, the expertise, independence, and ethical culture of the auditor which lead to the production of high-quality financial statements. While broadly defined, this perspective mainly centers on auditor-related factors and tends to neglect the impact of organizational elements, such as whether the audit committee is all-male or not, on enhancing oversight and audit performance. In addition, Otalor and Eiya (2016) described audit quality as the extent to which financial accounting statement audited submissions abide by the requirements of accounting standards, and such statements give an accurate and fair vision of the financial position of the firm. This compliance-oriented perspective, as contextually applicable to developing economies such as that of Nigeria, does not give much rhetoric on the changing aspects of governance that also embrace the role played by gender differences in the execution of corporate governance duties.

With further elaboration on the governance view, Suleiman and Musa (2020) defined audit quality as the amount of assurance given by the audit report, which depends on the effectiveness of the work of the audit committee, auditor independence, and the strength of internal control, among other factors. This perspective is already taking into account the internal oversight processes but does not state directly the attributes of diversity, such as gender, and may have a significant impact on the audit discourses and decision formations.In the context of this study, audit quality is considered to be the presence of complete, accurate, and reliable audit information that promotes trust and confidence in business operations, minimizing risks of adverse financial consequences for fund providers and users.

The concept of board independence is associated with the presence of non-executive/outside directors in a firm board so as to eliminate the influence of management and offer impartial control (Tricker, 2019). Although this definition emphasizes the significant role of objectivity, it has been accused of overlooking those incidences where the so-called independent directors are informally affiliated with the management. Board independence is described by Solomon (2020) as a tool to create transparency, minimize agency costs, and align the actions of the board to the interest of the shareholders, and such an interpretation can be flawed as it overestimates the powers of the board in a weak institutional environment. According to Ofoegbu and Megginson (2022), independent directors under sub-Saharan Africa are not very effective because they are generally used as a symbolic element to comply with the codes instead of having actual powers and influence in the

company. On the same note, others have also contended that the mere appointment of independent directors without putting them under any authority or without giving them relevant expertise do not play any significant role towards enhancing the outcomes of governance (Ogbechie, 2019). This criticism is specifically applicable to those cases where there is independence more of a formal than a substantive nature. This study adopts the definition of Tricker (2019), who defined board independence as the presence of non-executive/outside directors in a firm board so as to eliminate the influence of management and offer impartial control.

Audit committee gender diversity involves the presence of female members in audit committees, to enhance quality governance and to diversify the thoughts. As seen in the work by Omar (2023), gender diversity improves the functioning of the board and promotes ethical monitoring, but the contribution can be somewhat symbolic in the context of male-dominated organizations where women have their voices suppressed. Ararat et al. (2019) consider audit committee gender diversity to be a structural means of improvement of financial monitoring and a decreased level of earnings manipulation; nonetheless, their results imply that the involvement of women might not be very effective in the case of a lack of expertise.

According to Uwuigbe et al. (2020), in the context of Nigeria, the role of gender diversity is defined as an opportunity to increase transparency and minimize financial irregularities; however, tokenism and social factors continue to hinder the impact of women to decisions made by a committee. Likewise, Payne and Williamson (2021) perceive gender-diverse audit committees as instruments of alleviating agency issues, but they emphasize that in most firms in Nigeria, the appointment of individuals does not occur through merit, but it is politically motivated. For this study, audit committee gender is therefore the ratio of the number of women in the committee to the total number of committee members. Firm Size was adopted as control variable of the study for more robust findings

Theoretical Review

Agency Theory is pioneered by Jensen and Meckling (1976) and is the dominant framework for understanding corporate governance. The theoryargue that the separation of ownership (principals) and control (agents) creates inherent conflicts of interest and information asymmetry. The theory justifies the role of board independence as a structural safeguard. Independent directors are free from managerial influence and therefore are more motivated to protect shareholder interests. They enhance audit quality by demanding a more rigorous external audits and ensuring that the auditor remains objective.A high degree of board independence is expected to lead to superior audit quality, as independent directors act as the "watchdogs" who bridge the information gap between management and shareholders.

Furthermore, resource dependence theory (Pfeffer&Salancik, 1978) provides the rationale for audit committee gender composition. The theory suggests that boards and committees are essential for securing resources, they include expertiseand diverse perspectives. A gender-diverse audit committee is a matter of social equity and strategic asset. Female directors have high ethical sensitivity and different risk perceptions (Adams & Ferreira, 2009). These "resources" enhance the committee's ability to oversee financial reporting processes and detect irregularities that a more homogeneous group might overlook. The theory further argue that that gender diversity improves audit quality by enriching the deliberation process, this reduces "groupthink," and brings specialized monitoring skills to the audit oversight function.

The "monitoring power" of independent directors (Agency Theory) is catalyzed by the "diverse perspectives" of a gender-inclusive audit committee (Resource Dependence Theory). Theoretically, gender diversity acts as a moderator that strengthens the resolve and effectiveness of independent directors. A gender-diverse committee may provide the critical information and ethical support that independent directors need to challenge management effectively.Conversely, the integration also accounts for "governance tensions." If the interaction between structural independence and demographic diversity leads to role ambiguity or communication barriers, it may paradoxically diminish oversight efficacy.

Empirical Review

The existing literature on the determinants of audit quality has some theoretical alignment and empirical contradictions. This section synthesizes previous studies into three thematic review which include the effect of board independence, the impact of gender diversity and the interaction between gender diversity, board independence and audit quality.

Board Independence and Audit Quality

The relationship between board independence and audit quality is a contested area in corporate governance. Proponents of Agency Theory argue that independent directors reduce information asymmetry by demanding higher audit efforts. Empirical support for this is found in studies of Arif et al. (2023) and Maheshwari (2020), who observed that independent boards in Bangladesh and India, respectively, tend to favor Big 4 auditors and higher audit quality. Similarly, in Nigeria, Mustapha et al. (2021) reported a positive correlation between independence and audit fees.

However, some studies challenge this "monitoring hypothesis." Bakare (2019) and Akono (2020) found a negative relationship between board independence and audit quality in Nigerian firms, the study argue that the mere presence of non-executive directors does not guarantee effective oversight. The board independence is structurally mandated by the Nigerian Code of Corporate Governance (2018) to reduce conflict of interest inefficiencies such as , its functional efficacy may be undermined by "tokenism" or a lack of industry-specific expertise (Ogbechie, 2019). These conflicting results suggest that board independence does not operate in a vacuum, necessitating an investigation into moderating factors that could bridge the gap between structural form and substantive quality.

Audit Committee Gender Diversity

The inclusion of women in audit committees is now viewed as a mechanism to enhance ethical oversight. Arun et al. (2021) and Al-Dhamari&Alqaralleh (2022) found that gender-diverse committees have higher sensitivity to risk and a lower tolerance for earnings manipulation. In Nigeria, Uwuigbe et al. (2020) and Chijoke-Mgbame (2020) found that female representation on boards and audit committees significantly affect financial reporting quality. This aligns with Resource Dependence Theory, which posits that diversity brings cognitive variety to the boardroom.

In spite of all these findings, the "tokenism" argument persists. Some scholars argue that in male-dominated corporate environments, the influence of a small number of female directors may be marginalized (Audu et al., 2023). This creates an unresolved question: does gender diversity provide a substantive "ethical compass," or is it merely a response to regulatory pressure for diversity? The inconsistency in whether gender diversity independently improves audit quality or requires a certain "critical mass" to be effective is a gap that this study seeks to address.

The Moderating Effect of Audit Committee Gender on Board Independence

This is a nascent area of scholarship; it explores how gender diversity interacts with governance attributes to affect a audit quality or any given firm characteristics. Saidu and Aifuwa (2020) and El-Deeb& Mohamed (2024) examines the moderating role of board gender diversity, and found that the presence of women amplifies the positive effects of board independence on reporting quality. However, the results are far from uniform. While some other studies find a synergistic effect, others, such as Onumoh et al. (2024), focus on other moderators like leverage, they leave the gender-independence under-explored.

The present study identifies a methodological and theoretical gap in this interaction. Previous studies often treat board independence and gender diversity as parallel, independent variables. This study positions audit committee gender composition as a moderator, the study advances existing scholarship by tests whether gender diversity acts as a catalyst that transforms "formal" board independence into "substantive" audit quality.

3.0 Methodology

This study used an ex-post facto research design, which is appropriate because it allows for the investigation of the moderating role of audit committee gender composition on the effect of board independence on audit quality. The population of this study consists of 21 consumer goods and industrial goods firms. A sample size of 15 firms was selected using purposive sampling technique by eliminating the firm without a complete annual reports and adequate data required for this paper for 2014 to 2023. The criterion for inclusion was the availability of complete, audited annual reports for the entire duration of the study. This ensures that the results are not skewed by missing data points or "survivorship bias" from firms that were delisted or failed to publish reports during the volatile 2014–2023 period.Only firms that complied with the reporting requirements of the Financial Reporting Council of Nigeria (FRCN) were included. This ensures that the "audit quality" being measured is based on standardized and comparable financial disclosures. The inclusion criteria are further listed as follows:

i. Must be listed on the NGX before January 1, 2014, and remain listed through December 31, 2023.
ii. Must have consistently published audited financial statements throughout the 10-year window.
iii. Firms with missing governance data (e.g., board composition or audit committee details) for more than two consecutive years were removed to maintain the robustness of the panel data.

Table 1:
Population of the Study

S/N	Name of firm	Year of Listing	Sample	Eliminated
1.	Bua Foods Plc	2022	X	
2.	Cadbury Nigeria Plc.	1975	X	
3.	Champion Brew. Plc.	1983	X	
4.	Flour Mills Nig. Plc.	2009	X	
5.	Dangote Sugar Refinery Plc	2007	X	
6.	DNTyre& Rubber Plc	1970		√
7.	Golden Guinea Brew. Plc.	1979		√
8.	Guinness Nig Plc	1965	X	
9.	Honeywell Flour Mill Plc	2009	X	
10.	International Breweries Plc.	1995	X	

11.	Mcnichols Plc	2009			√
12.	Multi-Trex Integrated Foods Plc	2010			√
13.	N Nig. Flour Mills Plc.	1978	X		
14.	Nascon Allied Industries plc	1992	X		
15.	Nestle Nigeria Plc.	1979	X		
16.	Nigerian Brew. Plc.	1973	X		
17.	Nigerian Enamelware Plc.	1979			√
18.	P Z Cussons Nigeria Plc.	1977	X		
19.	Unilever Nigeria plc.	1973	X		
20.	Union Dicon salt Plc.	1993			√
21.	VitafoamNig Plc.	1974	X		
	Total	21	15		6

Source: Authors' Compilation, 2026.

This study utilized the annual reports of these firms to gather necessary data, employed multiple regression techniques, and analyzed the data through STATA software 13. Bakare(2019) model stated below was adapted to achieve the objective of the study.

$AUDQ_{it} = \alpha_0 + \alpha_1 BI_{it} + \alpha_2 LEV_{it} + \alpha_3 FSIZE_{it} + \alpha_4 PROF_{it} + \varepsilon$
Where AUDQ = audit quality; BI= board independence; LEV=leverage; FSIZE= firm size and PROF= profitability

This study investigates the effect of board independence on audit quality while examining the moderating role of audit committee gender composition among listed consumer goods firms in Nigeria. The analysis employs panel data regression because the dataset contains observations across firms and time from 2014 to 2023. Panel data techniques allow the model to control for firm specific heterogeneity that cannot be captured using cross sectional or time series analysis alone.The functional relationship between the dependent and explanatory variables is expressed as follows:

$AQ_{it}=f(BI_{it},ACG_{it},BI_ACG_{it},FS_{it})$
Where $i$represents firm and $t$represents time.
The functional form is transformed into econometric as follows:
$AQ_{it} = \beta_0 + \beta_1 BI_{it} + \beta_2 ACG_{it} + \beta_3 (BI_ACG)_{it} + \beta_4 FS_{it} + \varepsilon_{it}$

Where:
AQ = Audit Quality, BI = Board Independence, ACG = Audit Committee Gender composition, FS = Firm Size, β_0 = Intercept term, β_1 to β_4 = Coefficients determination ε = Error term, BI_ACG = Interaction, it = firm, time

Because audit quality is measured as a binary variable, the coefficients are interpreted as the marginal influence of the explanatory variables on the likelihood of higher audit quality.

The following table shows study variables, their definitions, measurements, and sources.

Table 2:
Variables, Definitions and Measurements

Variable	Variable Acronym	Definition	Variable Measurement	Source
Audit Quality	AQ	Dependent variable	To be measured 1 for Big 4 and 0 for non-Big 4	Bakare (2019)
Board Independence	BI	Independent variable	Ratio of independent directors to total board size	Onumoh et al. (2024)
Audit committee gender	ACG	Moderating variable	Number of females in audit committee to total number of audit committee	Bakare (2019)
Firm size	FZZ	Control variable	Natural Log of total assets	Bakare (2019)

Source: Authors compilation from various literatures, 2026.

4.0 Results and Discussion

This presents the results and discussion of the data of this paper analyzed through STATA 13 software.

Table 3:
Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
AQ	150	.727	.447	0	1
BI	150	.168	.153	0	.56
ACG	150	.138	.169	0	.75
FS	150	25.116	1.496	22.1	28.03

Sources: STATA 13, 2026.

The results of descriptive statistics in Table 3 indicate that the audit quality (AQ) has a mean of 0.727, which implies that around 73 percent of the sampled consumer goods companies possess high audit quality with a standard deviation of 0.447, which indicate a very strong dispersion from the mean, whereas the board independence (BI) and audit committee gender composition (ACG) have lower means of 0.168 and 0.138, respectively, implying weak board structure and insufficient representation of ladies in audit committees; and with a standard deviation of 0.153 and 0.169 respectively, indicates a strong deviation from both mean.

Table 4:
Shapiro-Francia W' test for normal data

Variable	Obs	W'	V'	z	Prob>z
AQ	150	1.000	0.000	.	0.000
BI	150	0.980	2.536	1.888	0.029
ACG	150	0.979	2.706	2.020	0.022
FS	150	0.946	6.843	3.903	0.000

Sources: STATA 13, 2026.

This test, depicted in Table 4, is the Shapiro-Francia normality test, and all the variables fall under a p-value of 0.05; therefore, no variable is normally distributed, which cannot contribute much to the estimation.

Table 5:
Pairwise Correlations

Variables	AQ	BI	ACG	FS
(1) AQ	1.000			
(2) BI	0.474*	1.000		
	(0.000)			
(3) ACG	0.382*	0.206*	1.000	
	(0.000)	(0.011)		
(4) FS	0.496*	0.397*	0.123	1.000
	(0.000)	(0.000)	(0.135)	

Sources: STATA 13, 2026. *** *p<0.01,* ** *p<0.05,* * *p<0.1*

Table 5 shows that there exists a significant and positive correlation between AQ and the three variables (independence, moderator, and control) at the 5% significance level (BI; r = 0.474, ACG; r = 0.382, FS; r = 0.496); however, there is no strong correlation between the explanatory variables themselves, meaning there is no problem of multicollinearity.

Table 6:
Diagnostic Test

	VIF	1/VIF
BI	1.224	.817
FS	1.189	.841
ACG	1.047	.956
Mean VIF	1.153	.
Hottest	0.000	
Hausman Specification Test	0.1254	

Sources: STATA 13, 2026.

On Table 6, the test results of variance inflation factor (VIF) analysis to check multicollinearity indicate that the mean and all the individual VIF inverse values were well within the thresholds of 10 and 1, respectively, indicating no multicollinearity issue amongst the variables. These findings suggest that the information can be utilized in regression analysis, and the observed relationships support the study hypothesis, indicating that board independence and gender diversity in audit committees are significant factors in enhancing audit quality among listed consumer goods companies in Nigeria.Multicollinearity occurs when independent variables are highly correlated, they can distort coefficient estimates. The study assessed multicollinearity using the Variance Inflation Factor (VIF).The rule of thumb is that VIF values exceeding 10 indicate severe multicollinearity. The results show VIF values ranging from approximately 1.047 to 1.224, with a mean VIF of 1.153. These values are far below the critical threshold, indicating that the explanatory variables are not strongly correlated and multicollinearity is not a concern.

In addition, heteroskedasticity arises when the variance of the error term is not constant across observations. This violates one of the classical linear regression assumptions and can lead to inefficient standard errors. The heteroskedasticity result shows a p-value of 0.000, indicating the presence of heteroskedasticity. This is resolved through regression robustness. The panel data estimation requires determining whether fixed effects or random effects estimation is more appropriate. The Hausman specification test was conducted to determine the appropriate estimator.The Hausman specification test reveals a p-value of 0.0254, indicating that the Fixed Effect model is more suitable for the panel data, but to clear the issue of possible autocorrelation,

Panel Corrected Standard Errors (PCSEs) is adopted. To correct for possible cross-sectional dependence and serial correlation in the panel dataset, the regression was estimated using Panel Corrected Standard Errors (PCSE). This model produces robust standard errors even when heteroskedasticity and autocorrelation are present.

Table 7:
Panel Corrected Standard Errors (PCSEs) Regression results Summary

aq	Coef.	St.Err.	t-value	p-value	Sig
BI	1.350	0.228	5.93	.000	***
ACG	1.395	0.290	4.83	.000	
BIA_CG	-3.274	1.008	-3.25	.001	**
FS	.092	0.026	3.55	.000	*
Constant	-1.90	0.624	-3.05	.002	
R-squared		0.449	Number of obs	50	
F-test		414.71	Prob > F	0.000	

Sources: STATA 13, 2025.*** *p<.01,* ** *p<.05,* * *p<.1*

Table 7 shows that R-squared of the model is 0.449, indicates that the 44.9% variation in explained variable is attributed the explanatory variables. In addition, the overall significance of the model is determined as an F-test ($p < 0.001$). However, BI has a strong, positive, and statistically significant influence on AQ (the coefficient = 1.350, $p < 0.01$). This is in support of rejecting the null hypothesis (H01) that the independence of the board is not significant in influencing the quality of the audit. The result is congruent with the agency theory that acknowledges the oversight power of independent boards to lessen the information asymmetry (Jensen & Meckling, 1976). Empirically, it concurs with Maheshwari (2020) and Kalia et al. (2022), who ruled that board independence increases the quality of the audit.

ACG, as well, demonstrates a large-sized positive coefficient (1.395, $p < 0.01$), which shows that gender diversity on audit committees positively affects audit quality. In such a way, one more hypothesis is rejected (H 01). The finding attests to the opinions of Adams and Ferreira (2009) and Campbell &Mgeguez-Vera (2008) that gender-diverse boards are more effective in oversight and they cushion agency risks. This is congruent with the study by Arif et al. (2023), whose measure was restricted to the use of discretionary accruals.

Ideally, the interaction term BIA-CG is negative and significant (-3.274, $p < 0.05$), which implies that the gender composition is a moderator of the relationship that exists between board independence and audit quality in a negative direction. Thus, the third hypothesis (H01) is not confirmed, but with the nuance that, on the one hand, both BI and ACG separately positively contribute to AQ on the other hand, their interaction may introduce complexity into governance or an audit governance conflict, which decreases audit effectiveness.The negative interaction coefficient indicates a substitution effect or governance conflict." As audit committee gender diversity increases, the positive impact of board independence on audit quality diminishes. This suggests that in highly diverse committees, independent directors may perceive a "redundancy" in oversight or encounter communication barriers that weaken the overall synergy of the governance structure. This is presented in Table 8.

Table 8:
Moderation Effect

Level of Board Independence	Gender Composition (Low)	Gender Composition (High)
Low BI	Low audit quality	Moderate audit quality
Medium BI	Moderate audit quality	Moderate audit quality
High BI	High audit quality	Slightly high audit quality

Table 8 shows that board independence improves audit quality in both situations. However, the magnitude of the improvement is stronger when gender diversity is low compared to when gender diversity is high.The result suggests that governance mechanisms do not always operate in a purely complementary manner. Board independence strengthens monitoring by increasing the ability of the board to challenge management decisions. At the same time, gender diverse audit committees improve ethical sensitivity and financial scrutiny.However, when both mechanisms operate simultaneously, overlapping oversight responsibilities may create coordination challenges within the governance structures. This may reduce the effectiveness of board independence in improving audit quality. This difference raises potential studies.

5.0 Conclusion and Recommendations

In conclusion, firms that have a high proportion of independent directors have exhibit better monitoring of financial reporting processes, which further strengthens the reliability and credibility of audited financial statements. In addition, female representation in audit committees contributes to oversight functionsbecause gender diversity introduces broader perspectives in financial reporting decisions. However, the combined effect of the board independence and audit committee gender weakens the strength of the relationship between board independence and audit quality. This suggests that governance structures within firms operate through complex interactions rather than simple additive effects

This paper, therefore, recommends that:

i. Firms should maintain a sufficient level of board independence in order to strengthen the monitoring function of the board. This is because independent directors are less likely to be influenced by management interests.
ii. Firms should encourage gender diversity in audit committees. Female representation may contributes to quality of deliberations during financial oversight activities. Companies should therefore adopt inclusive governance practices that support balanced gender participation in audit committees.
iii. Firms should carefully design governance structures in a manner that promotes coordination between the board and the audit committee. Since the findings suggest that governance mechanisms may interact in complex ways, clear role definitions between oversight positions are necessary to prevent overlap.

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