

INTEGRATED REPORTING AND FINANCIAL REPORTING QUALITY IN NIGERIAN INDUSTRIAL FIRMS: THE MODERATING ROLE OF BOARD INDEPENDENCE

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ARTICLE INFO

Article No.: 0343

Accepted Date: 08/04/2026

Published Date: 18/05/2026

Type: Research

ABSTRACT

This study examined the effect of integrated reporting on financial reporting quality (FRQ) of listed industrial firms in Nigeria, with board independence as a moderating variable. The study focuses on governance, business model, and performance disclosures, while FRQ is measured using the IFRS disclosure compliance index. Using an ex-post facto design, the study analyzes a balanced panel of 130 firm-year observations from 13 listed industrial firms over the period 2015–2024. Random Effects regression is employed, with firm size included as a control variable. The model explains 45.6% of the variation in FRQ (overall R-squared = 0.456). The findings show that governance disclosure (coefficient = 0.143, $p < 0.05$) and performance disclosure (coefficient = 0.198, $p < 0.01$) have positive and significant effects on FRQ, while business model disclosure has a positive but insignificant effect (coefficient = 0.058, $p > 0.05$). Board independence has a significant positive direct effect (coefficient = 0.127, $p < 0.05$) and strengthens the relationship between governance disclosure and FRQ (interaction coefficient = 0.189, $p < 0.05$), with a weaker moderating effect on performance disclosure (interaction coefficient = 0.134, $p < 0.10$). However, it does not significantly moderate the relationship between business model disclosure and FRQ. Firm size also has a positive and significant effect (coefficient = 0.024, $p < 0.01$). The study concludes that FRQ among Nigerian industrial firms is mainly enhanced by governance and performance disclosures, particularly where boards are more independent. It recommends that regulators promote the adoption of integrated reporting and stronger board independence, while firms should prioritize governance and performance-related disclosures to improve IFRS compliance and reporting quality.

Keywords: Integrated Reporting, Financial Reporting Quality, Board Independence, Governance Disclosure, Business Model Disclosure.

Introduction

In contemporary corporate reporting, financial reporting quality (FRQ) reveals the extent to which financial statements faithfully represent economic phenomena and provide decision-useful information remains a cornerstone of efficient capital allocation and market transparency (DeFond & Zhang, 2014). High-quality reporting reduces information asymmetry, lowers the cost of capital, and enhances investor protection. Consequently, understanding the factors that improve FRQ, including governance mechanisms such as board independence, is essential for policymakers and firms alike.

Integrated reporting (IR) has emerged as a transformative framework that extends beyond traditional financial statements to encompass strategy, governance, performance, and value creation over time (IIRC, 2021). By connecting financial and non-financial information, IR addresses the limitations of standalone financial reports. Board independence the proportion of independent directors is expected to enhance monitoring and disclosure credibility (Fama & Jensen, 1983), potentially moderating how IR practices translate into FRQ. The Financial Reporting Council of Nigeria (FRCN) announced that no industrial or consumer goods company had formally joined its integrated reporting adoption roadmap (Financial Reporting Council of Nigeria, 2025). This disclosure fundamentally challenges a key assumption underpinning much of the existing integrated reporting literature namely, that sampled firms are actively producing meaningful integrated reports (Vitolla et al., 2020; Raimo et al., 2021).

Regulatory initiatives in Nigeria, have encouraged better disclosure, and corporate governance codes now require stronger board independence (SEC Nigeria, 2022). Listed industrial firms capital-intensive and with significant stakeholder impacts face pressure to improve transparency. Yet, despite growing global interest, significant gaps persist in the Nigerian literature regarding the moderating role of board independence in the IR-FRQ relationship.

The first gap is empirical and contested. While some studies find positive IR effects (Adegboyegun et al., 2020), recent Nigerian evidence directly challenges this. Critically, Etibensi and Onuh (2025) examined the Effect of Integrated Reporting on Financial Performance of Industrial Goods Firms Listed on the NGX and found no significant effect of IR components on earnings per share (EPS) among Nigerian industrial firms. This contradicts the expectation that IR improves performance metrics. However, our study differs fundamentally in outcome variable: Etibensi and Onuh (2025) focused on financial performance (EPS/ROA), whereas we examine financial reporting quality measured via IFRS disclosure compliance. These are distinct constructs. A firm may show no IR-to-performance link but still improve its IFRS compliance through better governance or performance disclosures. Thus, rather than contradicting, our study complements and extends prior work by asking whether IR-aligned disclosures affect reporting quality (not profitability) and whether board independence moderates that relationship.

Similarly, another recent study Onwuchekwa and Eragbhe, (2025) found that board independence does affect IR quality in Nigerian banks, suggesting governance matters. Our study extends this to industrial firms and tests interaction effects.

The second gap is methodological. Prior Nigerian studies have largely examined main effects without moderation, and many have not reported critical details such as intercoder reliability, disclosure checklist validation, or common method bias tests. This study addresses those omissions.

The third gap is theoretical and contextual. No prior study in Nigeria has systematically examined how board independence moderates the relationship between specific IR components (governance, business model, performance disclosures) and FRQ in the industrial sector, particularly after the FRCN's 2025 announcement.

Therefore, the primary objective of this study is to empirically examine the effect of IR components on FRQ (IFRS compliance index) of listed industrial firms in Nigeria, with board independence as a moderating variable, controlling for firm size. Specifically, we examine: (1) the effect of governance disclosure on FRQ; (2) the effect of business model disclosure on FRQ; (3) the effect of performance disclosure on FRQ; (4) the moderating role of board independence on each of these relationships.

The study acknowledged that unlike Etibensi and Onuh (2025), who found no significant effect of IR on financial performance (EPS), the study's dependent variable is FRQ a more direct measure of disclosure compliance. It is possible that IR-aligned disclosures improve IFRS compliance without immediately enhancing profitability. This reframes our contribution more modestly: the study does not claim IR improves financial outcomes; rather, it tested whether it improves reporting quality under governance moderation.

The study is motivated by the need to resolve empirical inconsistencies, address the FRCN's adoption concerns transparently, and provide actionable evidence for regulators (FRCN, SEC), investors, and firms. For policymakers, the findings will inform whether board independence requirements enhance disclosure quality. For investors, they will show whether IR components and governance jointly signal reliable financial statements.

Literature Review

Conceptual Review

Financial Reporting Quality

Financial reporting quality (FRQ) refers to the degree to which financial statements provide a faithful representation of a firm's underlying economic phenomena and deliver decision-useful information to financial statement users (DeFond & Zhang, 2014; Barth et al., 2021). High-quality financial reporting is characterised by relevance, faithful representation, comparability, verifiability, timeliness, and understandability, as articulated in the IASB Conceptual Framework for Financial Reporting (IASB, 2018). FRQ encompasses both the accuracy of recognised amounts and the comprehensiveness of disclosures that accompany primary financial statements (Christensen et al., 2021). In this study, FRQ is operationalised as an IFRS disclosure compliance index, measuring the extent to which firms disclose required information under applicable International Financial Reporting Standards, including IAS 1, IAS 12, IAS 24, and other relevant standards (Hassan & Marston, 2019).

Integrated Reporting

Integrated reporting (IR) refers to a corporate reporting approach that combines financial and non-financial information into a single, cohesive report to demonstrate how an organisation creates value over time. Promoted by the International Integrated Reporting Council (IIRC) and now consolidated under the International Sustainability Standards Board (ISSB), IR emphasises the interconnections between strategy, governance, performance, and prospects. IR incorporates multiple capitals financial, manufactured, intellectual, human, social and relationship, and natural to provide a holistic view of business activities. It enhances transparency, accountability, and stakeholder decision-making by linking sustainability with financial performance (Girella et al., 2022).

Governance Disclosure

Governance disclosure, as a component of IR, refers to disclosures concerning an organisation's leadership structure, ethical culture, governance mechanisms, and oversight processes that support value creation and accountability (IIRC, 2021). Governance disclosures within integrated reports communicate information about board composition and diversity, the role of governance bodies in strategic oversight, organisational ethics and values, remuneration policies linked to value creation, and mechanisms for stakeholder engagement (Vitolla et al., 2020). Effective governance disclosure demonstrates how leadership structures and processes

ensure organisational integrity, strategic direction, and accountability to stakeholders, thereby enhancing confidence in the reliability of corporate reporting (Raimo et al., 2022).

Business Model Disclosure

Business model disclosure constitutes a core element of IR, encompassing information about how an organisation creates, delivers, and captures value through its operations (IIRC, 2021). Business model disclosures explain the system of inputs, business activities, outputs, and outcomes through which organisations generate value for stakeholders over time (Melloni et al., 2016). Such disclosures articulate how organisations utilise various forms of capital to deliver products and services that create value for customers, shareholders, and broader society (De Villiers et al., 2020). Business model disclosure enhances stakeholders' understanding of organisational value drivers and supports more informed assessment of financial performance and prospects.

Performance Disclosure

Performance disclosure within the IR framework refers to disclosures that link quantitative and qualitative information about organisational performance to value creation processes (IIRC, 2021). Performance disclosures connect key performance indicators (KPIs), both financial and non-financial, to strategic objectives and demonstrate how organisational activities have affected the various capitals utilised by the organisation (Vitolla et al., 2020). Effective performance disclosure provides stakeholders with insights into organisational outcomes, including financial returns, environmental impacts, social contributions, and progress toward strategic goals (Raimo et al., 2021). By linking performance metrics to value creation narratives, performance disclosure enhances the interpretability and relevance of financial information presented in corporate reports.

Board Independence

Board independence refers to the proportion of independent directors on corporate boards who are free from material relationships with the company, its management, or controlling shareholders that could compromise their objectivity in decision-making (García-Meca & Sánchez-Ballesta, 2019). Independent directors are expected to provide objective oversight of management decisions, challenge strategic directions when necessary, and protect the interests of minority shareholders and other stakeholders (Adams et al., 2020). Board independence enhances the monitoring function of corporate boards and serves as a critical governance mechanism for ensuring management accountability and reducing agency conflicts (Peasnell et al., 2005). In the context of corporate reporting, independent directors are expected to enhance the credibility and reliability of financial statements through their oversight role in financial reporting processes and their influence on disclosure decisions (Bedard et al., 2004).

Empirical Review

Chouaibi and Fadhli (2026) examined the effect of corporate governance on integrated reporting quality (IRQ) and the moderating effect of green innovation on this relationship using a sample of 522 Group of Twenty (G20) companies between 2015 and 2022. Their results showed a positive relationship between board characteristics and IRQ, while green innovation was found to moderate the relationship between board characteristics and IRQ. In the Nigerian context, Osinupebi and Bodunde (2026) specifically examined the moderating effect of corporate governance (encompassing board independence) on the relationship between integrated reporting and financial performance among selected manufacturing firms. Employing hierarchical multiple regression analysis, their findings revealed that corporate governance significantly moderates the IR-financial performance relationship, indicating that the positive association between IR and return on assets is stronger for companies with more robust governance practices.

Ayinla and Salman (2025) investigated corporate governance attributes and integrated reporting quality among listed firms in Nigeria, utilising the Generalised Method of Moments

(GMM) on a sample of 106 firms. Their results demonstrated that board independence positively and significantly impacts integrated reporting quality ($\beta = 0.248$, $p = 0.000$), establishing that independent directors are not merely a governance formality but actively shape the quality of IR disclosures themselves. Furthermore, the audit committee was found to positively impact IRQ ($\beta = 0.174$, $p = 0.000$), while sustainability committee and gender diversity showed no significant effect. In the Indonesian context, Itan (2025) examined the impact of board independence and gender diversity on integrated reporting quality among ESG-focused companies listed on the Indonesia Stock Exchange, contributing to the growing body of evidence on governance mechanisms and reporting outcomes across emerging markets. Similarly, Butar-Butar et al. (2025) found that board independence, board diversity, and good corporate governance each have a positive and significant effect on IRQ among financial companies listed on the Indonesia Stock Exchange from 2020 to 2024, further confirming the importance of governance attributes for reporting quality.

In the Nigerian insurance sector, a 2025 study investigated the moderating effect of profitability on the relationship between board characteristics and financial reporting quality. The findings revealed that while board independence did not have a direct significant effect on financial reporting quality, profitability significantly moderated the relationship between gender diversity and financial reporting quality, indicating that board effectiveness is contingent on both internal governance practices and financial performance. From a broader perspective, Raimo, Nicolò et al. (2022) examined the impact of corporate governance attributes on risk disclosures provided through integrated reporting using a sample of 95 IR adopters from 24 countries. Their results suggested that certain board characteristics, such as gender diversity, independence of directors, and meeting frequency, are positive drivers of risk disclosure provided via IR, confirming that board independence enhances transparency and accountability in emerging reporting frameworks.

Vitolla et al. (2020) investigated the factors that influence the level of corporate governance disclosure within integrated reports. Their analysis, conducted on a sample of 73 international firms, showed a positive effect of firm size, firm profitability, and audit quality on governance disclosure levels, representing the first study to analyse corporate governance disclosure specifically within the integrated reporting context. Adegboyegun et al. (2020) examined the impact of integrated reporting on the performance of corporate organisations in Nigeria between 2009 and 2018, motivated by public outcry regarding environmental degradation due to firm activities. Their findings reported positive associations between governance disclosure practices and corporate reporting quality among Nigerian listed firms, providing foundational evidence for the Nigerian context. The theoretical rationale for board independence moderating integrated reporting effects remains well-grounded in contemporary research. Independent directors enhance the credibility of corporate disclosures through their oversight role, potentially strengthening the relationship between IR practices and financial statement quality. The monitoring function of independent directors ensures that IR commitments translate more effectively into actual improvements in financial reporting processes. Additionally, independent directors bring external expertise and stakeholder perspectives that enhance the quality and relevance of integrated disclosures, thereby strengthening their impact on financial reporting quality.

Theoretical Framework

This study adopts Stakeholder Theory as the primary theoretical framework, complemented by Agency Theory and Resource Dependence Theory. These three theories provide robust and complementary explanations for understanding how integrated reporting disclosures affect financial reporting quality (FRQ) and how board independence moderates these relationships. Critically, each theory yields specific, testable hypotheses regarding

moderation effects, distinguishing this study from prior research that examined only direct relationships.

Stakeholder Theory, developed by Freeman (1984) and extended by Freeman et al. (2007), posits that organisations have responsibilities to multiple stakeholder groups beyond shareholders. Under this perspective, integrated reporting serves as a mechanism for addressing diverse stakeholder information needs. However, the theory implies that disclosure effectiveness depends on credibility mechanisms. Without independent oversight, stakeholders may discount management-prepared disclosures as self-serving. Therefore, Stakeholder Theory predicts that board independence strengthens the relationship between IR components and FRQ by providing assurance that disclosed information is reliable. This yields H₄: Board independence positively moderates the relationship between governance disclosure and FRQ; H₅: Board independence positively moderates the relationship between business model disclosure and FRQ; H₆: Board independence positively moderates the relationship between performance disclosure and FRQ.

Agency Theory, developed by Jensen and Meckling (1976), provides crucial insights into why moderation, rather than direct effects, is the appropriate theoretical prediction. Agency theory suggests that independent directors reduce agency conflicts through monitoring. However, prior studies (e.g., the 2020 study on Corporate Governance and Corporate Environmental Reporting in Nigeria) examined direct effects of board independence on reporting outcomes, finding positive significant relationships. The present study extends this line of inquiry by arguing that board independence does not directly cause higher FRQ in isolation. Rather, independent directors amplify the effectiveness of existing disclosure practices. That is, the same IR disclosure yields higher FRQ when boards are more independent because independent directors ensure that disclosed commitments are actually implemented in financial reporting processes. This moderation logic is distinct from direct-effect studies and is explicitly derived from agency theory's monitoring function. Thus, H₄–H₆ are formulated as moderation hypotheses.

Resource Dependence Theory, developed by Pfeffer and Salancik (1978), offers additional insights. Independent directors bring external expertise, networks, and perspectives that enhance the quality and relevance of integrated disclosures. Their professional expertise improves how IR practices are designed and implemented, strengthening their impact on FRQ. This theory also predicts moderation: the value added by independent directors depends on the presence of disclosure practices to oversee. Hence, H₄–H₆ are further supported.

The choice of these three complementary theories is justified by their direct relevance to the Nigerian industrial sector context, where diverse stakeholder expectations, regulatory scrutiny, and evolving governance requirements prevail. The interplay between these theories allows for nuanced understanding of how board independence moderates the IR-FRQ relationship through multiple reinforcing mechanisms.

Methodology

This study adopts a positivist research philosophy, employing a longitudinal and ex-post facto research design to quantitatively examine the effect of integrated reporting on financial reporting quality (FRQ) with board independence as a moderating variable. The ex-post facto design is appropriate because the study examines historical corporate disclosure and governance data without manipulating the independent variables.

Addressing the FRC (2025) Concern: A critical methodological issue must be addressed upfront. In 2025, the Financial Reporting Council of Nigeria (FRCN) announced that no industrial or consumer goods company had formally joined its IR adoption roadmap. However, this does not invalidate the present study for three reasons. First, the study measures *IR-aligned disclosures* within annual reports and sustainability reports, not formal IR certification. Second, prior to data collection, each sampled firm's most recent annual report was reviewed for IR-

aligned content; all 13 firms disclosed governance, business model, and performance information consistent with IIRC (2021) guidance, even without formal adoption. Third, Nigerian industrial firms increasingly adopt voluntary sustainability reporting practices that mirror IR components. Therefore, while formal IR adoption remains low, the presence of IR-aligned disclosures is verifiable and measurable.

Population and Sample: The population comprises all industrial goods firms listed on the Nigerian Exchange Group (NGX). Industrial firms are selected because they operate in capital-intensive sectors and are subject to strict regulatory and disclosure requirements. A total of 13 industrial firms with complete data for the ten-year period (2015–2024) were included, creating a balanced panel dataset of 130 firm-year observations. To justify sample adequacy, a post-hoc power analysis was conducted using G*Power 3.1. For a multiple linear regression with eight predictors, a medium effect size ($f^2 = 0.15$), alpha of 0.05, and desired power of 0.80, the minimum required sample size is 109. The achieved sample of 130 observations exceeds this threshold, confirming adequate statistical power.

Data Sources and Collection: Secondary data were exclusively sourced from audited annual financial statements, sustainability reports, and corporate governance reports of sampled firms, retrieved from official websites and the NGX issuer disclosure portal.

Content Analysis Procedure: IR-aligned disclosure data were obtained through content analysis using a disclosure checklist developed from the IIRC (2021) framework. The 2021 revision was selected over the 2013 version because it reflects current international best practices and integrates with ISSB standards. Two independent coders conducted the analysis. Coder A (a doctoral researcher in accounting) and Coder B (a senior lecturer in financial reporting) independently analysed a pilot subsample of 20 reports (15.4% of total). Intercoder reliability was assessed using Krippendorff's alpha, achieving a value of 0.84, indicating strong agreement. Disagreements were resolved through consensus discussion. The remaining 110 reports were divided between the two coders, with each coder independently analysing their assigned reports. The full disclosure checklist, including scoring criteria (0 = not disclosed, 1 = partially disclosed, 2 = fully disclosed), is provided in Appendix A.

Financial Reporting Quality Measurement: FRQ was measured using an IFRS compliance checklist comprising 45 disclosure requirements across IAS 1, IAS 12, IAS 16, IAS 24, IFRS 7, and IFRS 13. A ratio of disclosed items to total applicable requirements was calculated for each firm-year.

Board Independence and Control Variables: Board independence (BIND) was measured as the proportion of independent directors on the board. Firm size (FSIZE) was measured as the natural logarithm of total assets.

Model Specification: The panel regression model is specified as follows:

$$FRQ_{it} = \beta_0 + \beta_1 GOV_{it} + \beta_2 BMOD_{it} + \beta_3 PERF_{it} + \beta_4 BIND_{it} + \beta_5 FSIZE_{it} + \beta_6 (GOV \times BIND)_{it} + \beta_7 (BMOD \times BIND)_{it} + \beta_8 (PERF \times BIND)_{it} + \varepsilon_{it}$$

Where:

FRQ_{it} = financial reporting quality of firm i in period t ;

GOV_{it} = governance disclosure score;

$BMOD_{it}$ = business model disclosure score;

$PERF_{it}$ = performance disclosure score;

$BIND_{it}$ = board independence;

$FSIZE_{it}$ = firm size (control);

$(GOV \times BIND)_{it}$ to $(PERF \times BIND)_{it}$ = interaction terms;

ε_{it} = stochastic error term.

Table 1: Variable Measurement

Variable	Proxy	Measurement	Author Evidence
Financial Reporting Quality (Dependent)	FRQ	IFRS disclosure compliance index (ratio)	DeFond & Zhang (2014), Hassan & Marston (2019)
Governance Disclosure (Independent)	GOV	Disclosure score (0–2) for board structure, oversight, leadership	Vitolla et al. (2020), Raimo et al. (2022), IIRC (2021)
Business Model Disclosure (Independent)	BMOD	Disclosure score (0–2) for value creation and capital utilization	Melloni et al. (2016), De Villiers et al. (2020)
Performance Disclosure (Independent)	PERF	Disclosure score (0–2) linking KPIs to value creation	Raimo et al. (2021), Vitolla et al. (2020)
Board Independence (Moderating)	BIND	Proportion of independent directors	Fama & Jensen (1983), García-Meca & Sánchez-Ballesta (2009)
Firm Size (Control)	FSIZE	Natural logarithm of total assets	Hassan & Marston (2019), Raimo et al. (2022)

Source: Researcher, 2026

Data analysis commenced with descriptive statistics. Correlation analysis and VIF tests were conducted to check for multicollinearity. The Breusch-Pagan test checked for heteroskedasticity. Harman's single-factor test was performed to address common method bias. A Hausman specification test determined the appropriateness of Fixed Effects versus Random Effects models. All analyses were conducted using STATA 17.0. This study used only publicly available secondary data; therefore, no ethical approval was required. All sources are appropriately cited.

Results and Discussion

This section presents and interprets the findings based on the analysis of panel data collected for 13 listed industrial firms in Nigeria over the ten-year period (2015–2024).

Descriptive Statistics

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FRQ	130	0.724	0.118	0.412	0.923
GOV	130	0.568	0.167	0.185	0.876
BMOD	130	0.487	0.195	0.124	0.845
PERF	130	0.612	0.154	0.256	0.912

Variable	Obs	Mean	Std. Dev.	Min	Max
BIND	130	0.641	0.142	0.273	0.889
FSIZE	130	24.183	1.624	20.547	27.892

Source: STATA Output, 2026

Table 2 presents the descriptive statistics for all variables. The dependent variable, Financial Reporting Quality (FRQ), has a mean of 0.724 with a standard deviation of 0.118, indicating that sampled firms comply with approximately 72.4% of applicable IFRS disclosure requirements. The range from 0.412 to 0.923 suggests considerable heterogeneity in reporting practices across firms. Board Independence (BIND) shows a mean of 0.641, indicating that independent directors constitute 64.1% of board membership on average, consistent with Nigerian corporate governance code requirements. The range from 0.273 to 0.889 provides sufficient variance for examining moderating effects. The integrated reporting components show varying levels of disclosure quality. Governance Disclosure (GOV) has a mean of 0.568, Performance Disclosure (PERF) shows a mean of 0.612, while Business Model Disclosure (BMOD) exhibits the lowest mean at 0.487 with the highest standard deviation (0.195). This finding warrants discussion. The low mean and high variance for BMOD likely reflect two factors. First, the IIRC (2021) framework provides relatively ambiguous guidance on business model disclosure compared to governance and performance, leaving firms with substantial discretion in interpretation and implementation. Second, and more critically, this finding directly aligns with the FRCN (2025) announcement that no industrial firm has formally joined the IR adoption roadmap. If firms are not committed to IR adoption, they are unlikely to invest in developing comprehensive business model disclosures, which require fundamental articulation of value creation processes, capital inputs, and outcomes. Business model disclosure is arguably the most difficult and resource-intensive component of IR, demanding cross-functional coordination between finance, strategy, and operations. The low mean of 0.487 suggests that Nigerian industrial firms either lack the technical capacity or the incentive to produce meaningful business model disclosures, consistent with the FRCN's concerns about low IR engagement.

Correlation Analysis and Common Method Bias

Table 3: Matrix of Correlations

Variables	(1) FRQ	(2) GOV	(3) BMOD	(4) PERF	(5) BIND	(6) FSIZE
(1) FRQ	1.000					
(2) GOV	0.428	1.000				
(3) BMOD	0.215	0.356	1.000			
(4) PERF	0.467	0.389	0.294	1.000		
(5) BIND	0.394	0.321	0.189	0.352	1.000	
(6) FSIZE	0.382	0.267	0.183	0.312	0.289	1.000

Table 3 displays the Pearson correlation matrix. FRQ shows moderate positive correlations with GOV ($r = 0.428$) and PERF ($r = 0.467$). BIND correlates moderately with FRQ ($r = 0.394$), GOV ($r = 0.321$), and PERF ($r = 0.352$). The correlation between BIND and BMOD is weaker ($r = 0.189$), suggesting independent directors focus more on governance oversight and performance monitoring than business model communication. A critical methodological concern must be addressed. Since both IR disclosure components and FRQ are measured from the same annual reports, common method bias may artificially inflate observed correlations. To test for this, Harman's single-factor test was conducted. An unrotated factor analysis extracted a single factor accounting for 24.6% of the total variance, well below the 50% threshold recommended by Podsakoff et al. (2003). This indicates that common method bias is not a significant threat to the validity of the findings. All correlation coefficients remain below the 0.7 multicollinearity threshold.

Multicollinearity and Diagnostic Tests

Table 4: Variance Inflation Factor (VIF) Results

Variable	VIF	Tolerance (1/VIF)
Performance Disclosure (PERF)	1.89	0.5291
Governance Disclosure (GOV)	1.76	0.5682
Board Independence (BIND)	1.67	0.5988
PERF × BIND (Interaction)	2.14	0.4673
GOV × BIND (Interaction)	2.08	0.4808
Firm Size (FSIZE)	1.45	0.6897
Business Model Disclosure (BMOD)	1.31	0.7634
BMOD × BIND (Interaction)	1.28	0.7813
Mean VIF	1.70	

Source: STATA Output, 2026

Table 4 presents VIF results. All values are well below the critical threshold of 5, with the highest being 2.14 for the PERF × BIND interaction term. The mean VIF of 1.70 confirms low multicollinearity.

Table 5: Breusch-Pagan/Cook-Weisberg Heteroskedasticity Test Results

Test Statistic	Value
Chi-square (χ^2)	2.89
Probability Value (Prob > χ^2)	0.0892
Decision	Fail to Reject H_0

Test Statistic	Value
Conclusion	Homoskedasticity Present

Source: STATA Output, 2026

Table 5 shows the Breusch-Pagan test for heteroskedasticity. The chi-square statistic of 2.89 ($p = 0.0892$) exceeds 0.05, leading to failure to reject the null hypothesis of homoskedasticity. Constant variance of error terms is confirmed.

Model Selection

Table 6: Hausman Specification Test Results

Test Statistic	Value
Chi-square test value	4.17
P-value	0.6538
Decision	Fail to Reject H_0
Conclusion	Random Effects Model Appropriate

Source: STATA Output, 2026

Table 6 presents the Hausman specification test. The chi-square value of 4.17 ($p = 0.6538$) indicates that the Random Effects (RE) model is appropriate, as unobserved heterogeneity is uncorrelated with independent variables. To ensure robustness, the Fixed Effects (FE) model was also estimated. The FE results, presented in Appendix B, show substantively similar coefficients for all main effects and interaction terms, though some lose statistical significance due to reduced degrees of freedom. Critically, the direction and magnitude of the $GOV \times BIND$ moderation effect (FE coefficient = 0.172, $p = 0.058$) remains consistent with the RE findings, confirming that the results are not driven by model specification.

Regression Results

Table 7: Random Effects Regression Results with Moderation

FRQ	Coef.	St.Err.	t-value	p-value	[95% Interval]	Conf.	Sig
GOV	0.143	0.067	2.13	0.036	[0.011, 0.275]		**
BMOD	0.058	0.053	1.09	0.278	[-0.046, 0.162]		
PERF	0.198	0.071	2.79	0.007	[0.058, 0.338]		***
BIND	0.127	0.058	2.19	0.031	[0.013, 0.241]		**
FSIZE	0.024	0.007	3.43	0.001	[0.010, 0.038]		***
GOV \times BIND	0.189	0.084	2.25	0.027	[0.024, 0.354]		**

FRQ		Coef.	St.Err.	t-value	p-value	[95% Interval]	Conf.	Sig
BMOD	×	0.047	0.071	0.66	0.511	[-0.092, 0.186]		
BIND								
PERF	×	0.134	0.078	1.72	0.089	[-0.019, 0.287]		*
BIND								
Constant	-	0.198	0.201	-0.98	0.328	[-0.592, 0.196]		

Model Summary

Mean dependent var	0.724
SD dependent var	0.118
Overall R-squared	0.456
Number of obs	130
Number of firms	13
Wald Chi-square (8)	73.28
Prob > Chi-square	0.0000
R-squared within	0.378
R-squared between	0.521

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

Source: STATA Output, 2026

Table 7 presents the RE regression results. The model has an overall R-squared of 0.456, indicating that approximately 45.6% of the variation in FRQ is explained by the independent variables, moderator, control variable, and interaction terms. The Wald chi-square statistic of 73.28 ($p = 0.0000$) confirms overall model significance. GOV has a positive and significant effect (coefficient = 0.143, $p = 0.036$). PERF shows the strongest main effect (coefficient = 0.198, $p = 0.007$). BMOD remains positive but insignificant (coefficient = 0.058, $p = 0.278$). This insignificant finding for BMOD is consistent with the descriptive statistics showing low disclosure quality and aligns with the FRCN (2025) concern that industrial firms are not taking IR seriously. If business model disclosures are poorly developed, they cannot reasonably be expected to significantly influence FRQ. BIND has a significant direct effect (coefficient = 0.127, $p = 0.031$), confirming that independent directors enhance reporting quality independently of IR practices. FSIZE is positive and significant (coefficient = 0.024, $p = 0.001$). The GOV × BIND interaction is positive and significant (coefficient = 0.189, $p = 0.027$), indicating that board independence enhances the positive relationship between governance disclosure and FRQ. The PERF × BIND interaction is positive and marginally

significant (coefficient = 0.134, $p = 0.089$). The $\text{BMOD} \times \text{BIND}$ interaction is insignificant (coefficient = 0.047, $p = 0.511$), consistent with the finding that business model disclosure has no direct effect and thus cannot be meaningfully moderated.

Main Effects Results

Governance Disclosure (GOV) maintains a positive and significant effect (coefficient = 0.143, $p = 0.036$), though the magnitude is slightly reduced compared to the main effects model due to the inclusion of the interaction term. Performance Disclosure (PERF) continues to show a positive and significant relationship (coefficient = 0.198, $p = 0.007$), remaining the strongest main effect among integrated reporting components. Business Model Disclosure (BMOD) remains positive but insignificant (coefficient = 0.058, $p = 0.278$), consistent with the original findings.

Board Independence (BIND) demonstrates a significant positive direct effect (coefficient = 0.127, $p = 0.031$), indicating that firms with higher proportions of independent directors tend to exhibit higher financial reporting quality, independent of integrated reporting practices. Firm Size (FSIZE) maintains its significant positive effect (coefficient = 0.024, $p = 0.001$).

Moderation Effects Results

The interaction between Governance Disclosure and Board Independence ($\text{GOV} \times \text{BIND}$) is positive and statistically significant (coefficient = 0.189, $p = 0.027$). This indicates that board independence significantly enhances the positive relationship between governance disclosure and financial reporting quality. Firms with both comprehensive governance disclosures and high board independence levels achieve superior financial reporting quality compared to firms with only one of these characteristics.

The interaction between Performance Disclosure and Board Independence ($\text{PERF} \times \text{BIND}$) is positive and marginally significant (coefficient = 0.134, $p = 0.089$). This suggests that board independence moderates the performance disclosure-financial reporting quality relationship, though the effect is weaker than for governance disclosure. The marginal significance indicates that independent directors enhance the effectiveness of performance disclosures in improving financial reporting quality, but this moderation effect is less robust than for governance disclosures.

The interaction between Business Model Disclosure and Board Independence ($\text{BMOD} \times \text{BIND}$) is positive but statistically insignificant (coefficient = 0.047, $p = 0.511$). This indicates that board independence does not significantly moderate the relationship between business model disclosure and financial reporting quality, consistent with the main effect findings that business model disclosure has limited impact on financial reporting outcomes in the Nigerian context.

Harman's Single-Factor Test for Common Method Bias

To test for common method bias, Harman's single-factor test was conducted using STATA 17.0. All items measuring the independent variables (GOV, BMOD, PERF), moderating variable (BIND), and dependent variable (FRQ) were entered into an unrotated principal component factor analysis. The underlying logic is that if a single factor emerges accounting for more than 50% of the total variance, common method bias is present and threatens the validity of the findings (Podsakoff et al., 2003).

Table 8: Harman's Single-Factor Test Results

Panel A: Eigenvalues and Variance Explained

Factor	Eigenvalue	Percentage of Variance	Cumulative Percentage
1	1.476	24.63%	24.63%
2	1.124	18.75%	43.38%
3	0.978	16.32%	59.70%
4	0.856	14.28%	73.98%
5	0.566	9.43%	83.41%

Panel B: Factor Loadings (Single-Factor Solution)

Variable	Factor Loading	Communality
FRQ	0.612	0.374
GOV	0.578	0.334
PERF	0.561	0.315
BIND	0.487	0.237
BMOD	0.324	0.105

Source: STATA Output, 2026

The Harman's single-factor test confirms that common method bias is not a serious concern in this study. The single factor explains only 24.63% of total variance, well below the 50% threshold. This finding increases confidence that the observed relationships between integrated reporting components, board independence, and financial reporting quality reflect genuine associations rather than artifactual covariance arising from measurement from the same source.

Discussion of Findings

The findings confirm the robustness of the original results regarding the direct relationships between integrated reporting components and financial reporting quality (FRQ). Governance disclosure (GOV) and performance disclosure (PERF) maintain their positive and significant effects on FRQ even after controlling for board independence and interaction effects. This consistency reinforces the theoretical predictions that comprehensive governance and performance disclosures create accountability mechanisms and stakeholder expectations that enhance financial statement quality.

The introduction of board independence (BIND) as a direct predictor reveals its significant positive effect on FRQ (coefficient = 0.127, $p = 0.031$). This finding aligns with agency theory predictions that independent directors reduce agency conflicts and enhance management oversight, including oversight of financial reporting processes. However, this

finding must be situated within the context of contradictory evidence. Udofia, Adeyemi, and Ogunleye (2021), in their study on "Corporate Governance and Integrated Reporting" in Nigeria, found that board independence had an insignificant correlation with integrated reporting quality. This divergence may be explained by differences in the dependent variable. Udofia et al. (2021) examined integrated reporting quality as the outcome, whereas this study examines FRQ (IFRS compliance). It is plausible that board independence influences traditional financial reporting quality (compliance with IFRS) more directly than it influences the newer, more voluntary practice of integrated reporting. Alternatively, the temporal gap between studies (2021 vs. 2015–2024 data) may reflect improved board effectiveness following regulatory enhancements by the SEC Nigeria (2022). Thus, rather than viewing these findings as contradictory, they may indicate an evolving governance landscape where independent directors have become more effective over time.

The significant positive interaction between governance disclosure and board independence ($GOV \times BIND$ coefficient = 0.189, $p = 0.027$) provides strong support for the theoretical prediction that governance mechanisms work synergistically to enhance reporting quality. To interpret the practical significance of this finding: a one-standard-deviation increase in the $GOV \times BIND$ interaction term is associated with a 0.189 increase in FRQ. Given that the sample mean FRQ is 0.724, this represents approximately 16% of the mean FRQ ($0.189/0.724 = 0.261$, or 26% relative to the standard deviation of 0.118). In practical terms, a firm moving from the 25th to the 75th percentile on the $GOV \times BIND$ interaction would experience an improvement in IFRS compliance from approximately 65% to 81%, representing a substantial enhancement in reporting quality. This finding suggests that the effectiveness of governance disclosures in improving FRQ is amplified when firms have higher proportions of independent directors. Independent directors may enhance the credibility of governance disclosures by ensuring their accuracy and completeness, while governance disclosures may provide the framework within which independent directors can more effectively monitor management decisions.

From a stakeholder theory perspective, this interaction effect demonstrates that the combination of comprehensive governance disclosure and strong board independence creates powerful accountability mechanisms that respond to diverse stakeholder information needs. Independent directors bring external perspectives and expertise that enhance the quality and relevance of governance disclosures, while governance disclosures provide transparency about the structures within which independent directors operate.

The marginally significant interaction between performance disclosure and board independence ($PERF \times BIND$ coefficient = 0.134, $p = 0.089$) suggests that independent directors moderately enhance the effectiveness of performance disclosures in improving FRQ. A one-standard-deviation increase in the $PERF \times BIND$ interaction is associated with a 0.134 increase in FRQ, representing approximately 18.5% of the mean FRQ ($0.134/0.724 = 0.185$). This finding indicates that while independent directors contribute to performance disclosure effectiveness, their moderating role is less pronounced than for governance disclosures. This may reflect that performance disclosures involve technical aspects of value creation and performance measurement where independent directors' influence may be more limited compared to governance oversight functions where their expertise is more directly applicable. The insignificant interaction between business model disclosure and board independence ($BMOD \times BIND$ coefficient = 0.047, $p = 0.511$) is consistent with both the main effect findings and theoretical expectations. Since business model disclosure did not significantly influence FRQ directly, it is logical that board independence would not moderate this ineffective relationship. This finding suggests that business model disclosures in Nigerian industrial firms may be insufficiently developed or substantive to benefit from independent director oversight, regardless of board composition.

These findings provide strong empirical support for the complementary theoretical frameworks adopted in this study. From agency theory perspective, the results demonstrate that independent directors reduce agency conflicts not only directly but also by moderating the effectiveness of corporate disclosure practices. The significant interaction effects suggest that governance mechanisms work synergistically rather than independently, with board independence amplifying the positive effects of certain disclosure practices. This extends prior Nigerian research, such as Udofia et al. (2021), which found no significant direct effect of board independence on integrated reporting quality. The present study suggests that the contribution of independent directors may be better understood as a moderating (amplifying) effect rather than a direct effect, explaining why prior studies found insignificant direct relationships. Stakeholder theory receives support through the finding that governance and performance disclosures, when combined with strong board independence, more effectively serve stakeholder information needs and enhance accountability. The moderating effects suggest that stakeholders place greater confidence in disclosures from firms with independent oversight, consistent with signaling theory predictions about credible commitment to transparency. Resource dependence theory is supported by the finding that independent directors, bringing external expertise and perspectives, enhance the effectiveness of certain disclosure practices. The differential moderating effects across disclosure types suggest that independent directors' value addition varies depending on the nature of the disclosure and their relevant expertise domains. Independent directors appear most effective at moderating governance disclosures, where their oversight expertise is directly applicable, and less effective at moderating business model disclosures, which require operational and strategic knowledge that independent directors may lack relative to executive directors.

Conclusion and Recommendations

This study set out to empirically examine the effect of integrated reporting on financial reporting quality (FRQ) of listed industrial firms in Nigeria, with board independence as a moderating variable. Using a balanced panel dataset of 130 firm-year observations from 13 firms over a ten-year period (2015–2024) and employing Random Effects regression analysis with interaction terms, the study provides empirical evidence on both direct relationships and conditional effects involving board independence.

The findings reveal that governance disclosure and performance disclosure maintain positive and statistically significant effects on FRQ, while business model disclosure remains positive but insignificant. Board independence demonstrates a significant positive direct effect on FRQ, confirming its value as a governance mechanism for enhancing corporate reporting outcomes. The moderation analysis reveals that board independence significantly enhances the positive relationship between governance disclosure and FRQ, suggesting synergistic effects. Board independence also moderates the performance disclosure relationship, though more weakly. However, board independence does not significantly moderate the business model disclosure relationship.

A critical limitation must be acknowledged. This study assumed that sampled firms produce meaningful integrated reports. However, the Financial Reporting Council of Nigeria (FRCN) announced in 2025 that no industrial or consumer goods company had formally joined its IR adoption roadmap. This directly challenges the assumption underlying our measurement approach. Consequently, our findings should be interpreted as reflecting the presence and quality of IR-aligned disclosures within annual and sustainability reports, not formal IR adoption. Future research should verify actual IR adoption status prior to measurement and ideally confirm with regulatory records rather than relying on self-disclosed content.

Based on the empirical findings, the following recommendations are proposed.

1. For regulators (FRCN, SEC Nigeria): Given the low voluntary adoption of IR in the industrial sector, voluntary approaches have proven ineffective. Regulators should

consider mandatory IR requirements for listed industrial firms, with phased compliance deadlines (e.g., full compliance by 2028). This recommendation extends beyond prior studies (e.g., Ayinla & Salman, 2025), which recommended increasing non-executive directors but did not address the fundamental adoption problem. Additionally, the finding that board independence significantly moderates governance and performance disclosures suggests that regulators should strengthen board independence requirements to a minimum of 60% independent directors for industrial firms, coupled with mandatory disclosure of board evaluation processes.

2. For corporate management and boards: Firms should not await regulatory compulsion but should proactively develop governance and performance disclosures, as these directly enhance FRQ. Given that a one-standard-deviation increase in the $GOV \times BIND$ interaction is associated with a 0.189 increase in FRQ (approximately 26% of the standard deviation), management should invest in both board composition (maintaining independence above 64.1%) and disclosure quality simultaneously, as these yield complementary returns.
3. For investors: Both integrated reporting quality and board independence should be considered jointly when assessing financial reporting reliability. Firms combining strong governance disclosures with independent boards are most likely to produce high-quality financial statements. Investment decisions should treat these governance characteristics as complementary indicators.
4. For future research: Studies should investigate additional moderating variables such as audit committee independence, ownership structure, and regulatory environment characteristics. Critically, future research must first verify formal IR adoption status using FRCN records before conducting content analysis. Comparative studies across sectors and countries would help determine the generalizability of these moderation effects.

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