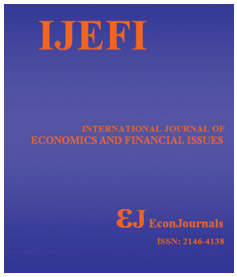

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Board Characteristics and Integrated Reporting Quality in Nigeria and South African Manufacturing Firms

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ABSTRACT

The effect of board characteristics on the quality of integrated reporting has raised concerns about governance effectiveness, transparency and stakeholder trust in emerging economies. This study, therefore, examined the effects of board characteristics on integrated reporting quality on listed manufacturing firms in Nigeria and South Africa. The study explored a purposive sampling technique to select 40 manufacturing firms in each country. The data for the study originates from the annual reports and accounts of the selected manufacturing firms from 2012 to 2023. The study utilized panel feasible generalized least squares regression in analyzing the data. The findings from the analysis reveal that board size, board meeting, board shareholding and board independence have significant effects on integrated reporting quality as it relates to the Nigerian manufacturing firms, while the same for South African manufacturing firms, except for board meetings. The study concludes that board attributes have a significant effect on the integrated reporting quality of manufacturing firms in both countries. The study recommends, among others, that both countries should strengthen the role of independent directors through better training and oversight to improve reporting outcomes.

Keywords: Board Characteristics, Corporate Governance, Feasible Generalized Least Squares, Integrated Reporting Quality, Manufacturing Firms
JEL Classifications: E31, Q43, C26, G18, H23

1. INTRODUCTION

In recent years, the emphasis on accountability, transparency and sustainable value creation has led to growing interest in Integrated Reporting (IR) as a comprehensive framework that combines financial and non-financial information in corporate disclosure. Organizations embracing Integrated Reporting seek to enhance accountability, improve decision-making processes, and build trust among investors, regulators, customers, and other stakeholders. IR disclosure refers to the extent and depth of information provided in an IR, encompassing both quantitative financial data and qualitative non-financial disclosures. The adoption of Integrated Reporting has gained momentum globally, driven by a growing recognition of the need for transparent and comprehensive reporting practices that consider the diverse interests of stakeholders (Bananuka et al., 2019 Integrated Reporting is a contemporary approach for corporate reporting that seeks to deliver a comprehensive perspective on an organization's performance and value generation throughout time. It combines financial and non-financial information to offer a comprehensive picture of the company's strategy, governance, performance and prospects within its broader social, environmental, and economic context (Busco et al., 2013; Hapsari and Khairunnisa, 2023). By providing a more broad view of the organisation, IR enhances transparency and accountability, which can lead to better engagement and stakeholder trust (Conway et al., 2020); it encourages better decision-making by highlighting the interdependencies between different aspects of the business and their collective impact on value creation (Ito

and Iijima, 2017; Mohammed et al., 2019) and also integrates sustainability into the core reporting framework, aligning corporate strategies with sustainable development goals and long-term value creation (Nugraha et al., 2025). Although organizations may face challenges in adopting IR, such as integrating it into existing reporting processes, ensuring data compatibility, and achieving stakeholder engagement (McNally et al., 2017).

Integrated Reporting is guided by the International Integrated Reporting Council (IIRC), which aims to provide stakeholders with a comprehensive view of how the organization creates value over time. The quality of such reporting has become a key determinant of strategic decision-making and investor confidence. Corporate governance mechanisms, particularly board characteristics, influence the depth and quality of the integrated reporting practices. Machmuddah (2023) affirms that high-quality integrated reporting driven by effective board characteristics can reduce information asymmetry, enhance investor decision-making, and ultimately increase company value. Despite the growing global adoption of integrated reporting as a tool for enhancing stakeholder engagement and transparency, significant variability exists in the quality of IR disclosures across firms and countries. While the IR framework offers guiding principles, it lacks mandatory enforcement in many jurisdictions, leaving the quality of disclosures largely dependent on internal corporate governance mechanisms. Integrated reporting in Nigeria is largely voluntary, which leads to inconsistent adoption and implementation across companies. This voluntary approach results in a lack of uniformity and commitment to high-quality reporting (Okaro and Okafor, 2017); while in South Africa, integrated reports tend to be lengthy and complex, which detracts from their usefulness. The repetition and checkbox approach undermine the development of integrated thinking and the overall quality of reports (du Toit and Delport, 2024). These challenges highlight the need for stronger regulatory frameworks, increased awareness and training, and better integration of non-financial metrics into existing reporting systems to achieve high-quality integrated reporting in both Nigeria and South Africa.

Despite the growing importance of integrated reporting, to be best of the author's knowledge, there is limited research on how specific board characteristics influence the quality of integrated reporting in comparing both emerging economies like Nigeria and South Africa. Both countries have unique regulatory environments and corporate governance practices that may affect the quality of integrated reports differently. Understanding these dynamics can help policymakers and corporate governance bodies enhance reporting standards and practices in these emerging economies. This study will provide valuable insights for improving corporate governance practices and enhancing the transparency and accountability of integrated reports in these regions.

2. LITERATURE REVIEW

2.1. Regulatory Requirements for Integrated Reporting in Nigeria and South Africa

Integrated reporting (IR) has been compulsory for every company listed on the Johannesburg Stock Exchange (JSE) since 2010 (Granà and Mari, 2013). The requirement is derived from the King III Code of Corporate Governance, which obligates corporations to provide an integrated report or furnish justifications for their failure to do so (Setia et al., 2015). The King III Code and subsequent King IV Code provide detailed guidelines on the content and principles of integrated reporting, emphasizing the need for transparency and the integration of financial and non-financial information (Setia et al., 2016). The JSE enforces an "apply and explain" basis, meaning companies must either comply with the IR requirements or explain their non-compliance (Moloi and Iredele, 2020). While in Nigeria, Integrated reporting is not yet mandatory. The regulatory landscape is characterized by fragmented reporting regulations and emerging mandatory reporting codes (Moses et al., 2019). The adoption of IR is still in its nascent stages, with some companies voluntarily adopting the framework to enhance transparency and investor relations (Otekunrin et al., 2024).

In South Africa, despite the mandatory nature, companies have discretion over the content, leading to variations in the quality of integrated reports. Studies indicate that the introduction of mandatory IR has led to an increase in the extent and quality of disclosures, particularly in areas such as human, social, natural, relational and intellectual capital (Ahmed Haji and Anifowose, 2016). However, there are concerns that some companies may adopt a symbolic approach to gain legitimacy rather than genuinely improving transparency. In Nigeria, the regulatory environment faces several challenges, including weak enforcement, inadequate sanctions, and fragmented regulations, which hinder effective compliance and disclosure (Moses et al., 2019). Companies that have adopted IR voluntarily report challenges such as the complexity of the framework and the need for greater awareness and training.

2.2. Theoretical Review

The relationship between board characteristics and integrated reporting quality (IRQ) is explored through various the oretical lenses, including agency theory, stakeholder theory and institutional theory. Agency theory posits that the primary goal of corporate governance is to mitigate agency conflicts between principals (shareholders) and agents (managers) by ensuring that managers act in the best interests of shareholders. Agency Theory was developed by economists Michael Jensen and William Meckling in their seminal 1976 paper "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure" (Abbas et al., 2021). In the context of Integrated Reporting (IR), agency theory suggests that strong governance structures can enhance the quality of integrated reporting by aligning managerial actions (Dragomir and Dumitru, 2023). This theory posits that managers, who are hired to run the company on behalf of the shareholders, may not always act in the best interests of the shareholders due to differing goals and risk preferences. This misalignment of interests can lead to agency problems, where managers may pursue personal benefits at the expense of shareholders' wealth. The theory suggests that better governance structures can mitigate agency problems and improve IR quality (Vitolla et al., 2020; Cooray et al., 2020). Agency theory emphasizes the role of governance mechanisms

in reducing information asymmetry and ensuring that integrated reports accurately reflect a company's value creation processes.

Edward Freeman is widely recognized as the main proponent of Stakeholder Theory. He introduced the concept in his 1984 book"Strategic Management: A Stakeholder Approach" (Melé, 2009). Stakeholder theory focuses on the idea that corporations have a responsibility to all stakeholders, not just shareholders. Integrated reporting, which provides a comprehensive view of a company's performance across multiple capitals (financial, manufactured, intellectual, human, social, and natural), aligns with stakeholder theory by addressing the needs of diverse stakeholders (Tiron-Tudor et al., 2020; Parhi and Subudhi, 2024). Tiron-Tudor et al. (2020) affirms that Integrated reporting aims to improve the quality of information provided to shareholders while addressing stakeholders' needs. This theory emphasizes the importance of addressing the needs and interests of all stakeholders, not just shareholders, which aligns with the principles of IR (Sun et al., 2022) Institutional Theory has been shaped by several scholars, including John Meyer and Brian Rowan, who introduced the concept of institutional isomorphism in their 1977 paper"Institutionalized Organizations: Formal Structure as Myth and Ceremony" (Danisman et al., 2006) Institutional theory emphasizes the role of external pressures, such as regulatory requirements and industry norms, in shaping organizational behavior. In the context of IR, institutional theory explains how governance structures are influenced by external factors, such as the adoption of integrated reporting frameworks for instance, the International Integrated Reporting Council (IIRC) framework (Parhi and Subudhi, 2024).

2.3. Empirical Review

Studies have investigated the relationship between board characteristics and integrated reporting quality (IRQ) across different regions, employing various methodologies and theoretical perspectives. Iredele (2019) examined listed firms in South Africa and found that the quality of integrated reports is significantly related to their length and influenced by firm-specific attributes such as profitability, board size, gender, and firm size, while leverage showed no significant effect. Similarly, Erin and Adegboye (2022) explored the corporate attributes influencing IRQ using legitimacy and stakeholder theories, revealing that board committees, audit committees, and other firm attributes significantly shape the quality of integrated reporting disclosures in South Africa. In the European context, Chouaibi et al. (2021) and Zouari and Dhifi (2021) demonstrated that board size, independence, and diversity are positively associated with IRQ. They also emphasized the importance of leadership structure, such as having an independent chairman. Vitolla et al. (2020), applying agency theory, reinforced these findings by identifying positive relationships between board activity and IRQ, suggesting that effective governance improves the transparency and comprehensiveness of disclosures. These findings are consistent with Fayad et al. (2022) and Halid et al. (2021) in Malaysia, who reported positive effects of board size, diversity, and activity, although Halid et al. observed a negative relationship between board size and reporting disclosure, highlighting contextual differences.

Further evidence from Songini et al. (2022) revealed that educational level on the board enhances IRQ, while gender diversity had a negative effect, suggesting that board quality may supersede mere numerical diversity. Machmuddah et al. (2023) highlighted the moderating role of board characteristics in the relationship between integrated reporting and firm value, using agency and signaling theories. Their findings confirmed that while IRD enhances firm value, certain board characteristics strengthen this effect, though board activity showed no moderating influence. Recent studies in emerging economies like South Asia and India also support the positive effect between board attributes and IRQ. Sobhan and Mia (2024) and Makri et al. (2024) found board size, independence, and gender diversity to significantly affect IRQ in Bangladesh, India, and Sri Lanka. Notably, both studies confirm that diverse and independent boards foster better transparency and alignment with stakeholder interests. Collectively, these empirical findings underscore the critical role of board governance in improving integrated reporting quality across varied regulatory and cultural environments.

3. METHODOLOGY AND DATA

3.1. Population, Sampling Technique and Sample Size

The population of the study consists of manufacturing firms listed on the Nigerian Exchange Group (NXG) and the Johannesburg Stock Exchange (JSE). The population for the study comprises of seventy-one and sixty-two manufacturing firms in Nigeria and South Africa, respectively. The sample size was purposively selected based on the availability of data and because of their contribution to the environment as they form the environmentally sensitive sector. The study sample size is 80 manufacturing firms, 40 was taken from each country between 2012 and 2023. The criteria for their selection is based on the availability of data.

3.2. Research Design, Data, and Sources of Data

This study explored ex post facto and longitudinal research designs. The ex post facto research design is essential, as pertinent data on key elements are already present in the firms' audited financial reports. The study also utilised a longitudinal research design, as the data obtained are panel (cross and time-series) in nature, encompassing 12 cross-sectional units from 2012 to 2023. A longitudinal research design is suitable as it allows for extensive data gathering, hence enhancing the accuracy of the resulting estimates. The data for the study were sourced from secondary sources, particularly the annual reports and accounts of selected manufacturing firms in Nigeria and South Africa, spanning the period from 2012 to 2023. The collected data includes variables such as integrated reporting, board characteristics and other control variables.

3.3. Model Specification

The model for this objective is formulated by considering the functional relationship between board characteristics and integrated reporting quality. The model for this objective is an adapted model from the work of Chouaibi et al. (2021), Halid et al. (2021) and Machmuddah et al. (2023). In line with

the proxies of each independent variable, the model is stated as a multiple regression model as below.

$$IRQ_{it} = \beta_0 + \beta_1 BOW_{it} + \beta_2 BGD_{it} + \beta_3 BIN_{it} + \beta_4 BME_{it} + \beta_5 BDS_{it} + \beta_6 AGE_{it} + \beta_7 AST_{it} + \epsilon_t \quad (3.1)$$

3.4. Measurement of Variables and Aprior Expectation

The study employed dependent, independent and control variables in examining the effect of board characteristics and integrated reporting quality in Nigeria and South African manufacturing firms. The measurement of each variable, along with their apriori expectations, is presented in Table 1. The dependent variable, Integrated Reporting Disclosure, was proxied using an integrated reporting score derived from the ratio of the firms' actual disclosure score to the maximum achievable score. The independent variables include Board shareholding(BOS), Board Gender Diversity (BGD), Board Independence (BIN), Board Meeting (BME) and Board Size (BDS).

Board shareholding represents the proportion of shares held by the directors relative to the total outstanding shares and the effect may either be positive or negative, depending on ownership concentration. The Board's gender diversity is measured as the Percentage of women making the Board. Board independence is the proportion of the non-executive board of directors divided by total board size, while Board Meeting is the number of board meetings held by the board of directors in a year. Board independence, Board gender diversity, board size and board meeting are expected to positively influence integrated reporting disclosure. The control variables include Firm Age and Asset Tangibility. Firms' age is measured as the number of years a company has been listed on the stock exchange and is expected to have a positive effect, while asset tangibility is proxied as the ratio of fixed assets to total assets and it is expected to have a negative relationship with disclosure.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

4.1.1. Nigeria

For Nigeria, the summary statistics of the variables contained in Table 2, the average value of the integrated reporting quality is approximately 89.933% with an associated median of 96.67, maximum of 100% and minimal value in the IRQ variable is 50%. Also, the standard deviation of the IRQ is 12.631 which implies that the IRQ data clustered around its mean value. Equally, the average value of information asymmetry is 1.675 with median of 2, maximum of 2 and minimal of 0.000 while the associated standard deviation (SD) is 0.473. The estimated average value of the board ownership is 0.110 with a median score of with associated SD of 0.199. The mean value of outside director represented by board independence is 0.767 with a standard deviation of 0.132. Furthermore, the outcomes of the descriptive analysis revealed that average board size is 6.264 with a standard deviation of 1.591. Equally, the average number of times the board meet is discovered to be 4.992 with a SD of approximately 0.802. The results equally reveal that average value of the leverage to be 0.950 while it has a standard deviation of 5.301. The estimated average age of the firms is approximately 56.55 years with an estimated standard deviation of 29.655 years.

4.1.2. South Africa

For South Africa, the summary statistics of the variables contained in Table 3 where the average value of the integrated reporting quality is approximately 88.188% with an associated median of 90, maximum of 96.67% and the minimal value

Table 1: Measurement of variables

S. N.	Variable	Measurement of variable	Authors	Expected sign
	Dependent variable			
1	Integrated reporting disclosure	$\text{Integrated reporting score} = \frac{IRS_{it}}{\text{Maximum Achievable Score}_{it}}$		
	Independent variables			
2	Board shareholding (BOS)	The ratio of shares held by directors to total outstanding shares	Yanto et al. (2024)	±
3	Board gender diversity (BGD)	The Percentage of Women making the Board	Machmuddah et al., (2023); Sobhan and Mia (2024); Makri et al., (2024)	+
4	Board independence (BIN)	The non-executive board of directors divided by total board size	Machmuddah et al., (2023); Sobhan and Mia (2024); Makri et al., (2024)	+
5	Board meeting (BME)	The number of the board meetings held by the board of directors in a year	Qaderi et al., (2022), Fayad et al. (2022)	+
6	Board size (BDS)	Total Number of Board Members	Machmuddah et al., (2023); Sobhan and Mia (2024); Makri et al., (2024)	±
	Control variables			
7	Asset tangibility (AST)	measured as fixed asset divided by total assets	Donkor et al. (2022)	-
8	Firm age (AGE)	Measured as the number of years a company is trading on the stock exchange	Yulyan et al., (2021)	+

Table 2: Descriptive statistics of the variables for Nigerian firms

Descriptive Statistics	IRQ	BOW	BODS	BMET	BGD	BIN	AGE	AST
Mean	89.933	0.110	6.264	4.992	0.2	0.767	56.550	0.003
Median	96.670	0.000	6.000	5.000	0.2	0.800	52.000	0.381
Maximum	100.000	0.979	14.815	6.000	0.6	1.000	161.000	0.897
Minimum	50.000	0.000	5.000	4.000	0	0.429	10.000	−35.686
Standard deviation	12.631	0.199	1.591	0.802	0.161	0.132	29.655	2.566
Skewness	−1.491	2.513	3.776	0.015	0.298	−0.737	1.532	−8.7
Kurtosis	4.541	10.121	21.102	1.559	2.284	2.847	5.588	95.947
Jarque-Bera	225.402	1519.287	7694.208	41.562	17.382	43.893	321.601	178838.1
Probability	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000

Source: Author's computation

Table 3: Descriptive statistics of the variables for South African firms

Descriptive Statistics	IRQ	BOW	BODS	BIN	BMET	BGD	AGE	AST
Mean	88.188	0.053	9.598	0.725	5.021	0.285	56.550	0.003
Median	90.000	0.005	10.000	0.750	5.000	0.29	52.000	0.381
Maximum	96.670	0.463	12.000	1.000	6.000	0.48	161.00	0.897
Minimum	0.000	0.000	7.000	0.429	4.000	0.1	10.000	−35.686
Standard deviation	18.494	0.097	1.701	0.102	0.809	0.113	29.655	2.566
Skewness	−4.161	2.619	−0.05	−0.372	−0.038	0.05	1.532	−8.7
Kurtosis	19.497	10.161	1.741	3.784	1.531	1.781	5.588	95.947
Jarque-Bera	6827.9	1574.2	31.881	23.373	43.297	29.903	321.60	178838
Probability	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000

Source: Author's Computation

Table 4: Estimated correlation coefficients (Nigeria)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) IRQ	1.000							
(2) BOS	0.002	1.000						
(3) AST	0.093	0.080	1.000					
(4) BIN	0.128	0.069	-0.076	1.000				
(5) AGE	−0.016	−0.077	0.093	−0.390	1.000			
(6) BDS	0.437	0.102	0.040	0.099	−0.092	1.000		
(7) BME	−0.057	0.067	−0.024	0.039	0.050	0.037	1.000	
(8) BGD	−0.018	0.050	−0.112	0.094	−0.007	−0.024	0.107	1.000

Source: Author's Computation

Table 5: Estimated correlation analysis (South Africa)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) IRQ	1.000							
(2) BOS	−0.159	1.000						
(3) AST	−0.088	0.423	1.000					
(4) BIN	0.287	−0.289	−0.254	1.000				
(5) AGE	0.297	−0.053	−0.050	0.089	1.000			
(6) BDS	−0.081	0.028	0.020	0.002	−0.181	1.000		
(7) BME	0.037	0.003	0.015	0.011	0.100	0.064	1.000	
(8) BGD	−0.004	0.021	−0.026	0.024	−0.044	0.007	0.019	1.000

Source: Author's Computation

in the IRQ variable is 0%. Also, the SD of the IRQ is 18.494 which implies that the IRQ data clustered around its mean value. Equally, the average value of information asymmetry is 2.775 with median of 3, maximum of 5 and minimal of 0.000 while the associated SD is 1.647. The estimated average value of the board ownership is 0.053 with associated SD of 0.097. The average value of the outside director represented by board independence is 0.725 accompanied by a SD of 0.102. Furthermore, results of the descriptive analysis revealed that the average board size is 9.598 with a SD of 1.701. Equally, the average number of times the board meet is found to be 5.021 with a SD of approximately 0.809. The results equally reveal that average value of the leverage to be −1.936 while it has a SD of 54.153. The estimated average age of the firms is approximately 63 years with an estimated standard deviation of 47 years.

4.2. Correlation Analysis

To determine the degrees of the associations and strengths of the relationships that exist among the variables, correlation analysis was employed as a preliminary test for the two countries. A summary of the direction and strength of the linear relationship that exists between two variables is given

by the Pearson product-moment correlation, also known as the correlation coefficient. In Tables 4 and 5, the asymmetrical matrix displays the correlation values between variables over 12 years. The values in Tables 4 and 5 for Nigeria and South Africa, respectively, are below the crucial 0.80 threshold (Judge et al., 1988; Bryman and Cramer, 2004).

4.3. Variance Inflation Factors (Nigeria and South Africa)

The results of the variance inflation factor (VIF), conducted to check if the independent variables do not have multicollinearity, are displayed in Table 6. From the results in the Table, board independence has the highest VIF of 1.203 for Nigerian firms, while Board Shareholding has the highest VIF of 1.275 for South African firms. Hence, the data utilized for achieving the objective of this study are free of a multicollinearity problem since the highest VIF is 1.275 and which falls short of the threshold of 10 for multicollinearity to exist.

4.4. Serial Correlation and Heteroscedasticity Test

Table 7 displays the diagnostic tests for both Nigerian and South African Manufacturing firms. The diagnostic tests for the Nigerian manufacturing firms reveal the absence of heteroscedasticity at the 10% significance level, as indicated by the Breusch-Pagan test (Chi2 = 2.27; Prob > Chi2 = 0.1324). However, the Wooldridge test for serial correlation shows evidence of serial correlation problems (F-stat = 29.924; Prob = 0.000), suggesting that the error terms are correlated across time, which could affect the efficiency of the regression estimates if not corrected. For the South African manufacturing firms, the results indicate the presence of both heteroscedasticity and serial correlation. The Breusch-Pagan test confirms heteroscedasticity at the 5% level (Chi2 = 429.35; Prob > Chi2 = 0.000), while the Wooldridge test similarly reveals a strong presence of serial correlation (F-stat = 9689.886; Prob = 0.000). These findings imply that both cross-sectional variance irregularities and autocorrelation issues exist in the South African data, necessitating the use of robust or feasible generalized least squares (FGLS) estimators to obtain efficient and reliable results.

Table 6: Variance inflation factors (Nigeria and South Africa)

Variables	Nigeria		South Africa	
	VIF	1/VIF	VIF	1/VIF
BIN	1.203	0.832	1.125	0.889
AGE	1.202	0.832	1.06	0.944
BGD	1.036	0.965	1.005	0.995
AST	1.034	0.967	1.249	0.801
BOS	1.032	0.969	1.275	0.784
BDS	1.027	0.974	1.042	0.959
BME	1.023	0.977	1.018	0.982
Mean VIF	1.079	0.931	1.111	0.908

Source: Author's Computation

4.5. Panel Regression Analysis

Though the Hausman test with a p value of 0.0212, as shown in Table 8 suggests that fixed effect panel regression is better than random effect, the existence of cross-sectional dependence observed from the Pesaran test with a P = 0.000 indicates that the appropriate static panel regression is panel Feasible generalized least squares regression (FGLS). The findings in Table 8 is for both Nigeria and South Africa, respectively. While the results in columns 1, 2 and 3 are obtained formed the fixed effect panel regression, random effect panel regression and panel generalized least square, respectively. Though the Hausman test with P = 0.0212 suggests that the fixed effects panel regression is better than the random effect, the existence of cross-sectional dependence observed from the Pesaran test with a P = 0.000 indicates that the suitable static panel regression is panel feasible generalized least square regression (FGLS). Hence, the interpretation of the objective of the study in Nigeria and South Africa is based on the panel FGLS regression results in column 3.

The results in columns 1 and 2 are obtained utilizing fixed effect and random effect panel regression, respectively while the results in column 3 of the Table are obtained using panel FGLS regression. The results of the Chow F-test with a P = 0.00 indicate that firm effects exist, suggesting that pooled OLS will not be appropriate, while the Hausman test with P = 0.0068 indicates that fixed effect panel regression performs better than random effects. However, the Pesaran test P = 0.000 indicates the existence of cross-sectional dependence which makes the use of fixed and random effects panel regression inadequate, as it signals the presence of endogeneity bias. Hence, the results are obtained with panel FGLS, which controls for the endogeneity bias. Hence, the interpretation of the objective of this study in South Africa is based on the panel FGLS regression result in column 3 of Table 8.

From the results in column 3, board size (BDS) with an estimated coefficient of 0.817 and associated P = 0.012 exerts a positive influence significant at 5% level on integrated reporting quality (IRQ) of Nigerian manufacturing companies, suggesting that Integrated Reporting increases with higher board size. Several studies indicate a positive relationship between board size and the quality of integrated reporting. Larger boards tend to enhance integrated reporting quality due to better representation of diverse stakeholder interests and improved governance mechanisms (Zouari and Dhifi, 2021; Chouaibi et al., 2022; Devarapalli and Mohapatra, 2024) and also due to enhanced monitoring and governance capabilities (Vitolla et al., 2020; Chouaibi et al., 2022). Board gender diversity exerts no effects on the integrated reporting quality of Nigerian non-financial firms. Also, board meeting exerts a negative influence on the firm value (b = −1.073) but not significant at 5% (P = 0.0937), suggesting that the integrated reporting quality of Nigerian firms is not affected by the number

Table 7: Serial correlation and heteroscedasticity test results

Model	Test	Results	Probability	Remarks
Nigeria	Breusch-Pagan	Chi^2=2.27	Prob > Chi^2=0.1324	No Heteroscedasticity at 10%
	Wooldridge test for serial correlation	F stat=29.924	Prob > Chi^2=0.000	Existence of serial correlation problem
South Africa	Breusch-Pagan	Chi^2=429.35	Prob > Chi^2=0.000	Existence of Heteroscedasticity at 5% level
	Wooldridge test for serial correlation	F stat=9689.886	Prob > Chi^2=0.000	Existence of serial correlation

Source: Author's Computation

Table 8: Estimated static panel regression results

Variables	Nigeria			South Africa		
	FE	RE	FGLS	FE	RE	FGLS
BDS	0.007	0.00686	0.817**	−0.464	−0.541	−1.148**
	−0.97	−0.98	−2.53	(−1.37)	(−1.51)	(−2.55)
BGD	0.043	0.0426	0.976	8.862	8.118	7.65
	−0.99	−0.98	−0.3	−1.17	−1.1	−1.15
BMET	0.018	0.018	−1.073*	−0.563	−0.456	−0.0507
	−0.99	−0.99	(−1.68)	(−0.73)	(−0.58)	(−0.05)
BOS	-	−12.96	−15.13***	-	−28.62	−22.84***
		(−1.08)	(−5.83)		(−1.42)	(−2.61)
BIN	-	4.271	10.21**	-	−32.73	−33.26***
		−0.34	−2.42		(−1.09)	(−4.29)
AST	0.001	0.0014	1.923***	23.59	25.47	19.20***
	−0.91	−1.12	−9.56	−1.22	−1.55	−5.6
AGE	0.004	0.0036	0.046**	0.721*	0.169***	0.127***
	−0.99	(1.00)	−2.44	−1.86	−2.71	−7.78
Constant	1.294	0.709	0.729	38.24	98.19***	107.2***
	−259	−0.531	−16.01	−1.68	−4.78	−12.29
Observations	480	480	480	480	480	480
Number of PID	40	40	40	40	40	40
R-squared						
F-Test P value		0			0	
Pesaran Chi		31.184			19.702	
Pesaran P value		0			0	
Hausman P value		0.0212			0.0068	

Source: Author's Computation, 2025 t-statistics in parentheses, ***P<0.01, **P<0.05, *P<0.1

of meetings held by the board. Also, the results showed that the impacts of shareholding by the board is negative and significant at 5% level ($\beta = -15.13$; $P < 0.05$), suggesting that an increase in the proportion of shares held by the board members leads to lower integrated reporting quality. The negative impact of board ownership on IRQ is consistent with agency theory, which suggests that board ownership can lead to entrenchment and reduced transparency in reporting. The negative relationship between board shareholding and IR quality can be explained through agency theory. This theory suggests that higher board ownership may lead to conflicts of interest and reduced transparency, as managers might prioritize their interests over those of other stakeholders (Raimo et al., 2020; Vitolla et al., 2022). In addition, the results of the panel FGLS in column 3 reveal that board independence exerts a positive effect significant at 5% on the IRQ of Nigerian sampled firms ($\beta = 10.21$; $P < 0.05$) suggesting that an increase in the proportion of independent members on the board is associated with higher IR quality of Nigerian non-financial companies. Studies indicate that a higher proportion of independent board members is associated with better IR quality. This is because independent directors are more likely to ensure that the reporting is accurate, comprehensive and aligned with stakeholders' interests (Chouaibi et al., 2022; Vitolla et al., 2022). The results for the control variables show that the asset tangibility exerts a positive and significant impact at 5% on the firm value ($\beta = 1.923$; $P < 0.05$) while the effects of firm age on the value of Nigerian sampled non-financial companies is significant and positive at 5% level ($\beta = 0.0457$; $P < 0.05$). The result aligns with Darminto et al. (2024), which affirm that older firms tend to have better integrated reporting practices.

The findings of the feasible generalized panel regression obtained in the third column of Table 8 revealed that board size exerts negative effect that is significant at 5% level on the IR quality in South Africa ($\beta = -1.148$; $P < 0.05$) implying that an increase in board size reduces the IR quality of South African companies. This is different from what is obtainable in Nigerian non-financial firms. Halid et al. (2021) also reported a negative association between board size and IR quality, suggesting that larger boards might hinder effective integrated reporting in this specific context. The results further reveals that the board gender diversity exerts a positive but no significant effect on the IR quality in South Africa ($\beta = 7.650$; $P > 0.05$). Also, the impacts of board meetings is found to be negative but insignificant ($\beta = -0.057$; $P > 0.05$), implying that the value of South African firms is not affected by the number of meetings held by the board. Also, the results show that the impact of shareholding by the board is significant and negative at 5% level ($\beta = -22.84$; $P < 0.05$), suggesting that an increase in the proportion of shares held by the board members leads to lower IR quality in South Africa. This is also similar to what is obtained in Nigerian non-financial firms. In addition, the result of the panel FGLS in column 3 of Table 8 reveal that board independent exerts negative effects significant at 5% on IR quality of sampled South African firms ($\beta = -33.26$; $P < 0.05$) suggesting that an increase in the proportion of independent members on the boards is associated with lower value of South African non-financial companies.

The estimated panel regression results reveal that for both Nigerian and South African manufacturing firms, asset tangibility (AST) and firm age (AGE) have a significant positive effect on integrated reporting quality when using the FGLS model. In Nigeria, AST shows a strong positive and significant relationship ($\beta = 1.923$, $P < 0.01$), indicating that firms with higher tangible assets tend to achieve better integrated reporting quality. Similarly, in South Africa, AST also exhibits a positive and significant impact

($\beta = 19.20$, $P < 0.01$), reinforcing the view that asset-heavy firms are likely to be more transparent and adhere better to integrated reporting principles. Regarding firm age, the findings suggest that older firms in both countries are significantly associated with higher reporting quality: for Nigeria ($\beta = 0.046$, $P < 0.05$) and for South Africa ($\beta = 0.127$, $P < 0.01$). This implies that more established firms, likely due to their experience and reputation considerations, place greater emphasis on producing higher-quality integrated reports. The estimated static panel regression results reveal that for both Nigerian and South African manufacturing firms, asset tangibility (AST) and firm age (AGE) have a significant positive effect on integrated reporting quality when using the FGLS model. In Nigeria, AST shows a strong positive and significant relationship ($\beta = 1.923$, $P < 0.01$), indicating that firms with higher tangible assets tend to achieve better integrated reporting quality. Similarly, in South Africa, AST also exhibits a positive and significant impact ($\beta = 19.20$, $P < 0.01$), reinforcing the view that asset-heavy firms are likely to be more transparent and adhere better to integrated reporting principles. Regarding firm age, the findings suggest that older firms in both countries are significantly associated with higher reporting quality: for Nigeria ($\beta = 0.046$, $P < 0.05$) and for South Africa ($\beta = 0.127$, $P < 0.01$). This implies that more established firms, likely due to their experience and reputation considerations, place greater emphasis on producing higher-quality integrated reports.

5. CONCLUSION AND RECOMMENDATIONS

This study examined the comparative analysis of board attributes and integrated reporting quality evidenced by manufacturing firms in Nigeria and South Africa from 2013 to 2023. The findings from the analysis reveal that board size, board meetings, board shareholding and board independence have significant effects on integrated reporting quality as it relates to the Nigerian manufacturing firms, while the same for South African manufacturing firms, except for board meetings.

Based on findings and conclusions, the study further suggests the following recommendations:

i. For Nigerian firms where larger board size enhances integrated reporting quality (IRQ), it is recommended that firms should maintain a moderately large board size to leverage diverse expertise for better reporting practices. Nevertheless, for South African firms, where larger boards negatively affect IRQ, it is suggested to keep the board size lean and efficient to improve reporting quality.
ii. Considering the significant negative effect of board shareholding on IRQ in both Nigeria and South Africa, companies should establish robust governance frameworks that will mitigate the potential conflicts of interest.
iii. In Nigeria, the positive effects of board independence on IRQ suggest that companies should continue to strengthen the presence of independent directors in ensuring transparency and objectivity in reporting. Conversely, since South African firms showed a negative relationship, boards should focus on enhancing the effectiveness of independent directors through targeted training in integrated reporting quality and best practices
iv. Regulatory authorities in both Nigeria and South Africa should develop and strengthen guidelines that emphasize the quality of integrated reporting.
v. Since board gender diversity did not significantly affect IRQ in both countries, firms should move beyond symbolic gender representation by ensuring that female board members are appointed to influential committees and are empowered with leadership roles that enhance governance and reporting quality.

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