DOES FIRM SIZE CONDITION THE ASSOCIATION BETWEEN BOARD INDEPENDENCE AND INTEGRATED REPORTING QUALITY? EVIDENCE FROM NIGERIAN FINANCIAL SERVICES FIRMS

Aminu Alkasim
Department of Finance
Kigali Independent University, Rwanda
aminualkasim@ulk.ac.rw alkasim.aminu@umyu.edu.ng

Martin Uwihoreye
Kigali Independent University, Rwanda
uwimartin@gmail.com

Oluwafayokemi Tobi
Kigali Independent University, Rwanda
kemitobi24@gmail.com

Corresponding Author:alkasim.aminu@umyu.edu.ng
DOI: https://doi.org/10.57233/ijamer.v2i3.047

Article History: Received: 10 September 2026 | **Revised:** 17 September 2026 | **Accepted:** 23 September 2026 | **Published:** 25 September 2026

How to Cite This Article
Alkasim, A., Uwihoreye, M., & Tobi, O. (2026). Does firm size condition the association between board independence and integrated reporting quality? Evidence from Nigerian financial services firms. International Journal of Accounting, Management and Economic Review, 2(3). https://doi.org/10.57233/ijamer.v2i3.047

Abstract
Boards in emerging markets are often expected to improve corporate reporting by adding independent directors, but the evidence on whether they do is mixed. This study asks whether board independence is associated with integrated reporting quality (IRQ) in Nigerian listed financial services firms, and whether firm size changes that association. Agency theory frames the question. The sample is a balanced panel of 34 of the 43 listed firms in the sector, observed from 2014 to 2024, which gives 374 firm-years. IRQ is an index built from the eight content elements and six capitals of the International Integrated Reporting Framework: each of 14 components is scored from 0 to 3 and the total is divided by 42. The model is a pooled regression with panel-corrected standard errors. Board independence and firm size are centred at their sample means before the interaction is formed. At average firm size, board independence is positively associated with IRQ ($B = 0.226$, $p < .001$). Firm size is also positively associated with IRQ at average board independence ($B = 0.014$, $p < .001$). The interaction between them is negative and not significant ($B = -0.011$, $p = .115$), so the data do not show that size moderates the link. Return on assets is not significant at the 5% level. These are associations from a pooled model without firm or year effects, and they are not causal estimates. Boards and regulators who rely on independence rules should also look at how complete, firm-specific and connected a report is.

Keywords*:* Board independence; firm size, integrated reporting quality, panel-corrected standard errors

1.0 Introduction

Corporate reports are how investors, lenders and regulators learn about a firm: how it is governed, where its strategy is heading and which risks it carries. Integrated reporting was introduced to bring those pieces together. The International Integrated Reporting Framework asks firms to explain how governance, strategy, performance and prospects relate to the resources and relationships they depend on, and how value is created, kept or lost over time (International Integrated Reporting Council [IIRC], 2021). A report can name every expected topic and still leave the reader unable to see how one risk shapes one decision, so what counts is the content and not the checklist. Commentators have asked whether integrated reports make that link in practice (Adams, 2015; de Villiers et al., 2014), and the measurement literature separates the presence of disclosure from its depth and connectivity (de Villiers et al., 2017; Rauschenberger et al., 2026). This paper uses integrated reporting quality (IRQ) for that depth, specificity and integration.

The issue weighs more heavily on financial services firms. Banks hold assets that outsiders find hard to observe and value (Gallemore, 2023), and they depend on the confidence of depositors and investors, who respond to what a bank discloses about itself (Chen et al., 2022). They answer to prudential supervisors as well as shareholders, so more parties have a stake in how they are governed (de Haan & Vlahu, 2016). Heavy regulatory reporting does not make integrated reports informative, though. Five large South African banks covered risks far more fully than opportunities, with 38 risk themes against 14 opportunity themes, and two disclosed no opportunities at all (Ramabulana & Moosa, 2022). Bank opacity is not the same thing as IRQ, and this evidence is cited only to show why the information environment of these firms deserves attention.

Board independence is the governance feature most often expected to explain why reporting quality differs between firms. Agency theory holds that separating ownership from control creates information asymmetries and gives managers room to pursue interests that differ from shareholders' (Jensen & Meckling, 1976), and it gives outside directors the job of monitoring them (Fama & Jensen, 1983). Applied to reporting, independent directors should question management's judgements and resist selective disclosure. Part of the evidence agrees. Independence is positively associated with IRQ in international samples (Vitolla et al., 2020), among Asean firms (Carissa et al., 2026), in a panel of 158 firms (Colak & Sarioglu, 2025), in Indian listed firms (Makri et al., 2024) and in Nigerian oil and gas firms (Orshi et al., 2019), and Wang et al. (2020) tie report quality in Johannesburg-listed companies to board diligence and expertise. Other studies find no effect (Al-Malkawi et al., 2026; Butar-Butar et al., 2025; Oben et al., 2026; Rossa & Lestari, 2025), and Girella et al. (2019) find that independence does not separate firms that adopt integrated reporting from those that do not.

The split matters because boards and regulators in many jurisdictions treat independence requirements as a route to better reporting. If the same rule goes with better reports in some samples and makes no difference in others, the rule alone cannot be the explanation. Formal independence does not guarantee effective oversight. Directors also need information, expertise and the standing to question management. Directors who gather information first-hand, for example through site visits, are associated with better firm outcomes (Wang & Wang, 2023), outside directors improve performance mainly where information about the firm is cheap to acquire (Duchin et al., 2010), and independence loses effectiveness in high-discretion firms where information is costly (James et al., 2022). What is not well understood is the set of conditions under which board independence goes with higher IRQ.

Firm size is a plausible condition. Larger firms can afford specialist reporting staff, integrated information systems and external advice, and they attract closer attention from investors, analysts and regulators (Al-Malkawi et al., 2026). The direct evidence on size is mostly positive: it is associated with reporting in Nigerian oil and gas firms (Alade & Odugbemi, 2022), in Indian firms (Devarapalli & Mohapatra, 2024; Makri et al., 2024), among firms in the United Arab Emirates (Al-Malkawi et al., 2026) and with adoption of integrated reporting (Girella et al., 2019), while Rossa and Lestari (2025) find no significant effect for Asian banks. These are direct associations, and they leave open whether size changes what independent directors can do. A capacity account says it should. Reporting infrastructure, internal controls and specialist staff help independent directors get the information they need, and directors who gather first-hand information are associated with better firm outcomes (Wang & Wang, 2023). Outside directors also improve performance where information is cheap to acquire (Duchin et al., 2010). Independence would then matter more in larger firms, and the interaction would be positive.

A complexity account says the opposite. Large financial groups run many business lines, jurisdictions and layers of management (Correa & Goldberg, 2022), and the executives' information advantage over part-time outside directors grows with that scope. James et al. (2022) find that board independence goes with lower performance in high-discretion firms, more so when information is costly to obtain, and they caution against a uniform approach to board reform. Mirayani (2025) reports that size weakens the positive link between board independence and ROA among Indonesian manufacturers, although performance is a different outcome from reporting quality. Under this account the interaction would be negative. Because the two accounts predict opposite signs, the moderation hypothesis is stated without one.

Two gaps follow. The first concerns context. The Nigerian integrated-reporting studies reviewed here cover oil and gas firms (Alade & Odugbemi, 2022; Orshi et al., 2019) and non-financial firms (Taiwo et al., 2025), and the one study of Nigerian banks treats board characteristics as a group (Olayiwola & Okoughenu, 2026). Evidence on board independence in the wider set of financial services firms, whose reports carry the heaviest risk and regulatory disclosure, is therefore sparse. The second concerns conditions. Most IRQ studies enter size as a determinant or a control (Alade & Odugbemi, 2022; Devarapalli & Mohapatra, 2024; Girella et al., 2019; Makri et al., 2024). Olayiwola and Okoughenu (2026) are the exception: they report that bank size positively moderates the link between board characteristics and IRQ in 24 deposit money banks, using ordinary least squares and an aggregate of board characteristics. Wong et al. (2023) test board independence as a moderator of institutional pressures, and Songini et al. (2022) compare how different board attributes relate to reporting quality, but neither tests size as a condition of independence. A positive size coefficient cannot fill this gap, because it shows that larger firms report better and not that their independent directors do more. The question needs a direct test of the interaction (Brambor et al., 2006). The claim here is a narrow one: independence, size and IRQ have each been studied, but how size conditions the independence–IRQ association has received little direct testing in financial services firms.

Nigeria is a useful setting for both gaps. Listed financial institutions operate under the Nigerian Code of Corporate Governance 2018, which requires non-executive directors to form a majority of the board (Financial Reporting Council of Nigeria, 2018; Ozili et al., 2023), and banks are subject to central bank guidelines on the number, tenure and independence of non-executive directors (Central Bank of Nigeria, 2023). The formal provisions are extensive, yet they do not show that reports give a coherent account of value creation. The Code follows an apply-or-explain approach with no severe penalty for deliberate non-compliance (Ozili et al., 2023), and meeting a composition rule says little about what a report contains.

This study therefore asks whether board independence is associated with IRQ in Nigerian listed financial services firms, and whether firm size conditions that association. Three research questions guide it. Is board independence associated with IRQ? Is firm size associated with IRQ? Does firm size moderate the association between board independence and IRQ? Agency theory supplies the main argument, with resource dependence as a supporting view of what makes monitoring effective.

The paper contributes in three ways. It isolates board independence in a wider set of Nigerian financial services firms, where the closest earlier study treats board characteristics as a group and covers deposit money banks only. It asks whether the monitoring argument of agency theory holds at different firm sizes and not only on average, and it sets out two competing mechanisms instead of assuming one. And it treats moderation as a question of conditional effects: board independence and firm size are centred so that each lower-order coefficient describes an average firm, and the independence association is reported with confidence intervals at stated firm sizes across the observed range. The results speak to boards and

regulators who rely on independence rules to improve reporting, and they are read as associations, not causal effects.

2.0 Literature Review and Hypothesis Development

Conceptual Review: Integrated Reporting and Its Quality

Integrated reporting asks a firm to account for how its strategy, governance, performance and prospects relate to the capitals it uses and affects, and to explain value creation over the short, medium and long term (IIRC, 2021). The Framework works through eight content elements and six capitals. Its main demand is connectivity: a report should show how risks, strategy, resources and outcomes bear on one another, and should not present financial and non-financial information as separate accounts.

Three outcomes are easily confused in the empirical literature. Adoption asks whether a firm uses integrated reporting. Coverage asks whether the expected subjects appear. Quality asks whether the statements are specific to the firm and tied to its decisions and results. The Framework is principles-based, so a report can follow its form and say little, and the measurement literature separates the presence of disclosure from its depth and integration (de Villiers et al., 2017; Rauschenberger et al., 2026). The distinction matters for governance. An adoption decision is made once, while quality is re-decided in every report, in the wording of each risk and each link between strategy and resources. A coverage index also gives the same score to a firm that names its risks and to one that shows how they shape investment, so it can overstate quality. Studies are therefore compared below with their outcome stated. In this paper, IRQ means the depth, specificity and integration of what a report says, under the coding rules in Section 3. It does not measure whether the claims are true or externally assured.

Theoretical Framework

Agency theory supplies the main argument. Separating ownership from control creates information asymmetries and gives managers room to pursue interests that differ from shareholders' (Jensen & Meckling, 1976), and the board is the device through which decisions are ratified and monitored (Fama & Jensen, 1983). A principles-based framework widens that room, because management decides how much to say about risk, strategy and non-financial results, and a generic or flattering account breaches no rule. Independent directors have fewer ties to executives and less at stake in management's record, so they are better placed to question such an account. The baseline expectation is that a higher share of independent directors is associated with higher IRQ.

That expectation depends on three conditions, and the rest of the review is organised around them. The first is discretion: there must be something for a monitor to constrain, and a principles-based report supplies it. The second is information: directors can question only what they can see, and monitoring needs information and expertise as well as formal status (Hillman & Dalziel, 2003). Directors who gather first-hand information are associated with better firm outcomes (Wang & Wang, 2023), and independence loses effectiveness in high-discretion firms where information is costly to obtain (James et al., 2022). The third is standing: what a director brings to the board matters as much as formal independence (Pfeffer & Salancik, 1978). The independence ratio measures only formal status, so it is a proxy for all three. Resource dependence is therefore used as a supporting view of what makes monitoring effective and is not tested separately.

Firm size matters because it can change the second condition. It can raise the resources that bring information to the board, and it can raise the amount of information a director must absorb. Section 2.3.3 develops the two directions. Two limits apply throughout. A disclosure index does not measure agency

costs or information asymmetry, so the tests establish association only, and an interaction result cannot say which mechanism produced it.

Empirical Review and Hypothesis Development

Board Independence

Divergent empirical findings. Independence is positively associated with IRQ in five studies. Vitolla et al. (2020) found it among 134 firms in several countries, Makri et al. (2024) among 197 Indian firms, Carissa et al. (2026) among 46 Asean firms, Colak and Sarioglu (2025) in a panel of 158 firms, and Orshi et al. (2019) among 10 Nigerian oil and gas firms. Devarapalli and Mohapatra (2024) report a positive association for non-executive directors in 46 Indian firms. Against these, Butar-Butar et al. (2025), Oben et al. (2026), Al-Malkawi et al. (2026) and Rossa and Lestari (2025) find no significant association, and Girella et al. (2019) find that independence does not separate firms that adopt integrated reporting from those that do not. Counting studies settles nothing, since the two groups are close in number, and the more useful question is what separates them. Four features stand out. None of the studies tests them, so each is a conjecture.

Outcome. Orshi et al. (2019) score the presence of disclosure items, Alade and Odugbemi (2022) measure implementation of the Framework, and Girella et al. (2019) study adoption. A board can influence whether a firm report without influencing how well it reports. The outcome cannot be the whole story, though, because studies of report quality also disagree: Vitolla et al. (2020) and Makri et al. (2024) find an effect, while Oben et al. (2026) and Rossa and Lestari (2025) do not.

Sample and setting. The null studies draw on ESG-selected companies (Butar-Butar et al., 2025), non-financial firms in the United Arab Emirates (Al-Malkawi et al., 2026), banks spread across seven Asian regulatory regimes (Rossa & Lestari, 2025) and a later Johannesburg sample (Oben et al., 2026). Where firms enter a sample because they already report extensively, little variation in quality is left for independence to explain. Institutional context also conditions the effect more generally: a meta-analysis of 27 studies found that board independence is associated with voluntary disclosure only in countries with strong investor protection (García-Meca & Sánchez-Ballesta, 2010).

Formal status and substance. Carissa et al. (2026) find effects for both board and audit committee independence among ASEAN firms. In Johannesburg, Wang et al. (2020) find that board and audit committee quality, driven mainly by diligence and expertise, is positively related to integrated report quality, and their abstract does not single out independence. A later study of the same exchange reports no independence effect (Oben et al., 2026). These results fit the second and third conditions in Section 2.2: when the ratio is a poor proxy for a director's information and standing, it may predict little.

Identification. Makri et al. (2024) use two-stage least squares, and the abstracts of the other studies reviewed here do not mention an attempt to deal with endogeneity. A positive association may therefore reflect selection, since better-resourced firms may both appoint more independent directors and report better.

Financial institutions and Nigeria. Evidence for financial institutions is thin and divided. Rossa and Lestari (2025) find no independence effect in Asian banks, whereas Alshammari (2026) reports a positive association between independence and financial reporting quality in Saudi banks over 2013 to 2025, a different outcome from IRQ. The Nigerian IRQ evidence reviewed here covers oil and gas firms (Alade & Odugbemi, 2022; Orshi et al., 2019), non-financial firms (Taiwo et al., 2025, who relate IRQ to stakeholder pressure among 62 companies over 2014 to 2023) and deposit money banks (Olayiwola & Okoughenu,

2026, who report that board characteristics taken together are positively related to IRQ among 24 banks over 2016 to 2025). None of these isolates' independence in a broad set of financial services firms.

Hypothesis. The monitoring argument is the better-grounded prediction here, for two reasons. Financial firms answer to prudential supervisors as well as shareholders, which widens the set of parties their governance must satisfy (de Haan & Vlahu, 2016). The Nigerian Code of Corporate Governance 2018 requires non-executive directors to form a majority of the board (Financial Reporting Council of Nigeria, 2018; Ozili et al., 2023), and central bank guidelines set rules on the independence and tenure of bank directors (Central Bank of Nigeria, 2023), so variation across firms lies in the share of independent directors, not in whether a minimum is met. The Code follows an apply-or-explain approach with no severe penalty for deliberate non-compliance (Ozili et al., 2023), so a composition rule does not guarantee a better report. The hypothesis follows the agency prediction, and the divided evidence is the reason for testing it in this setting.

H_{02}: Board independence is positively associated with integrated reporting quality in Nigerian listed financial services firms.

Firm Size

The evidence on size is more consistent than the evidence on independence. Size is positively associated with implementation of the Framework in Nigerian oil and gas firms (Alade & Odugbemi, 2022), with IRQ in Indian firms (Devarapalli & Mohapatra, 2024; Makri et al., 2024), with disclosure scores in the United Arab Emirates (Al-Malkawi et al., 2026), with financial reporting quality in Saudi banks (Alshammari, 2026) and with adoption of integrated reporting (Girella et al., 2019). Rossa and Lestari (2025) find no significant effect for Asian banks, again in a sample that mixes seven regimes. The usual explanation is capacity and scrutiny: larger firms can afford specialist staff, integrated information systems and external advice, and they attract closer attention from investors, analysts and regulators, which raises the cost of vague reporting (Al-Malkawi et al., 2026).

A size coefficient is a bundle, though. Size also goes with more business lines, more activity to describe and more visibility, so a positive coefficient may reflect any of these. A size effect on a content index may partly reflect the volume of activity large firms have to describe, and an index that scores specificity and integration, as the one used here does, reduces that risk without removing it. The prediction is positive.

H_{02}: Firm size is positively associated with integrated reporting quality in Nigerian listed financial services firms.

Firm Size as a Moderator

A direct size effect does not show whether size changes what independent directors do. Both accounts that follow agree that information is the mechanism, and they differ on which way size moves it. The capacity account predicts a stronger association in larger firms. Reporting infrastructure, internal controls and specialist staff help independent directors obtain information and see their questions turned into better disclosure. Directors who gather first-hand information are associated with better firm outcomes (Wang & Wang, 2023), and outside directors improve performance where information about the firm is cheap to acquire (Duchin et al., 2010). The interaction would then be positive. The Nigerian evidence points this way: Olayiwola and Okoughenu (2026) report that bank size positively moderates the link between board characteristics and IRQ among 24 deposit money banks.

The complexity account predicts the reverse. Large financial groups carry business, geographic and organisational complexity (Correa & Goldberg, 2022), and the executives' information advantage over part-time outside directors grows with that scope. Part-time directors may find it harder to judge whether a long report links strategy, risk and outcomes coherently. James et al. (2022) find that board independence

goes with lower performance in high-discretion firms, more so where information is costly to obtain, and they caution against a uniform approach to board reform. Mirayani (2025) reports that size weakens the positive link between board independence and ROA among Indonesian manufacturers. Performance is a different outcome from reporting quality, so that result is an analogue and not a test of this hypothesis.

The only direct test the review found is that of Olayiwola and Okoughenu (2026). It uses ordinary least squares on board characteristics taken together, so it does not show whether size conditions the effect of independence in particular. Other studies that include size treat it as a determinant or a control (Alade & Odugbemi, 2022; Devarapalli & Mohapatra, 2024; Girella et al., 2019; Makri et al., 2024). Wong et al. (2023) test board independence as a moderator of institutional pressures, and Oben et al. (2026) test firm performance as a moderator of board composition, but neither tests size as a condition of independence. A positive size coefficient shows that larger firms report better, not that their independent directors do more, and a non-significant direct effect does not rule out moderation. Answering the question needs the interaction term, evaluated across the observed range of size and not only at a single point (Brambor et al., 2006). The two accounts predict opposite signs, so the hypothesis is non-directional.

H_{03}: Firm size moderates the association between board independence and integrated reporting quality in Nigerian listed financial services firms.

Research Gaps

The review points to three gaps. The first is contextual. The Nigerian IRQ evidence concerns oil and gas firms, non-financial firms and, in one study, deposit money banks with board characteristics treated as a group (Olayiwola & Okoughenu, 2026), and the bank evidence elsewhere is either multi-country (Rossa & Lestari, 2025) or about a different outcome (Alshammari, 2026). The independence–IRQ association for Nigerian financial services firms is therefore not well established, and this matter because these firms are where reporting is hardest to judge from outside and where independence rules are most visible. The second gap is conceptual. Size has mostly been treated as a determinant and not as a condition of the effect of independence, although the monitoring argument itself gives two opposing reasons to expect it to be one. A positive finding on size cannot settle that, and neither can a null one. The third is methodological. The studies reviewed here compare outcomes ranging from adoption and implementation to disclosure scores and quality indices, and they seldom report how the independence effect changes across the range of the moderator, which is why the disagreement in Section 2.3.1 cannot be settled by counting studies.

The study responds to the first gap by estimating H1 and H2 for a panel of Nigerian listed financial services firms, to the second by estimating H3 as an interaction between independence and size, and to the third by reporting the independence effect, with confidence intervals, at stated firm sizes across the observed range, with IRQ, a quality index, as the outcome.

3.0 Methodology

The study uses a quantitative panel design. The same firms are observed every year from 2014 to 2024, so the models draw on differences between firms and over time. The data are firm-year observations taken from published annual reports and other public disclosures. Board composition and firm size are not assigned by the researcher, so the estimates are read as associations and not as causal effects.

The population is the 43 firms classified in the financial services sector of the Nigerian Exchange Group (NGX) during 2014 to 2024. The sector suits the question because its firms report under prudential regulation, carry risks that outsiders find hard to observe, and have large information gaps between insiders and external parties.

The sample is 34 of the 43 firms (79%), observed for 11 years, which gives a balanced panel of 374 firm-years (34 firms × 11 years). A firm was included if the annual reports and other disclosures needed to code IRQ, board independence, firm size and return on assets were available for every year of the period, and firms without a complete record were left out. A complete record keeps the panel balanced, but it can favour firms that report regularly and stay listed throughout, so the results may not carry over to the nine firms excluded. They should also be generalised with care to unlisted institutions and to firms in other sectors.

The data are secondary and come from the firms' annual reports for 2014 to 2024 and other public disclosures. The annual reports supply the material used to code integrated reporting content, identify board composition and obtain the financial figures. The observations were organised into a panel with firm and year identifiers, and each firm-year uses the report and financial statements for that year, so the explanatory variables and the outcome refer to the same period. IRQ was measured by structured content analysis of each annual report against the eight content elements and six capitals of the International Integrated Reporting Framework. The coding scheme scores the specificity and explanatory depth of what is reported and not only whether a topic appears, because a report can mention a subject without explaining how it connects to strategy, performance, risk or value creation. The index measures the quality of disclosed content under the study's coding rules. It does not check whether the disclosures are true or externally assured.

Model Specification

The model relates IRQ to board independence, to firm size, and to the product of the two, which carries the moderation test. Board independence and firm size are centred at their sample means before the product is formed. Centring makes each lower-order coefficient interpretable at the mean of the other predictor and reduces non-essential collinearity between the predictors and their product (Aiken & West, 1991). It leaves the interaction coefficient, its standard error and the fitted values unchanged. The model is

$$IRQ_{it} = \beta_0 + \beta_1 BIND_{c,it} + \beta_2 FSIZE_{c,it} + \beta_3 (BIND_{c,it} \times FSIZE_{c,it}) + \beta_4 ROA_{it} + \varepsilon_{it} \qquad (1)$$

where i indexes firms and t years, IRQ is integrated reporting quality, $BIND_c$ is board independence centred at its sample mean (0.348), $FSIZE_c$ is firm size centred at its sample mean (18.285), ROA is return on assets, and ε is the error term. Table 1 gives the definitions. Because both predictors are centred, β_1 is the association between board independence and IRQ at average firm size, and β_2 is the association between firm size and IRQ at average board independence. The association between board independence and IRQ at a given firm size is $\beta_1 + \beta_3 FSIZE_c$, and the association between firm size and IRQ at a given level of board independence is $\beta_2 + \beta_3 BIND_c$. H1 is judged on β_1, H2 on β_2 and H3 on β_3.

Measurement of Variables

IRQ is built from the eight content elements and six capitals of the Framework. Each of the 14 components is scored from 0 to 3. A score of 0 means the item is not disclosed, 1 that the disclosure is minimal or generic, 2 that it is moderate or partly explained, and 3 that it is detailed, specific to the firm, linked to strategy or value creation, and integrated with related information. The maximum total is 42, and IRQ is the sum of the component scores divided by 42, so it runs from 0 to 1. Every component carries the same weight. That is a design choice: it gives each element and capital equal importance in every firm, whether or not it matters equally to that firm.

Board independence (*BIND*) is the number of independent non-executive directors divided by the total number of directors, and $BIND_c$ is *BIND* minus its sample mean (0.348). Firm size (*FSIZE*) is the natural logarithm of total assets, and $FSIZE_c$ is *FSIZE* minus its sample mean (18.285). Return on assets (*ROA*) is net income divided by total assets and is the only control variable.

Table 1:
Operational Definitions and Measurement of Variables

Variable	Definition	Measurement
IRQ	Integrated reporting quality (dependent variable)	Sum of scores for 14 components (eight content elements and six capitals) divided by 42; range 0–1
BIND	Board independence	Independent non-executive directors divided by total directors
$BIND_c$	Centred board independence	BIND minus its sample mean (0.348)
FSIZE	Firm size	Natural logarithm of total assets
$FSIZE_c$	Centred firm size	FSIZE minus its sample mean (18.285)
$BIND_c \times FSIZE_c$	Interaction	Centred board independence multiplied by centred firm size
ROA	Return on assets (control)	Net income divided by total assets

Note: IRQ = integrated reporting quality; BIND = board independence; FSIZE = firm size; ROA = return on assets; subscript c = centred at the sample mean.

Method of Data Analysis

The data were analysed in Stata. The sequence was descriptive statistics and correlations, diagnostic tests, and then a pooled regression of Equation 1 with panel-corrected standard errors (PCSE; Beck & Katz, 1995), estimated with *xtpcse*. The standard errors allow each firm its own error variance and allow errors to be correlated across firms within a year. No autocorrelation correction was applied. PCSE was chosen because pooled data on 34 firms in one market are likely to have unequal error variances and shared year-specific shocks, which conventional standard errors ignore. The estimator was designed for panels with many periods. With 11 periods and 34 firms it estimates 595 distinct elements of the error covariance matrix (34 variances and 561 covariances) from 11 observations each, and standard errors from so short a panel can be too small (Beck & Katz, 1995; Reed & Webb, 2010). The results are read with that in mind.

The association between board independence and IRQ at selected firm sizes is $\beta_1 + \beta_3 FSIZE_c$, with its standard error taken from the covariance matrix of the PCSE estimates (Brambor et al., 2006). The selected sizes are the sample minimum, one standard deviation below the mean, the mean, one standard deviation above the mean and the maximum. Tests are two-sided at the 5% level and are reported with 95% confidence intervals. H3 is judged on β_3. H1 and H2 are supported when the coefficient has the predicted sign and its interval excludes zero. The conditional estimates show how far the independence pattern extends across firm sizes, and they are not used to claim support beyond where the interval excludes zero.

Diagnostic Tests

The Breusch–Pagan/Cook–Weisberg test (Breusch & Pagan, 1979; Cook & Weisberg, 1983) rejected constant error variance, $\chi^2(1) = 8.44$, $p = .004$. The test uses fitted values, which centring does not change, so it applies equally to the centred model. A Hausman (1978) test comparing fixed-effects and random-effects estimates was also significant, $\chi^2 = 520.64$, $p < .001$, which suggests that unobserved firm characteristics are correlated with the regressors. The pooled model does not remove them, and Section 4.7 treats this as a limitation. Variance inflation factors were computed for the model with both predictors centred. Before centring, the factors for BIND and the product term were above 90 (mean VIF = 46.96), which is why both predictors were centred. Tests for serial correlation (Drukker, 2003) and cross-sectional dependence (Pesaran, 2021) were not run, so neither can be ruled out.

Ethical Considerations

The study uses published annual reports and does not collect data from people, so it carries no risk to participants. The ethical obligations are practical ones: to code every report by the same rules, to transcribe governance and financial figures accurately, and to report the analysis in full. The IRQ index is read only as a measure of reported content. The coded dataset and the Stata do-file are available from the author on reasonable request.

4.0 Results and Discussion

This section reports the association between board independence and IRQ, the association between firm size and IRQ, and the moderating role of firm size. The estimates come from Equation 1 on the balanced panel of 34 firms and 374 firm-years, with panel-corrected standard errors. They are associations and not causal effects.

Descriptive Statistics and Correlations

Table 2:

Descriptive Statistics for the Study Variables

Variable	*M*	*SD*	Minimum	Maximum
Integrated reporting quality	0.775	0.138	0.429	0.976
Board independence (BIND)	0.348	0.251	0.000	0.833
Centred board independence ($BIND_c$)	0.000	0.251	−0.348	0.485
Firm size (log of total assets)	18.285	2.255	14.043	23.742
Centred firm size ($FSIZE_c$)	0.000	2.255	−4.242	5.457
$BIND_c \times FSIZE_c$	−0.089	0.524	−2.058	0.871
Return on assets	0.031	0.028	−0.089	0.096

Note. N = 374 firm-years from 34 firms, 2014–2024. M = mean; SD = standard deviation.

Table 2 shows that IRQ averages 0.775 (SD = 0.138), so the average firm-year scores about 77.5% of the maximum, with values from 0.429 to 0.976. Independent non-executive directors make up 34.8% of the board on average (SD = 0.251), from none to 83.3%, and centred board independence runs from −0.348 to 0.485. Firm size, measured as the log of total assets, has a mean of 18.285 and a standard deviation of 2.255; centred size runs from −4.242 to 5.457. The centred interaction term has a mean of −0.089 (SD = 0.524). ROA averages 0.031, or 3.1%, and ranges from −0.089 to 0.096.

Table 3:

Pearson Correlations Among Study Variables

Variable	1	2	3	4
1. Integrated reporting quality	—			
2. Centred board independence	.43**	—		
3. Centred firm size	.17**	−.16**	—	
4. $BIND_c \times FSIZE_c$	−.19**	−.44**	.08	—
5. Return on assets	.25**	.23**	.08	.13*

Note. N = 374. * p< .05, ** p< .01 (two-tailed). The correlations are descriptive and do not allow for repeated observations on the same firm.

IRQ is positively correlated with board independence (r = .43), centred firm size (r = .17) and ROA (r = .25), all at p< .01. These pairwise associations are consistent with larger, more profitable firms and firms with more independent directors producing higher-scoring reports, but they do not show that each characteristic matters on its own. The centred interaction term is only weakly correlated with centred firm

size (r = .08) and is negatively correlated with centred board independence (r = −.44). The variance inflation factors in Table 4 give a further check on collinearity.

Diagnostic Tests and Model Adequacy

Table 4:

Diagnostic Tests and Variance Inflation Factors

Test or predictor	Statistic or VIF	*p*	Interpretation
Breusch–Pagan/Cook–Weisberg	$\chi^2(1) = 8.44$	.004	Rejects constant error variance
Hausman	$\chi^2 = 520.64$	< .001	Rejects random-effects orthogonality; firm effects may be correlated with regressors
VIF: $BIND_c$	1.43	—	Low
VIF: $FSIZE_c$	1.04	—	Low
VIF: $BIND_c \times FSIZE_c$	1.34	—	Low
VIF: ROA	1.16	—	Low

Note. VIF = variance inflation factor; values are for the model with both predictors centred. Before centring, the VIFs were 91.80 for BIND and 90.96 for the interaction term. The Breusch–Pagan test uses fitted values and is unaffected by centring.

The heteroskedasticity test rejects constant error variance, which supports an estimator that does not rely on conventional standard errors. The Hausman test is also significant. It does not validate the pooled model: it warns that unobserved firm characteristics may be correlated with the regressors. With both predictors centred, the variance inflation factors fall to 1.43 for board independence and 1.34 for the product term, far below the values above 90 before centring and below the rules of thumb usually applied, though those rules deserve caution (O'Brien, 2007).

The PCSE estimator estimates 595 covariance elements from 11 annual periods. That is a lot of structure for a short panel, so the standard errors are best read as approximate (Reed & Webb, 2010). Serial correlation and cross-sectional dependence were not tested, and the pooled model has no firm or year effects, so firm heterogeneity and common year shocks remain possible.

Panel-Corrected Regression Results

Table 5:

Panel-Corrected Regression Estimates for Integrated Reporting Quality

Predictor	*B*	*SE*	*z*	*p*	95% CI
Constant	0.752	0.029	26.25	< .001	[0.696, 0.808]
Centred board independence (at mean firm size)	0.226	0.019	11.87	< .001	[0.189, 0.264]
Centred firm size (at mean board independence)	0.014	0.003	5.11	< .001	[0.009, 0.019]
$BIND_c \times FSIZE_c$	−0.011	0.007	−1.57	.115	[−0.025, 0.003]
Return on assets	0.711	0.396	1.80	.072	[−0.065, 1.487]

Note. Dependent variable: IRQ. N = 374 firm-years; 34 panels; 11 years. R^2 = .260. Wald $\chi^2(4) = 297.13$, p< .001. The z values are computed from unrounded estimates.

The regressors are jointly significant, Wald $\chi^2(4) = 297.13$, p< .001, and the model accounts for 26.0% of the variation in IRQ in the pooled sample.

Board independence is positively associated with IRQ at the mean firm size (B = 0.226, SE = 0.019, z = 11.87, p< .001, 95% CI [0.189, 0.264]). Because size is centred, this coefficient describes an average firm.

A firm whose independence ratio is one standard deviation higher (0.251) is predicted to score 0.057 higher on IRQ, which is about 0.41 of the standard deviation of IRQ, or 2.4 points on the 42-point scale. The coefficient on centred firm size is positive (B = 0.014, SE = 0.003, z = 5.11, p< .001, 95% CI [0.009, 0.019]). Because both predictors are centred, it describes the size association at average board independence. The size association at other levels of independence is $\beta_2 + \beta_3 BIND_c$, and it is smaller where independence is higher.

The interaction is negative and not statistically significant (B = −0.011, SE = 0.007, z = −1.57, p = .115, 95% CI [−0.025, 0.003]). The sign says that the independence association weakens as firms get larger, but the interval includes zero. This is a failure to find moderation in this sample, not evidence that the association is the same at every size (Altman & Bland, 1995). ROA is positive but does not reach the 5% level (B = 0.711, SE = 0.396, p = .072), and its interval is wide enough to include zero.

Conditional Association Between Board Independence and IRQ

Table 6:

Conditional Association of Board Independence with IRQ at Selected Firm Sizes

Firm-size position	FSIZE	$FSIZE_c$	B	SE	95% CI	p
Minimum	14.04	−4.242	0.273	0.025	[0.225, 0.321]	< .001
Mean − 1 *SD*	16.03	−2.255	0.251	0.017	[0.219, 0.284]	< .001
Mean	18.29	0.000	0.226	0.019	[0.189, 0.264]	< .001
Mean + 1 *SD*	20.54	2.255	0.202	0.031	[0.141, 0.262]	< .001
Maximum	23.74	5.457	0.166	0.051	[0.066, 0.267]	.001

Note. $B = \beta_1 + \beta_3 FSIZE_c$. Standard errors are taken from the covariance matrix of the PCSE estimates; intervals use the normal critical value, 1.96.

Table 6 reports the association between board independence and IRQ at five firm sizes. It is positive at every one, falling from 0.273 for the smallest firm to 0.166 for the largest, and the intervals stay above zero throughout. The downward slope matches the negative interaction, but the formal evidence for a change in slope is the interaction coefficient, and that test does not reject constant slopes (p = .115). The conditional estimates therefore describe the fitted relationship and are not separate evidence of moderation.

Hypothesis Testing

Table 7:

Summary of Hypothesis Tests

Hypothesis	Evidence	Decision
H1: Board independence is positively associated with IRQ.	Positive at mean firm size; B = 0.226, p< .001	Supported
H2: Firm size is positively associated with IRQ.	Positive at mean board independence; B = 0.014, p< .001	Supported
H3: Firm size moderates the independence–IRQ association.	Negative, not significant; B = −0.011, p = .115	Not supported

Note. Decisions follow the rule in Section 3.7 and the estimates in Table 5. A non-significant interaction is not evidence that the association is identical at every firm size.

H1 is supported: the independence coefficient is positive at average firm size and significant at p< .001, and Table 6 shows the association stays positive across the observed range of size. H2 is supported at average board independence. Because the model has an interaction, the size association depends on the

level of independence, and the coefficient should not be read as a uniform association at every level. H3 is not supported, since the interaction is not significant at the 5% level.

Discussion of Findings

The positive association between board independence and IRQ at average firm size agrees with the agency argument that independent directors scrutinise management's reporting choices and challenge generic or selectively favourable accounts (Fama & Jensen, 1983; Jensen & Meckling, 1976). Integrated reporting leaves management wide discretion over how it explains strategy, risk, resources and value creation, so board oversight may be associated with reports that connect these subjects more clearly. The result matches the positive findings of Vitolla et al. (2020), Makri et al. (2024), Colak and Sarioglu (2025) and Orshi et al. (2019), and it differs from the null results of Butar-Butar et al. (2025) and Rossa and Lestari (2025). The features discussed in Section 2.3.1, namely outcome, sample and setting, formal status against substance, and identification, may account for the difference, but this study does not test them.

The positive size association at average board independence fits a reporting-capacity explanation. Larger firms have more resources for reporting systems, specialist staff and coordination across business units, and they face more scrutiny from investors and regulators. Alade and Odugbemi (2022), Devarapalli and Mohapatra (2024), Makri et al. (2024) and Al-Malkawi et al. (2026) report similar associations. A larger firm also has more to describe, and although the IRQ scheme rewards specificity and integration and not topic coverage alone, it cannot remove every scale effect.

The interaction is negative but not significant, so the study does not show that the independence association changes with size. The sign is the one the complexity account predicts (Correa & Goldberg, 2022; James et al., 2022), and the capacity account (Duchin et al., 2010) predicts the opposite, but the estimate cannot separate them. It also does not reproduce the positive size moderation that Olayiwola and Okoughenu (2026) report for deposit money banks. The two studies differ in firm coverage, in the board measure (one independence ratio against an aggregate of characteristics) and in the estimator, so the difference cannot be traced to a single cause. Interaction tests have low power in small samples (Aguinis, 1995; McClelland & Judd, 1993), and 34 firms is small. The ROA coefficient is positive but imprecise under PCSE, so the study cannot say whether profitability matters for IRQ. Earlier studies disagree on that as well: profitability is positive in Alade and Odugbemi (2022) and Makri et al. (2024) and negative in Devarapalli and Mohapatra (2024).

Limitations and Summary

Four limitations qualify these results. The pooled model has no firm or year effects, so it does not isolate within-firm change, and the significant Hausman test suggests that unobserved firm characteristics may be correlated with the regressors. The PCSE standard errors rest on 595 covariance elements estimated from 11 periods, and serial correlation and cross-sectional dependence were not tested. IRQ measures the specificity and integration of what reports say under the study's own coding rules, with equal weights, and it does not measure truth or assurance. Board independence records formal composition and not how directors behave.

In summary, the centred PCSE model shows a positive association between board independence and IRQ at average firm size, a positive association between firm size and IRQ at average board independence, and no significant interaction. The pattern is consistent with the agency view of board oversight, but the design is pooled and observational, so it does not establish cause. The moderation result is inconclusive and should not be taken to mean that size plays no role.

5.0 Conclusion and Implications

Summary of the Study

This study asked whether board independence is associated with integrated reporting quality (IRQ) among Nigerian listed financial services firms, and whether firm size moderates that association. It covers 34 of the 43 listed firms in the sector over 2014 to 2024, which gives 374 firm-years. IRQ is a content-analysis index built from the eight content elements and six capitals of the International Integrated Reporting Framework, with each of 14 components scored from 0 to 3 and the total divided by 42. Board independence is the share of independent non-executive directors, firm size is the natural logarithm of total assets, and return on assets is the control. The model is a pooled regression with panel-corrected standard errors (PCSE), Board independence and firm size are centred at their sample means, so each lower-order coefficient describes the association at the mean of the other predictor. The estimates are read as associations.

Conclusion

Board independence is positively and significantly associated with IRQ at average firm size. This agrees with the agency argument that independent directors strengthen oversight of reporting choices, which in integrated reporting would show up as more specific accounts of strategy, risk, resources and value creation. The independence ratio records formal composition, though, and not how hard directors work or how well they monitor. Firm size is also positively associated with IRQ at the sample mean of board independence. The interaction between independence and size is negative and not significant, so the study does not find that size moderates the independence–IRQ association. That is not proof that the association is the same at every size, because 34 firms may be too few to detect moderation of this kind.

Taken together, the results give qualified support to the view that board independence and firm size go with better integrated reporting in this sector. They do not show that changing board composition or growing a firm would raise reporting quality. The pooled model leaves out firm and year effects, and the Hausman test suggests that unobserved firm characteristics may be correlated with the regressors.

Contribution

This study contributes to the integrated reporting literature in three ways. First, it extends the empirical evidence on board independence and integrated reporting quality in Nigeria's financial services sector. Previous Nigerian studies have examined integrated reporting in oil and gas firms, non-financial firms, and deposit money banks, including research that considers board characteristics collectively. By isolating board independence and examining 34 listed financial services firms over the 2014-2024 period, this study provides sector-specific evidence that board independence is positively associated with integrated reporting quality at the mean level of firm size. Second, the study distinguishes the direct association between firm size and integrated reporting quality from its proposed moderating role. Although larger firms may have greater reporting resources, their organisational complexity may also constrain the effectiveness of independent board oversight. The estimated interaction between board independence and firm size is negative but statistically insignificant. The results therefore do not provide sufficient evidence that firm size strengthens or weakens the relationship. This distinction is important because a positive association between firm size and reporting quality does not, by itself, establish a moderating effect.

Third, the study examines the conditional association between board independence and integrated reporting quality across different levels of firm size, reporting estimates and confidence intervals rather than relying solely on the interaction coefficient. The estimated association remains positive across the evaluated firm-size levels, although its magnitude declines as firm size increases. This analysis provides a

more detailed account of the relationship than an interpretation based only on the coefficient for board independence at the mean level of firm size.

These contributions should be interpreted in light of the study's methodological limitations. The estimates are based on observational panel data and a pooled regression model with panel-corrected standard errors; they therefore establish associations rather than causal effects. In addition, the statistically insignificant interaction means that the proposed moderating role of firm size remains empirically unresolved.

Theoretical Implications

The findings agree with agency theory, which treats the board as a device for constraining managerial discretion and reducing information asymmetry (Fama & Jensen, 1983; Jensen & Meckling, 1976). The positive association at average firm size extends this line of evidence to listed financial services firms in Nigeria, where reporting is shaped by complex risk exposures and regulatory demands. Because the design is observational, it cannot show that independence itself produces the difference in IRQ.

The non-significant interaction limits what can be said about size as a boundary condition for monitoring. The negative sign fits the complexity account, but the interval is too wide to favour it over the capacity account, so the study establishes neither mechanism.

Resource dependence theory adds that oversight depends on access to information, expertise and standing as well as on formal independence (Hillman & Dalziel, 2003; Pfeffer & Salancik, 1978). The model does not measure those resources, so the theory frames the interpretation and is not tested. Future work could test it with measures of directors' financial and risk expertise, access to reporting systems, and the work of audit and risk committees.

Practical and Regulatory Implications

For boards and nomination committees, independence is a relevant feature to consider when overseeing integrated reporting, but a composition ratio does not show that monitoring is effective. Boards should make sure independent directors receive timely, decision-useful information and have the expertise and standing to question how management presents risk, strategy, resources and outcomes. Reviews of the report can ask whether it explains the links among these matters instead of listing topics.

For financial services firms, integrated reporting quality can be treated as a governance and reporting process and not only as a document to produce. Management, finance, risk and board committees can coordinate the evidence behind the account of how strategy, principal risks, resource allocation and performance relate to value creation. Larger groups may need to pay particular attention to information flows across business units and subsidiaries, although this study does not show that size strengthens or weakens the role of independence.

For regulators and standard setters, the findings support looking at the substance of reporting as well as formal board structure. Composition rules can be paired with guidance and monitoring that encourage firm-specific, connected explanations of governance, strategy, risk, performance and the capitals a business uses or affects. The study does not evaluate any particular Nigerian regulatory provision, so it can inform discussion but not serve as a causal assessment of existing rules.

Limitations

The sample is 34 listed financial services firms over 11 years, and the results may not carry over to the nine listed firms excluded for incomplete records, to unlisted institutions, to other sectors or to other countries. The pooled regression has no firm or year effects, so it does not isolate within-firm change or

account for unobserved firm characteristics and common annual shocks, and the Hausman test points to a risk of correlation between those characteristics and the regressors.

The PCSE standard errors rest on 595 covariance elements estimated from 11 periods, and tests for serial correlation and cross-sectional dependence were not run, so the inference should be read with care. The interaction is not significant and the sample is small, so the moderation result is inconclusive and not evidence against a role for size.

IRQ measures the specificity and integration of what annual reports say under the study's scoring rules, with equal weights on all 14 components. It does not verify the statements or show that they were externally assured. Board independence is a proportion and does not capture directors' behaviour, expertise or actual independence. ROA is the only control, so ownership structure, audit committee characteristics, leverage, reporting resources and organisational complexity are outside the model.

Recommendations for Future Research

Future studies should model the panel structure more directly, with firm and year fixed effects, chosen with care between fixed and random effects (Clark & Linzer, 2015), and with inference suited to a small number of firms. Standard errors clustered by firm and, where the number of clusters is small, a wild cluster bootstrap would help (Cameron et al., 2008; Cameron & Miller, 2015). Serial correlation (Drukker, 2003) and cross-sectional dependence (Pesaran, 2021) should be tested and reported, because inference in finance panels is sensitive to how the standard errors are computed (Petersen, 2009).

A larger sample or a longer period would give the moderation test more power and show whether the findings are specific to Nigerian financial services firms. Comparisons across African markets could examine whether regulation, reporting institutions and investor protection change the pattern. Such work should keep IRQ distinct from adoption, disclosure volume and external assurance.

Further studies could measure the mechanisms this study leaves aside: directors' accounting, finance and risk expertise, the effectiveness of audit and risk committees, institutional ownership, external assurance, and organisational complexity measured by subsidiaries or business segments. Where a regulatory change provides credible variation, a design that identifies causal effects would be a step beyond pooled associations.

References

Adams, C. A. (2015). The International Integrated Reporting Council: A call to action. *Critical Perspectives on Accounting, 27*, 23–28. https://doi.org/10.1016/j.cpa.2014.07.001

Aguinis, H. (1995). Statistical power with moderated multiple regression in management research. *Journal of Management, 21*(6), 1141–1158. https://doi.org/10.1177/014920639502100607

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Alade, M. E., & Odugbemi, O. M. (2022). Corporate characteristics and implementation of integrated reporting framework of listed oil and gas firms in Nigeria. *International Review of Business and Economics, 6*(1), 91–102. https://doi.org/10.56902/IRBE.2022.6.1.8

Al-Malkawi, H.-A. N., Kurdy, D. M., & Lahrech, A. (2026). Firm-level factors associated with integrated reporting quality in a sustainability context: Evidence from an emerging economy. *Sustainability, 18*(7), Article 3560. https://doi.org/10.3390/su18073560

Alshammari, M. K. (2026). How does internal governance improve the financial reporting quality of banking institutions? *Journal of Risk and Financial Management, 19*(7), Article 505. https://doi.org/10.3390/jrfm19070505

Altman, D. G., & Bland, J. M. (1995). Statistics notes: Absence of evidence is not evidence of absence. *BMJ, 311*(7003), 485. https://doi.org/10.1136/bmj.311.7003.485

Beck, N., & Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review, 89*(3), 634–647. https://doi.org/10.2307/2082979

Brambor, T., Clark, W. R., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political Analysis, 14*(1), 63–82. https://doi.org/10.1093/pan/mpi014

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica, 47*(5), 1287–1294. https://doi.org/10.2307/1911963

Butar-Butar, D. T. M., Itan, I., & Saragih, A. G. (2025). The impact of board independence and gender diversity on quality of integrated reporting: Indonesian ESG-focused companies. *Journal of Accounting and Business Education, 9*(4). https://doi.org/10.17977/jabe.v9i4.59853

Cameron, A. C., & Miller, D. L. (2015). A practitioner's guide to cluster-robust inference. *Journal of Human Resources, 50*(2), 317–372. https://doi.org/10.3368/jhr.50.2.317

Cameron, A. C., Gelbach, J. B., & Miller, D. L. (2008). Bootstrap-based improvements for inference with clustered errors. *Review of Economics and Statistics, 90*(3), 414–427. https://doi.org/10.1162/rest.90.3.414

Carissa, J., Setijaningsih, H. T., & Kasenda, F. (2026). The impact of board and audit committee characteristics on integrated reporting disclosure: Evidence from ASEAN. *Corporate Board: Role, Duties and Composition, 22*(2), 23–38. https://doi.org/10.22495/cbv22i2art2

Central Bank of Nigeria. (2023). *Corporate governance guidelines for commercial, merchant, non-interest and payment service banks in Nigeria*. https://www.cbn.gov.ng/Out/2023/FPRD/Circular%20and%20Guidelines%20for%20Corporate%20Governance.pdf

Chen, Q., Goldstein, I., Huang, Z., & Vashishtha, R. (2022). Bank transparency and deposit flows. *Journal of Financial Economics, 146*(2), 475–501. https://doi.org/10.1016/j.jfineco.2022.07.009

Clark, T. S., & Linzer, D. A. (2015). Should I use fixed or random effects? *Political Science Research and Methods, 3*(2), 399–408. https://doi.org/10.1017/psrm.2014.32

Colak, M., & Sarioglu, M. (2025). The effect of corporate governance on the quality of integrated reporting and ESG risk ratings. *Sustainability, 17*(11), Article 4868. https://doi.org/10.3390/su17114868

Cook, R. D., & Weisberg, S. (1983). Diagnostics for heteroscedasticity in regression. *Biometrika, 70*(1), 1–10. https://doi.org/10.1093/biomet/70.1.1

Correa, R., & Goldberg, L. S. (2022). Bank complexity, governance, and risk. *Journal of Banking & Finance, 134*, Article 106013. https://doi.org/10.1016/j.jbankfin.2020.106013

De Haan, J., & Vlahu, R. (2016). Corporate governance of banks: A survey. *Journal of Economic Surveys, 30*(2), 228–277. https://doi.org/10.1111/joes.12101

De Villiers, C., Rinaldi, L., & Unerman, J. (2014). Integrated reporting: Insights, gaps and an agenda for future research. *Accounting, Auditing & Accountability Journal, 27*(7), 1042–1067. https://doi.org/10.1108/AAAJ-06-2014-1736

De Villiers, C., Venter, E. R., & Hsiao, P.-C. K. (2017). Integrated reporting: Background, measurement issues, approaches and an agenda for future research. *Accounting & Finance, 57*(4), 937–959. https://doi.org/10.1111/acfi.12246

Devarapalli, S., & Mohapatra, L. M. (2024). Impact of corporate governance characteristics on integrated reporting quality: An empirical analysis, evidence from India. *Indian Journal of Corporate Governance, 17*(1), 9–32. https://doi.org/10.1177/09746862241236546

Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *The Stata Journal, 3*(2), 168–177. https://doi.org/10.1177/1536867X0300300206

Duchin, R., Matsusaka, J. G., & Ozbas, O. (2010). When are outside directors effective? *Journal of Financial Economics, 96*(2), 195–214. https://doi.org/10.1016/j.jfineco.2009.12.004

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics, 26*(2), 301–325. https://doi.org/10.1086/467037

Financial Reporting Council of Nigeria. (2018). *Nigerian Code of Corporate Governance 2018*. https://www.ecgi.global/sites/default/files/codes/documents/nccg_2018.pdf

Gallemore, J. (2023). Bank financial reporting opacity and regulatory intervention. *Review of Accounting Studies, 28*(3), 1765–1810. https://doi.org/10.1007/s11142-022-09674-4

García-Meca, E., & Sánchez-Ballesta, J. P. (2010). The association of board independence and ownership concentration with voluntary disclosure: A meta-analysis. *European Accounting Review, 19*(3), 603–627. https://doi.org/10.1080/09638180.2010.496979

Girella, L., Rossi, P., & Zambon, S. (2019). Exploring the firm and country determinants of the voluntary adoption of integrated reporting. *Business Strategy and the Environment, 28*(7), 1323–1340. https://doi.org/10.1002/bse.2318

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica, 46*(6), 1251–1271. https://doi.org/10.2307/1913827

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review, 28*(3), 383–396. https://doi.org/10.5465/amr.2003.10196729

International Integrated Reporting Council. (2021). *International Integrated Reporting Framework*. https://integratedreporting.ifrs.org/resource/international-ir-framework/

James, H. L., Borah, N., & Lirely, R. (2022). The effectiveness of board independence in high-discretion firms. *The Quarterly Review of Economics and Finance, 85*, 103–117. https://doi.org/10.1016/j.qref.2020.10.021

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Makri, M., Makan, L. T., & Kabra, K. C. (2024). Board characteristics and integrated reporting in an emerging market: Evidence from India. *Asian Journal of Accounting Research, 9*(1), 2–12. https://doi.org/10.1108/AJAR-02-2022-0050

McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114*(2), 376–390. https://doi.org/10.1037/0033-2909.114.2.376

Mirayani, L. P. M. (2025). The board independence and performance nexus: The moderating role of firm size. *Jurnal Ilmiah Akuntansi dan Bisnis, 10*(2), 163–171. https://doi.org/10.38043/jiab.v10i2.7138

Oben, J. A., Chikutuma, C. N., & Khatlisi, M. (2026). Board composition and integrated reporting quality: The moderating role of firm performance. *Journal of Risk and Financial Management, 19*(4), Article 238. https://doi.org/10.3390/jrfm19040238

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity, 41*(5), 673–690. https://doi.org/10.1007/s11135-006-9018-6

Olayiwola, T. G., & Okoughenu, S. A. (2026). Board characteristics and integrated reporting quality of deposit money banks in Nigeria: Moderating role of bank size. *Journal of Business Development and Management Research, 12*(7). https://doi.org/10.70382/ajbdmr.v12i7.073

Orshi, T., Dandago, K. I., & Isa, R. (2019). Do boards determine integrated reporting in Nigerian listed oil and gas firms? *SEISENSE Journal of Management, 2*(4), 35–50. https://doi.org/10.33215/sjom.v2i4.157

Ozili, P. K., Uadiale, O. M., & Edeigba, J. (2023). *The 2018 revised Nigerian Code of Corporate Governance: An academic response and lessons for Africa* (MPRA Paper No. 118795). Munich Personal RePEc Archive. https://mpra.ub.uni-muenchen.de/118795/

Pesaran, M. H. (2021). General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics, 60*(1), 13–50. https://doi.org/10.1007/s00181-020-01875-7

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435–480. https://doi.org/10.1093/rfs/hhn053

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.

Ramabulana, K., & Moosa, R. (2022). Disclosure of risks and opportunities in the integrated reports of South African banks. *Journal of Risk and Financial Management, 15*(12), Article 551. https://doi.org/10.3390/jrfm15120551

Rauschenberger, F., Gerwanski, J., & Lueg, R. (2026). How to measure integrated reporting adoption, compliance, and quality: A systematic review of taxonomies, constructs, and measures toward a research agenda. *Management Review Quarterly, 76*(2), 1411–1467. https://doi.org/10.1007/s11301-025-00507-7

Reed, W. R., & Webb, R. (2010). The PCSE estimator is good: Just not as good as you think. *Journal of Time Series Econometrics, 2*(1). https://doi.org/10.2202/1941-1928.1032

Rossa, P., & Lestari, T. (2025). Integrated reporting disclosure quality: Evidence from emerging Asian banking. *JRAK, 17*(2), 348–366. https://doi.org/10.23969/jrak.v17i2.27935

Songini, L., Pistoni, A., Tettamanzi, P., Fratini, F., & Minutiello, V. (2022). Integrated reporting quality and BoD characteristics: An empirical analysis. *Journal of Management & Governance, 26*(2), 579–620. https://doi.org/10.1007/s10997-021-09568-8

Taiwo, J. A., Adejuwon, B. S., & Adeniran, T. (2025). Corporate stakeholders' pressure and integrated reporting of listed non-financial companies in Nigeria. *International Journal of Research and Innovation in Social Science, 9*(6), 2078–2092. https://www.rsisinternational.org/journals/ijriss/Digital-Library/volume-9-issue-6/2078-2092.pdf

Vitolla, F., Raimo, N., & Rubino, M. (2020). Board characteristics and integrated reporting quality: An agency theory perspective. *Corporate Social Responsibility and Environmental Management, 27*(2), 1152–1163. https://doi.org/10.1002/csr.1879

Wang, Q., & Wang, H. (2023). Independent directors' information acquisition and corporate innovation: Evidence from corporate site visits. *Research in International Business and Finance, 66*, Article 102024. https://doi.org/10.1016/j.ribaf.2023.102024

Wang, R., Zhou, S., & Wang, T. (2020). Corporate governance, integrated reporting and the use of credibility-enhancing mechanisms on integrated reports. *European Accounting Review, 29*(4), 631–663. https://doi.org/10.1080/09638180.2019.1668281

Wong, K. S., Amran, A., & Chu, E. Y. (2023). Institutional antecedents of integrated reporting quality: The moderating role of board independence. *Corporate Social Responsibility and Environmental Management, 30*(2), 621–640. https://doi.org/10.1002/csr.2378