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Moderating Effect of Firm Size on Board Structure and Financial Performance of Quoted Financial Services Firms in Nigeria

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Abstract
The effectiveness and efficiency of the board of directors as a monitoring tool to the management of an organization is essential to the performance of the firms. It is on this note that this study examines the moderating effect of firm size on board structure and financial performance of quoted financial services firms in Nigeria, from 2019 to 2023. The population comprises all the quoted financial services firms in Nigeria while the filtering technique was used to arrive at a sample size of forty-five (45) financial service firms in Nigeria. The hypotheses were tested using a robust random effect regression model after conducting some diagnostics tests. The results of the first model show board independence has an insignificant positive effect on the return on assets of quoted financial services firms in Nigeria. Also, board size has a significant negative effect on the return on assets of quoted financial services firms in Nigeria. Further results based on the second model indicate that firm size significantly moderates the relationship between board size, and board independence, with the interaction of firm size having a significant statistical effect on the return on assets of quoted financial service firms in Nigeria. The study recommends among others, that the financial services firms should constitute a small board size that is drawn from those who are well experienced and knowledgeable in the industry to bring their expertise to bear and enhance the financial performance of the financial services firms in Nigeria.
Keywords: *Firm Size, Board Structure, Financial Performance, Financial Services, Firms*

1.1. Introduction

Research into corporate governance mechanisms has surged in response to global corporate failures, highlighting stakeholders' concerns that despite robust financial declarations, firms can still collapse due to ineffective governance, particularly board structure. The board of directors is crucial in monitoring management, ensuring performance, and safeguarding shareholders' investments. Renewed interest in how board structure affects transparency and financial performance is driven by the belief that an effective board leads to efficient management operations and guarantees returns.
Fama and Jensen (1983) argue that boards are responsible for approving management decisions and monitoring performance, suggesting that including independent non-executive directors can reduce management collusion risk. Weisbach (1988) supports this, advocating for more independent directors to enhance board effectiveness according to agency, stewardship, and resource dependence theories.

The board structure is especially important in Nigeria's financial sector due to historical financial fraud and failures that have eroded stakeholder confidence. Factors influencing board effectiveness include board size, independence, gender diversity, meeting frequency, and financial expertise.

Rashid et al. (2010) link major corporate collapses to ineffective boards that failed to detect management's questionable practices, emphasizing the need for careful board composition.
Financial performance, often measured by Return on Assets (ROA), reflects a firm's profitability and management's ability to utilize resources. This study uses ROA to gauge financial performance, considering it a comprehensive indicator as it includes both equity and debt.

Effective board size is critical for decision-making and firm performance. Larger boards can provide a wider range of expertise, with an optimal size often suggested to be at least eight directors. Board independence can enhance performance by reducing agency problems, with more independent directors potentially leading to better oversight and reduced management opportunism.
Criticism of boards for corporate failures, such as those involving Adelphia, Global Crossing, Tyco, WorldCom, and Wire card, extends to Nigeria's financial sector. Past collapses of Nigerian banks have been attributed to poor board oversight and management control issues, prompting corporate governance reforms to improve board composition and structure.

For Nigerian financial services firms, effective board structures are essential for monitoring management and ensuring financial success. Regulatory bodies like the SEC, PENCOM, and CBN recommend unitary board structures with independent non-executive directors to enhance scrutiny and separate management from decision control. However, the selection process for these directors, often influenced by management, can undermine their independence. This study uses ROA as the performance metric to explore how board structure, moderated by firm size, affects the financial performance of Nigerian financial services firms. The research aims to fill gaps in existing studies by examining the moderating effect of firm size on the relationship between board structure and financial performance

1.2. Objectives of the Study

The main objective of this research is to examine the Moderating Effect of Firm Size on Board Structure and Financial Performance of Quoted Financial Services Firms in Nigeria. Other specific objectives are to:

i. Assess the relationship between board size and return on assets of quoted financial services firms in Nigeria;
ii. determine the relationship between board independence and return on assets (ROA) of quoted financial services firms in Nigeria;
iii. find out the moderating role of firm size on the relationship between board size and return on assets of quoted financial services firms in Nigeria.
iv. find out the moderating role of firm size on the relationship between board independence and return on assets of quoted financial services firms in Nigeria.

2. Literature Review

2.1. Conceptual Framework

The conceptual framework of this study is adapted from Badara, (2016) and Ongore *et al*. (2015) and it comprises of board structure which is the independent variable proxy by Board Size, Board Independence, Board Gender Diversity and Frequency of Board Meetings, Board Financial Expertise while Financial Performance denoted as Profitability (dependent variable) is proxied by Return on

Assets (ROA). Also, Firm size is used as the moderating variable while firm age is the control variable for the study.

The conceptual framework work for this study is as follow

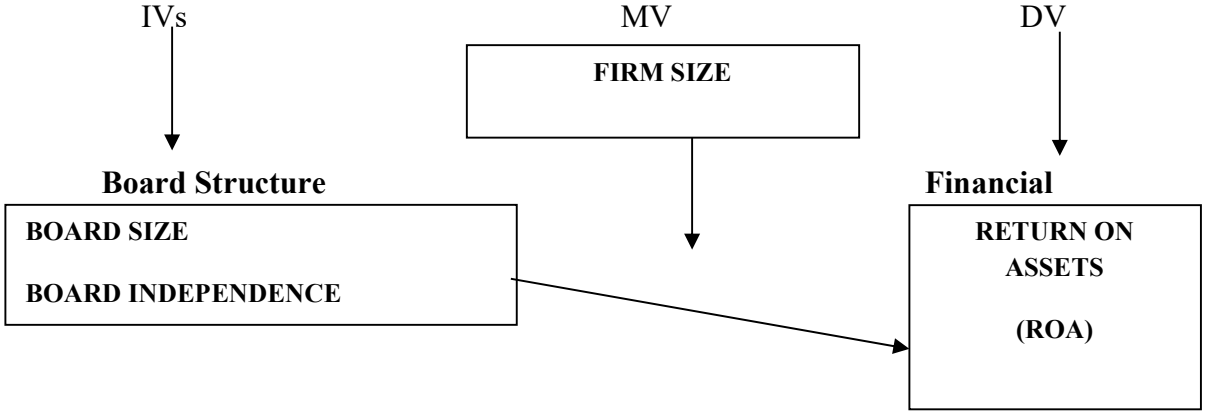

Fig 2.1: The Framework of the Study

Source: Adapted from *Badara*, (2016) and *Ongore, et al*. (2015)

2.1.1 Board Structure

Board structure refers to the attributes that measure the effectiveness and efficiency of a corporate board in monitoring firm management. It is crucial to ensure a good management system, which is necessary for strong financial performance. An effective board structure protects shareholders' and stakeholders' interests. While some literature shows that an efficient board structure enhances financial performance, other studies present differing views. According to agency theorists, protecting shareholders' interests requires the board to perform effective oversight. The effectiveness of this monitoring is influenced by factors such as board size, diversity, independence, meeting frequency, financial expertise, information asymmetries, and board culture (Brennan, 2006; Uadiale, 2010)

2.1.2 Board Size

Board size refers to the number of directors on a firm's board, and its optimal size for effective functioning is debated. The Nigerian Code of Corporate Governance (2018) advises a board size that can oversee and control the firm's activities but does not specify a number. Typically, an effective board should have both executive and non-executive directors.

Board size varies internationally: UK, Holland, and Switzerland have smaller boards, while Belgium, France, Germany, and Spain have larger ones (13-19 members). In Nigeria, an optimal board size is suggested to be at least eight members. Proponents of larger boards argue they offer more expertise and better management balance, while critics suggest smaller boards (8-9 members) are more efficient and avoid coordination issues. Agency theory supports larger boards for better management monitoring, whereas resource dependency theory favors larger boards for reducing external resource dependence. Ultimately, there is no universal optimal board size; it should be based on the board's effectiveness. For this study, board size is defined as the number of directors on the board of quoted financial services firms in Nigeria

2.1.3 Board Independence

Board independence refers to the proportion of outside directors on a board who have no prior relationship with the firm, allowing them to offer unbiased opinions and oversee management without interference. Independent non-executive directors (INEDs) are not involved in the firm's day-to-day operations and are seen as impartial "referees" who protect shareholders' interests and curb management opportunism.

Independent directors are vital for board effectiveness, enhancing decision-making and strategic oversight. They act as a check on executive directors, ensuring that negative information is not concealed. The Nigerian Code of Corporate Governance (2018) requires that at least two INEDs, or 20% of the board, be independent and not hold significant shareholding that could impair their independence. Additionally, the Code mandates an annual assessment of each INED's independence. Agency theory supports the notion that independent boards better monitor management, as independent directors are motivated to build a reputation as experts. For this study, board independence is defined as the ratio of non-executive directors to the total number of board members.

2.1.4 Financial Performance

Financial performance measures the monetary outcomes of a firm's operations, typically derived from financial statements. It can be assessed through various indicators such as market value added (MVA), economic value added (EVA), cash flow growth, earnings per share (EPS) growth, asset growth, dividend growth, and sales growth. These metrics quantify how well a firm achieves its financial goals.

According to Akenga (2017), financial performance evaluates a firm's policies and operations in monetary terms, reflecting how effectively it uses assets to generate revenue. A commonly used metric is Return on Assets (ROA), which measures profitability relative to total assets. ROA is calculated by dividing annual earnings by total assets and indicates how efficiently management uses assets to generate earnings.

For this study, financial performance is defined using ROA, calculated as the ratio of profit after tax to total assets for quoted financial services firms in Nigeria. ROA is chosen because it accounts for both equity and debt, reflects the firm's capital and board structure, and provides a comprehensive measure of financial performance.

2.1.5 Firm Size as a Moderator

Niresh and Velnampy (2014) argue that firm size is crucial for determining profitability due to economies of scale, a concept from the neoclassical view of firms. Larger firms can achieve cost leadership, thus gaining a competitive edge in profitability and market share. Firm size is often measured by total assets, total investment, and net worth and is widely used in studies related to firm performance (Rehman, 2016). Akinyomi and Olagunju (2013) also emphasize the critical role of firm size in performance.

Ramasamy et al. (2005) note that the relationship between firm size and performance is ambiguous and industry-specific, cautioning against generalization. Papadogonas (2006) supports the idea that larger firms benefit from better interest rates, discounts, specialization, and division of labor, leading to economies of scale and financial robustness. Conversely, Marsh (1982) argues that large firms may be controlled by self-interested managers, resulting in sub-optimal performance.

Gonenc (2005) and Dittmar (2004) found that large firms tend to issue more debt due to high tangibility, which can lead to financial distress. Khan (2012) and Maina & Ishmail (2014) suggest that large firms often suffer from operational inefficiencies, adversely affecting financial performance. However, Brigham and Houston (2016) assert that firm size significantly influences performance and value. Abdurahman et al. (2003) highlight the importance of understanding the relationship between firm size and profitability to identify factors enhancing profits.

2.2 Theoretical Review

2.2.1 Agency Theory

Agency theory, as proposed by Jensen and Meckling (1976), addresses the conflicts that arise when ownership and control are separated within a firm, causing a divergence in managerial and owner interests. The theory emphasizes the importance of monitoring managerial decisions to protect shareholders' interests, as managers tend to act in self-interest, potentially at the expense of shareholders. The theory suggests aligning the interests of owners and managers through well-designed contracts and emphasizes the crucial role of the board of directors in governance. A key advantage of agency theory is its simplification to the agent (manager) and principal (shareholder) relationship, focusing on shareholder returns. The theory provides a framework for understanding and mitigating agency conflicts to enhance firm performance, suggesting that proper governance mechanisms can align interests and reduce agency costs, which include monitoring costs, bonding costs, and residual losses.

Agency theory posits that corporate governance mechanisms, such as board structure, are vital in aligning principal-agent interests and improving firm performance. Factors like board size, the presence of non-executive directors, gender diversity, and ownership structure play roles in mitigating agency conflicts. The theory assumes that information asymmetry and self-interested behavior by managers can lead to sub-optimal decisions, necessitating effective monitoring and incentive alignment.

The theory also suggests that larger boards with independent directors can better monitor management, but critics argue that insider directors may have superior knowledge of firm operations. Additionally, larger boards may face coordination and communication challenges, reducing their effectiveness. Overall, agency theory underscores the need for proper governance to ensure managers act in shareholders' best interests, promoting accountability, transparency, and prudent management

2.3 Empirical Review

2.3.1 Board Size and Financial Performance

Ahmad *et al.* (2023) examine the relationship between corporate governance characteristics and firm performance of non-financial firms in the Pakistan Stock Exchange for the period of 2010 to 2019. Data were collected using secondary sources which were extracted from the financial statement of the selected firms. A fixed-effect regression model was used in analyzing the collected data and findings indicate that there is a positive relationship between corporate governance and firm performance. The study concluded that board size, board education, board experience, board nationality and board compensation have significant ROA and board size, board experience, the board size, and board compensation show significance with Tobin-Q. The study recommends further study into the area of study. The study used ordinary least square regression model in analyzing the

collected panel data which is in contrary to the postulate of Hausman 1978. Also, the study was carried out in 2021 and data collected and analysed covered up to 2019 which enhances the currency of the study. In order to fill in the gap created by this study, this very study updated data to 2020 and also included board financial expertise as a proxy for board structure.

Ariyibi *et al.* (2023) evaluate the impact of corporate governance on firm performance using the accounting measures based on profitability status of the selected firms depending on cash flows and inflow from the income statement of (15) listed non-financial manufacturing (Consumer goods sector) firms quoted on the Nigeria Stock Exchange (NSE) using the stratified and simple random technique. The panel data were collected which spanned through the periods of 2014 to 2018. Using fixed effect regression model, findings indicate that board size has positive significant effect on return on sales. Board size and board independence has positive significant effect on profit margin. It also revealed that board size and board independence negative significant effect on operating cash flow. Based on the findings, the study recommended that the organization should take cognizance of its board size since it influences the rate of turnover which is an intrinsic component of the overall performance of the organization. The organization should make sure the board size is regulated on a low-cost reduction basis so it does not induce a negative impact on the profitability status of the firm. The study used appropriate statistical tool of analysis. Also, the study was carried out in 2021 and the panel data collated and analysed covered up to 2018 which enhances the currency of the study.

Bekiaris (2023) examines the effect of board characteristics on bank financial performance. Tracing the Greek financial crisis during the period of 2008 to 2018, the paper investigates whether board size, board independence, CEO duality, female directors, and foreign directors affect banks performance. Using fixed effect regression model the empirical evidence shows that board structure has a significant effect on bank performance. Specifically, board independence, board size, and chairman independence were found to exert a positive effect on bank performance. The effect of diversity on performance was ambiguous, since the effect of female directors was positive; but the effect of foreign directors was negative. The study concludes that the findings can potentially help banks improve performance by considering the features found significant in this study and also recommended that regulators should draw insight from the findings to design rules that strengthen corporate governance effectiveness. However, the study uses appropriate statistical tool of analysis but the study was carried out in Greece which will not enable generalization of the findings which is as a result of environmental differences.

Fariah*et al*. (2023) evaluates the effect of board characteristics and audit committee attributes on the firm performance of publicly listed commercial banks of Bangladesh. 30 publicly listed commercial banks of Dhaka Stock Exchange (DSE) were selected as sample for this study. Data were collected from annual reports between 2011 and 2017 of the assessed banks. Pooled OLS regression model was used for analyzing the collected data. Findings indicate that board independence has a negative and significant relationship with ROA and Tobin's Q. However, Board Independence has a positive and significant relationship with Stock Return. On the other hand, Board Diversity has a negative and significant relationship with ROA and ROE, which implies inefficiency of diversified board members in the context of Bangladesh. Family duality has a positive and significant relationship with ROA and a negative and significant relationship with Stock return. Board Meeting has a positive and significant relationship with ROA. Audit Committee Size has a negative and significant relationship with Tobins' Q. Independence of audit committee chairman has a negative and significant relationship with Tobin's Q and Stock Returns. Also, the presence of non-executive directors has no

significant relationship with any of the predicted variables. However, the study applied inappropriate statistical tool of ordinary least square in analyzing the collected panel data which is against the postulate of Hausman (1978). Also the study was carried out in Bangladesh which is another environment outside Nigeria which will not enable generalization of the findings as a result of environmental differences.

Kiptoo *et al.* (2023) examine the relationship between corporate governance and financial performance of 51 insurance firms listed on the Kenya stock exchange between the periods of 2013 to 2018. The fixed effect regression model was used and the results showed that corporate governance significantly affects the financial performance of insurance firms. In particular, the findings showed that board diversity, board independence positively and significantly affects financial performance. In contrast, board composition and board size negatively and significantly affects financial performance. This study concludes that proper corporate governance structure significantly affects the performance of a firm. Therefore, the study recommends that directors and other stakeholders should put in place appropriate governance structures in order to boost financial performance. Regulators and policymakers should also come up with policies and regulations that will ensure firms adopt appropriate governance structures to enhance performance. The study uses ordinary least square in analyzing the collected panel data which was inappropriate for the study. However, the study was carried out in Kenya which may not enable generalization of the findings as a result of environmental differences.

Babatunde and Folorunsho (2022) examine the effect of board size and its independence on the performance of listed entities in Nigeria. The study further determined the effect of board diligence and board diversity on the performance of quoted firms in Nigeria. These were with the view of examining the relationship that exists between board characteristics and performance of quoted firms in Nigeria. The study which covered a period of ten-year (2009–2018) made use of secondary data sourced from published annual reports and accounts of 35 purposively selected listed companies on the Nigerian Stock Exchange (NSE). The Pooled Ordinary Least Square (OLS) and Generalised least square method of regression techniques were employed in analyzing the data obtained. Findings from the study reveal no significant relationship exists between earnings per share and board independence. The study recommends a small board size of diverse educational background and wide experiences of members, and regular meetings to discuss matters that concern the performance of firms. However, the data analysis technique employed for the study is appropriate and data collected were up to date, therefore enhances the currency of the study.

3. METHODOLOGY

A descriptive research design of *ex-post facto* research (after the fact) design was used considering the specific objectives and the panel statistical technique used. The study's population consists of 53 financial services firms quoted on the Nigerian Stock Exchange (NSE) as of December 31, 2023. The sample size includes 45 firms listed on the NSE at least a year before 2019, the year Nigeria implemented the International Financial Reporting Standards (IFRS). The financial sector was chosen due to its high capitalization on the NSE. A filtering method was used to select the sample, requiring firms to have been listed on the NSE before 2012 and to have the necessary financial data for the study period. Eight firms that did not meet these criteria were excluded, resulting in a final sample size of 45 firms. The study uses panel data obtained from the audited annual reports of these firms, with secondary data deemed reliable for empirical research

The study employs both descriptive and inferential statistics to analyze data, using panel data regression analysis to examine how firm size, moderated by firm age, affects the relationship between board structure and financial performance of quoted financial firms in Nigeria. Data analysis was conducted using STATA v.15 software. The study used panel data to capture both time series and cross-sectional aspects. Various robustness tests were performed.

The study adopts models to achieve the set objectives of the study. The model captures the direct relationship between board sizes (BSize), board Independence (Bind), and the moderating variable firm size (Fsize) with Return on Assets (ROA):

ROA = f(Bsize, Bind,, Fsize, Fage)
Equation 1 is expressed econometrically as follows:
$ROA = \alpha+\beta_1 BSIZE_{it}+\beta_2 BIND_{it}+ \varepsilon_{i,t}$ ..... (Model I)
Where:
$\beta_1\beta_2\beta_3\beta_4\beta_5$– coefficients of proxies of independent variable
β_6= A coefficient of moderating variable
β_7= A coefficient of control variable
α = constant
ROA = an indicator representing Return on Assets (a proxy for dependent variable)
BSIZE = Board Size
BIND = Board Independence
FSIZE = Firm Size
ε = Error term
i = firms
t = periods and
f = Functional relationship

Model 2: with moderation
ROA= f(Fsize*BSize + Fsize*Bind)
Econometrically, the above function is rewritten as:
$ROA_{it} = \alpha + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} +\beta_6 FSIZE_{it}*\beta_6 BSize_{it}+ \beta_7 FSIZE_{it}*\beta_7 BIND_{it}=+\varepsilon_{it}$…….. (Model II)
Where:

Variable Measurement and Justification

Table 1 below explains the variables understudy

Variables	Type	Measurement and Justification
Return on Assets	Dependent	Measured as the ratio of profit after tax to total assets. It clarifies the extent to which the financial services firms' assets have been used to generate wealth. (Akpan, 2015; Bebeji *et'al*., 2015; Nnado & Ugwu, 2016)
Board Size (BSIZE)	Independent	Measured as the total number of directors on the board (Badara, 2016; Bebeji *et al*., 2015
Board Independence	Independent	Measured as ratio of the number of independent non-executive director to total number of directors (Badara, 2016; Ilaboya & Lodikero, 2017;
Firm Size (Fsize)	Moderator	Measured as natural logarithms of firm's total assets (Badara, 2016; Ilaboya & Ohiokha, 2014; Dioha *et al.*, 2018; Usman & Amran 2015)

Source: author's compilation 2024

The variables of the study consist of dependent variable which is firm financial performance measured by Return on Assets (ROA) and the independent variable is Board Structure proxied with board size, board independent. These variables were measured using content analysis of annual reports of listed financial services firms in Nigeria.

4. Results and Discussion

4.1 Data Presentation

The data for the 45 financial service firms regarding return on assets, board size, board independence, and firm size are presented in Appendix B.

4.2 Data Analysis

The data analysis was carried out using descriptive statistics, Shapiro-Wilk normality test, Pearson correlation, Variance Inflation Factor, Heteroskedasticity test, Hausman specification test, Lagrangian Multiplier Test, and Random effect regression model based on the data attached in Appendix B and the detailed results are equally attached in appendix C.

Descriptive Statistics

Table 2 below is the descriptive statistics that summarise the entire data set.

Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	374	.0069305	.1124199	-.692	.654
BSIZE	379	10.44855	4.064866	3	21
BIND	357	.5066076	.2524459	.0833333	.9473684
FSIZE	378	7.518365	.9975218	3.614	9.939

Source: Researcher's Computation (2024) Using Stata 15

Return on Assets (ROA) Mean: 0.0069305 (or approximately 0.69%). This indicates a very low average return on assets across the sample. Standard Deviation: 0.1124199. This relatively high standard deviation suggests significant variability in ROA among firms. Minimum: -0.692. The negative minimum value indicates that some firms experienced a substantial loss relative to their assets. Maximum: 0.654. The maximum value indicates that some firms achieved a high return on assets, but such instances are rare compared to the average. Board Size (BSIZE) Mean: 10.44855. On average, firms have about 10 members on their boards. Standard Deviation: 4.064866. There is considerable variability in board size, suggesting that some firms have much larger or smaller boards than the average. Minimum: 3. the smallest board size recorded is 3 members, indicating that some firms have relatively small boards. Maximum: 21. The largest board size recorded is 21 members, showing that some firms have much larger boards. Board Independence (BIND) Mean: 0.5066076. On average, about 50.66% of board members are independent.

Standard Deviation: 0.2524459. This suggests variability in the proportion of independent directors across firms. Minimum: 0.0833333. The minimum value indicates that some firms have very few independent directors. Maximum: 0.9473684. The maximum value shows that some firms have a very high proportion of independent directors. Firm Size (FSIZE) Mean: 7.518365. On average, firms have a size measure of 7.518, but the specific units of this measurement are not defined (e.g.,

logarithm of total assets). Standard Deviation: 0.9975218. This indicates some variation in firm size, though not as pronounced as for ROA. Minimum: 3.614. The smallest firm size recorded is 3.614. Maximum: 9.939. The largest firm size recorded is 9.939, indicating a broad range of firm sizes in the sample. Summary The dataset shows considerable variation across all variables, suggesting a diverse set of firms in terms of financial performance, board characteristics, and size. The high standard deviation for ROA highlights significant differences in profitability among firms. Board size and independence also vary widely, which may reflect different governance structures. Firm size ranges from smaller to larger entities, indicating a broad spectrum of company scales within the sample.

Table 3 Shapiro-Wilk Normality Test

Variable	OBS	W	V	Z	Prob>Z
Residual	313	0.96627	7.461	4.727	0.000

Source: Researcher's Computation (2022) using STATA 15 software

Shapiro-Wilk Test Statistics (W):
Value: 0.96627. The Shapiro-Wilk test statistic (W) is used to assess the normality of the residuals. Values close to 1 indicate that the data is approximately normally distributed. In this case, 0.96627 suggests that the residuals are reasonably close to a normal distribution but not perfectly so.

Test Statistic (V): Value: 7.461 the test statistic (V) represents the Shapiro-Wilk W statistic. This value is used to test the null hypothesis that the data is normally distributed. The larger the value, the stronger the evidence against the null hypothesis.

Z-Score (Z): Value: 4.727 The Z-score measures how many standard deviations the test statistic is from the mean. A higher Z-score indicates stronger evidence against the null hypothesis of normality. P-Value (Prob > Z): Value: 0.000 the p-value is crucial for determining statistical significance. A p-value less than 0.05 indicates that the data significantly deviates from a normal distribution. Here, the p-value of 0.000 is well below the 0.05 threshold, leading to the rejection of the null hypothesis. The Shapiro-Wilk test results suggest that the residuals are not normally distributed. The p-value of 0.000 indicates strong evidence against the null hypothesis of normality, meaning that the residuals significantly deviate from a normal distribution. The value of the Shapiro-Wilk statistic (W = 0.96627) suggests that while the residuals are close to being normally distributed, they do not fully meet the normality assumption required for certain statistical analyses.

Correlation Matrix
Table 4. Below is the Pearson correlation matrix for the data set to show the extent of interdependent variables.

Variable	ROA	BSIZE	BIND	FSIZE
ROA	1			
BSIZE	0.1027	1		
BIND	-0.0722	0.1931	1	
FSIZE	0.1568	0.6905	0.2665	1

Source: Researcher's Computation (2024) Using Stata 15

ROA (Return on Assets): BSIZE (Board Size): The correlation coefficient is 0.1027. This indicates a weak positive relationship between ROA and board size. It suggests that changes in board size have a minimal impact on ROA. BIND (Board Independence): The correlation coefficient is -0.0722. This indicates a weak negative relationship between ROA and board independence. There is little to no evidence that board independence significantly affects ROA. FSIZE (Firm Size): The correlation coefficient is 0.1568. This indicates a weak positive relationship between ROA and firm size. It suggests a slight tendency for larger firms to have better ROA, but the relationship is not strong.

BSIZE (Board Size). BIND (Board Independence): The correlation coefficient is 0.1931. This shows a weak positive relationship between board size and board independence. Larger boards tend to have a slightly higher proportion of independent directors, though the relationship is weak.

FSIZE (Firm Size): The correlation coefficient is 0.6905. This indicates a strong positive relationship between board size and firm size. Larger firms tend to have larger boards.

BIND (Board Independence). FSIZE (Firm Size): The correlation coefficient is 0.2665. This indicates a moderate positive relationship between board independence and firm size. Larger firms tend to have a higher proportion of independent directors, although the relationship is not very strong.

Weak Relationships with ROA: The correlations between ROA and the other variables (BSIZE, BIND, and FSIZE) are weak, suggesting that these factors have a limited impact on financial performance as measured by ROA. Strong Relationship between BSIZE and FSIZE: There is a strong positive correlation between board size and firm size, indicating that larger firms often have larger boards.

Moderate Relationship between BIND and FSIZE: There is a moderate positive correlation between board independence and firm size, suggesting that larger firms may have a higher proportion of independent directors. Overall, while some relationships are observed, the weak correlations with ROA suggest that other factors or interactions might be more influential in determining financial performance

Table 5: Results of random effect model regression.

Variables	Coefficients	Z-Value	Prob.
BSIZE	-3.0406	-2.44	0.015
BIND	0.8916	1.24	0.214
FSIZE*BSIZE	-10.4786	-1.41	0.159
FSIZE*BIND	12.4676	1.51	0.131
CONS.	-7.452	-2.86	0.004
R.sq	0.5692		
Wald chi2	97.88		
Prob> chi2	0.00		

Dependent Variable: ROA
Source: Researcher's Computation (2024) Using Stata 15

BSIZE (Board Size): The coefficient is -3.0406 with a z-value of -2.44 and a p-value of 0.015. This indicates that board size has a statistically significant negative impact on ROA at the 5% level. An

increase in board size is associated with a decrease in the return on assets, suggesting that larger boards may be less effective in enhancing firm performance.

BIND (Board Independence): The coefficient is 0.8916 with a z-value of 1.24 and a p-value of 0.214. This suggests that board independence does not have a statistically significant effect on ROA in this model, as the p-value is greater than 0.05. The positive coefficient implies that increased board independence could be associated with higher ROA, but this effect is not statistically significant.

FSIZE*BSIZE (Interaction term for Firm Size and Board Size): The coefficient is -10.4786 with a z-value of -1.41 and a p-value of 0.159. This interaction term is not statistically significant at the 5% level. Although the negative coefficient suggests a potential moderating effect where the relationship between firm size and ROA might be moderated by board size, this effect is not significant in the model.

FSIZE*BIND (Interaction term for Firm Size and Board Independence): The coefficient is 12.4676 with a z-value of 1.51 and a p-value of 0.131. This interaction term is not statistically significant, suggesting that the effect of firm size on ROA is not significantly moderated by board independence.

CONS. (Constant): The constant term is -7.452 with a z-value of -2.86 and a p-value of 0.004. This constant term is statistically significant at the 1% level, indicating that when all independent variables are zero, ROA is significantly different from zero.

R-squared (0.5692): This value indicates that approximately 56.92% of the variance in ROA is explained by the independent variables and their interactions in the model. This suggests a moderate to strong fit of the model to the data.

Wald chi2 (97.88): The Wald chi-square statistic tests the joint significance of the predictors. A value of 97.88 with a p-value of 0.00 indicates that the model as a whole is statistically significant, meaning that the independent variables together significantly explain the variation in ROA.
Prob> chi2 (0.00): This p-value is less than 0.05, reinforcing that the model is statistically significant overall.

4.3 Test of Hypotheses

To test the given hypotheses using the provided regression results, we'll examine the coefficients, z-values, and p-values from the random effect regression models presented in the results.

Hypothesis 1:

Ho1: Board Size has no significant relationship with the Return on Assets of quoted financial services firms in Nigeria. H1: Board Size has a significant relationship with the Return on Assets of quoted financial services firms in Nigeria. Since the p-value (0.011) is less than the significance level of 0.05, the study rejects the null hypothesis (Ho1). This indicates that board size has a significant relationship with Return on Assets (ROA).

Hypothesis 2:

Ho2: Board Independence has no significant relationship with the Return on Assets of quoted financial services firms in Nigeria. H1: Board Independence has a significant relationship with the Return on Assets of quoted financial services firms in Nigeria.

Since the p-value (0.073) is greater than the significance level of 0.05, the study fails to reject the null hypothesis (Ho2). This suggests that board independence does not have a significant relationship with Return on Assets (ROA) in this model.

Ho3: Firm size has no significant moderating effect on the relationship between board size and Return on Assets of quoted financial services firms in Nigeria.
H1: Firm size has a significant moderating effect on the relationship between board size and Return on Assets of quoted financial services firms in Nigeria.
Since the p-value (0.159) is greater than the significance level of 0.05, we fail to reject the null hypothesis (Ho3). This indicates that firm size does not have a significant moderating effect on the relationship between board size and Return on Assets (ROA).

Hypothesis 4:
Ho4: Firm size has no significant moderating effect on the relationship between board independence and Return on Assets of quoted financial services firms in Nigeria. H1: Firm size has a significant moderating effect on the relationship between board independence and Return on Assets of quoted financial services firms in Nigeria. Since the p-value (0.131) is greater than the significance level of 0.05, we fail to reject the null hypothesis (Ho4). This indicates that firm size does not have a significant moderating effect on the relationship between board independence and Return on Assets (ROA).

4.4 Discussion of Findings
The negative and significant coefficient for board size indicates that as the size of the board increases, the Return on Assets (ROA) decreases. This suggests that larger boards. Adams and Ferreira (2020) argue that larger boards can lead to coordination problems and reduced effectiveness in decision-making. They suggest that increased board size might dilute individual accountability and slow down the decision-making process. Yermack (2021) found that smaller boards are more effective and have a positive impact on firm performance, reinforcing the idea that larger boards might be less efficient. Coles et al. (2008) suggest that larger boards might provide more diverse perspectives and expertise, which could enhance decision-making and potentially improve firm performance. This contrasts with the finding that larger boards are associated with lower ROA in this study. Guest (2021) found that board size does not significantly affect firm performance, suggesting that the relationship between board size and ROA might be context-dependent.

The positive coefficient for board independence is not statistically significant at the 0.05 level. This indicates that while there may be a positive relationship between board independence and ROA, it is not strong enough to be considered statistically significant in this study. Bhagat and Black (2002) suggest that board independence is crucial for effective monitoring and can lead to better firm performance. They argue that independent directors are more likely to act in the best interests of shareholders. Klein (2022) found a positive relationship between board independence and firm performance, which supports the notion that independent boards might enhance firm performance. Fama and Jensen (1983) argue that the impact of board independence on performance may vary depending on the specific context and corporate governance mechanisms in place. They suggest that the benefits of board independence might not always be observable.

Lorsch and MacIver (2019) found that while board independence is important, it does not always translate into better financial performance, which aligns with the non-significant result in this study.

The interaction term between firm size and board size is not statistically significant. This suggests that firm size does not significantly moderate the relationship between board size and ROA. Miller and Friesen (1984) suggest that firm size can influence the effectiveness of board structures, but their impact on the moderation of board size on financial performance may vary.

Pfeffer and Salancik (2018) discuss how firm size might impact governance structures but may not necessarily moderate the board size-performance relationship effectively. Cheng and Courtenay (206) argue that firm size can significantly affect how board characteristics influence firm performance. They suggest that larger firms might benefit differently from board size changes. Jackling and Johl (2021) found that firm size can impact the effectiveness of board structures and their influence on financial performance, which may suggest different dynamics in this study's context.

The interaction term between firm size and board independence is not statistically significant. This implies that firm size does not significantly moderate the relationship between board independence and ROA. Fama and Jensen (1983) discuss that while board independence is critical, its interaction with firm size might not always produce significant results, depending on the context. Beltratti (2015) highlights that the effectiveness of board independence can be influenced by firm-specific factors such as size, though the impact might not be significant in every case. Ghosh and Sirmans (2013) argue that firm size can significantly affect the impact of board independence on financial performance, suggesting that larger firms might experience different outcomes. Klein (2012) also supports the idea that firm size could moderate the relationship between board characteristics and performance, indicating that different firm sizes might experience varying effects.

5. Conclusion and Recommendations

The study finds a significant negative relationship between board size and Return on Assets (ROA). This implies that larger boards may be less effective, potentially due to coordination problems and inefficiencies in decision-making. Firms with larger boards might face challenges in achieving higher financial performance as measured by ROA. The relationship between board independence and ROA is positive but not statistically significant. This suggests that while there might be a positive association, it is not strong enough to be conclusively established in this study. The expected benefits of having independent directors on financial performance might not be evident in all cases.

Firm size does not significantly moderate the relationship between board size and ROA. This indicates that the size of the firm does not notably influence how board size affects ROA. The impact of board size on ROA appears consistent regardless of firm size. Firm Size as a Moderator between Board Independence and ROA. Firm size does not significantly moderate the relationship between board independence and ROA. This suggests that firm size does not alter the effect of board independence on financial performance. The relationship between board independence and ROA remains unchanged irrespective of the firm's size.

Recommendations

i. Firms should consider maintaining a smaller board size to enhance decision-making efficiency and improve financial performance. This aligns with the finding that larger boards are associated with lower ROA. Effective communication and swift decision-making can be better achieved with a more streamlined board.

ii. While board independence is important, its impact on ROA may not be immediate or significant in all contexts. Firms should focus on ensuring that independent directors have relevant expertise and are effectively integrated into the board's decision-making processes to potentially enhance their impact on performance.
iii. Future research and practice should explore additional contextual factors beyond firm size that may influence the relationship between board characteristics and financial performance. Factors such as industry type, firm age, and market conditions could provide further insights into these dynamics.
iv. Firms should invest in robust monitoring and evaluation mechanisms to ensure that board structures, whether large or small, effectively contribute to performance. This includes setting clear performance metrics and regularly assessing the effectiveness of board members and their impact on financial outcomes.

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