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Moderating Effect of Institutional Ownership on Board Attributes and Financial Performance of the Listed Manufacturing Firms in Nigeria

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ABSTRACT

This study examines the relationship between board attributes and financial performance of listed manufacturing firms in Nigeria, focusing particularly on how institutional ownership plays a moderating role. The board attributes examined include financial expertise, size, independence, and nationality. By analyzing panel data from 30 listed manufacturing firms over a decade, the study uses regression analysis to explore both direct and interaction effects. The findings reveal that board independence has a significant effect on financial performance, while board nationality demonstrates a positive and significant association. However, board financial expertise and board size do not exhibit significant direct effects. Regarding the moderating role, institutional ownership significantly strengthens the relationship between board independence and financial performance, suggesting a complementary governance effect. In contrast, institutional ownership appears to weaken the positive relationship between board nationality and performance, indicating a substitution effect. No significant moderating influence is found for board financial expertise and size. The study suggests that regulators and policymakers should promote greater involvement of institutional investors in the Nigerian capital market.

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1. INTRODUCTION

Financial performance represents a critical indicator of a firm's value and sustainability, particularly within capital market environments where investors continuously evaluate corporate outcomes. In stock markets, share price performance reflects investors' collective assessment of a firm's profitability, growth prospects, and governance quality (Shukeri, et al., 2022). Consequently, fluctuations in market value signal how effectively a company has deployed its resources over time. Since the fundamental objective of corporate financial management is the maximization of shareholder wealth, managerial decisions are often judged by their capacity to enhance long-term firm value (Widhiadnyana & Ratnadi, 2021). Decisions that increase the market price of shares are generally perceived as wealth-enhancing, whereas those that diminish value may attract investor dissatisfaction and capital withdrawal.

In the Nigerian capital market, uncertainty, macroeconomic volatility, and regulatory challenges heighten investors' sensitivity to firm performance. Rational investors whether individual or institutional seek to maximize returns while minimizing risk exposure (Dhuhri & Diantimala, 2020). This expectation places considerable responsibility on corporate boards and management to adopt governance structures capable of safeguarding shareholder interests and sustaining financial performance. Poor managerial decisions or ineffective oversight mechanisms may adversely affect firm value and dividend outcomes, thereby weakening investor confidence (Eklund & Wiberg, 2023).

Institutional ownership has increasingly been recognized as an important external governance mechanism capable of influencing firm outcomes. Institutional investors such as pension funds, mutual funds, insurance companies, and investment firms typically possess substantial financial resources, professional expertise, and monitoring capacity. Their presence in a firm's ownership structure may enhance managerial discipline and strategic oversight, thereby improving financial performance (Alshetwi, 2020). Through active monitoring, voting power, and engagement with management, institutional shareholders can mitigate agency conflicts and align managerial decisions with shareholder wealth maximization objectives. However, the effectiveness of this monitoring role may depend on how institutional ownership interacts with internal governance mechanisms, particularly board attributes.

In emerging economies such as Nigeria, corporate governance effectiveness remains a pressing concern. The Nigerian Exchange Group (NGX) operates within an environment characterized by regulatory evolution, ownership concentration, and economic instability. Timely and transparent financial reporting, as mandated by regulatory authorities, plays a crucial role in shaping investor perception and share price movements (Ibenta, 2005). Nevertheless, governance challenges persist, particularly within the manufacturing sector. Manufacturing firms constitute a vital segment of Nigeria's industrial and real sectors, contributing significantly to employment generation, value creation, and economic diversification. Despite their strategic importance, Nigerian manufacturing firms continue to face structural constraints, including foreign exchange volatility, infrastructural deficits, inflationary pressures, and declining investor confidence. Evidence from the Manufacturers' CEOs Confidence Index (MCCI) indicates sustained pessimism in recent years, reflecting broader concerns about sectoral performance and economic stability (Adekoya, 2021). These conditions underscore the need for effective governance frameworks capable of strengthening firm performance and restoring investor confidence.

Although prior studies have examined the direct relationship between institutional ownership and firm performance across various jurisdictions including Jordan, Turkey, Kenya, and Iran (Eklund & Wiberg, 2023; Mishra, 2020; Widhiadnyana & Ratnadi, 2021), empirical evidence remains inconclusive, particularly within emerging markets. In Nigeria and across the globe, existing studies have largely focused either on board attributes and firm performance or on ownership structure and sustainability reporting, often within specific sub-sectors such as consumer goods firms (Lu et al 2022; Yahaya e al 2024; Ma & Chen 2024; Bosun-Fakunle et al. 2023; Oyedokun et al., 2020). Limited attention has been given to the interactive effect of institutional ownership on the relationship between board attributes and financial performance, especially among listed manufacturing firms.

This gap is significant because institutional ownership may strengthen or weaken the effectiveness of board attributes in enhancing financial outcomes. By serving as an external monitoring force, institutional investors may amplify the impact of board oversight, independence, and expertise on firm performance. Conversely, passive or strategically aligned institutional investors may dilute governance effectiveness. Understanding this moderating role is therefore essential for a more comprehensive evaluation of corporate governance dynamics in Nigeria.

Accordingly, this study examines the effect of board attributes on the financial performance of listed manufacturing firms in Nigeria and investigates whether institutional ownership moderates this relationship. By integrating internal governance mechanisms with ownership structure dynamics, the study contributes to the growing body of literature on corporate governance in emerging markets and provides relevant insights for policymakers, regulators, and investors within the Nigerian capital market. The specific objectives are to examine the:

i. Effect of board attributes (board financial expertise, board size, board independence and board nationality) on the financial performance of listed manufacturing firms in Nigeria;
ii. Effect of Institution Ownership on the financial performance of listed manufacturing firms in Nigeria;
iii. Moderating effect of Institutional ownership on the board attributes and the financial performance of listed manufacturing firms in Nigeria.

2. LITERATURE REVIEW

This section reviewed the literature relevant to the subject under study. The review will also cover empirical issues and conceptual framework which includes: the concept of Board attributes, the concept of performance, and other empirical reviews based on the objectives of the study. Also, theories that will be backed up by the study will be highlighted.

Financial Performance

Venkatraman and Ramanujam (1986) describe financial performance as the financial results of a company, which are evident in profitability, sales growth, and return measures. These outcomes reflect the economic impact of managerial decisions. Essentially, financial performance stems from a company's operating and financing choices, and it's usually assessed through profitability ratios, earnings, and market valuation metrics (Brigham & Ehrhardt 2017). Additionally, Pandey (2015) characterizes financial performance as a company's capability to generate earnings and enhance shareholders' wealth by effectively managing its assets and liabilities. At its core, financial performance indicates how well a firm can generate profit and maximize shareholder value. It's often measured using accounting-based metrics like return on assets (ROA), return on equity (ROE), and profit margins, alongside market-based indicators such as Tobin's Q and the market-to-book ratio. While accounting measures provide insights into past

operational results, market-based measures offer a glimpse into investors' expectations regarding future performance and value creation (Almatari, et al 2014).

Board Attributes

Board attributes refer to the essential features that make up a board's structure and composition, which in turn affect corporate decision-making and the overall success of a firm. These attributes include structural aspects like the size of the board and the representation of non-executive members, as well as functional elements such as how often meetings are held and the expertise of the directors (Lu et al., 2022). According to Yahaya et al. (2024), these board attributes highlight the unique traits and quality indicators of the board of directors that influence its ability to carry out governance tasks effectively, including strategy development, management oversight, and safeguarding shareholder interests. Commonly examined attributes consist of size, independence, diversity, and the frequency of board meetings. However, it's important to note that a board's effectiveness isn't just about its presence; it's also shaped by specific characteristics like financial expertise, size, independence, and even the nationality of its members.

Board Financial Expertise

Financial literacy refers to the ability to effectively manage financial resources by applying knowledge and skills to keep a business thriving (Abdeldayem, 2019). It helps individuals make the best use of their resources. Choosing the right financial path is a critical decision for any business, as it can lead to long-term financial consequences. Navigating a company's financial landscape can be quite challenging, with a variety of complex financial needs to consider (Patrick, 2015). As a result, a significant barrier to the growth of sustainable medium enterprises in developing regions is the lack of knowledge, skills, attitudes, and awareness necessary to manage their finances in a robust, clear, and professional way (Adomako & Danso, 2019). Similarly, business owners in Ethiopia are facing financial literacy challenges that hinder their operations, just like many other developing countries (Leo & Antoine, 2019).

Board Size

The size of a board reflects how many directors are currently on it. The question of what the ideal board size should be is often debated, as both larger and smaller boards come with their own sets of advantages and disadvantages. A larger board can offer a broader range of perspectives and a wealth of expertise, but it might also lead to difficulties in making decisions, coordinating efforts, and communicating effectively (Dada 2023; Ugwu 2021). On the flip side, smaller boards can make decisions more quickly, but they might miss out on diverse viewpoints. Essentially, board size refers to the number of directors who are appointed or elected to guide the strategic direction, decision-making, and overall governance of a company (Umukoro et al., 2019). Figuring out the best board size requires a careful look at the unique needs and circumstances of each company. Factors such as the complexity of the industry, the stage of company development, the level of desired diversity, and adherence to relevant regulations and standards all play a role. Companies may also find it beneficial to regularly review and adjust their board size to better meet evolving needs and goals (Olayinka, 2021).

Board Independence

Board independence refers to the involvement of non-executive directors who are free from any ties or interests that might compromise their ability to monitor impartially. This quality is crucial (Yahaya et al., 2024). Independent directors play a vital role in ensuring objectivity and protecting the interests of shareholders, especially minority shareholders, which ultimately enhances the board's effectiveness (Sunday et al., 2023). The Nigerian Code of Corporate Governance (2018) suggests a balanced mix of executive directors, non-executive directors, and independent non-executive directors based on the company's operational scale and complexity. Executive directors serve as both employees and board members, juggling responsibilities within the management team and the board. Research shows that having an independent board can lead to better company performance and sustainability efforts (Adewale, 2020).

Board Nationality

Board nationality diversity refers to the proportion of foreign boards to the overall size of the board in an organization. Nationality diversity in this study refers to the foreign individual director being a member of the corporate board of a Firm. Due to the different backgrounds, Skills, Expertise, and Social networks that Nationality may provide, nationality diversity has the potential to increase board performance (Usman, et al., 2020). More so, Mohsni, et al., (2021), found that firms with foreign individual Directors make better cross–border acquisitions when the targets are from the home regions of foreign individual Directors. These Directors offer unique skills, knowledge, and insight into how best to cope with multiple counterparts as the Firm ventures into new or untested investment areas. Heterogeneity in both the firm's ownership base and its operations has a positive effect on the incidence of nationality diversity on board (Niyi & Dare, 2022). They believe that Directors with diverse nationality backgrounds are likely to provide better monitoring of firm managers and promote product or geographic diversification.

Institutional Ownership

Institutional ownership refers to the percentage of equity owned by financial institutions, corporate institutions, mutual funds, foreign financial institutions, foreign mutual funds, and other institutions. Demiralp, Ranjan, Frederik, and Venkat (2019) defined

institutional ownership as shares held by registered institutions such as insurance firms, investment companies, pension, funds, banks, and money managers. Furthermore, Institutional ownership refers to a situation where an institution, organization, or entity holds shares in a company, thereby playing a role in determining the company's direction and policies (Yahaya (2022). The level of ownership indicates the proportion of shares held by institutional investors, such as pension funds, insurance companies, banks, or mutual funds. With significant ownership, the institution can oversee the company's performance and management behavior, to protect and optimize their investment interests within the company (Nurulrahmatiah et al., 2020).

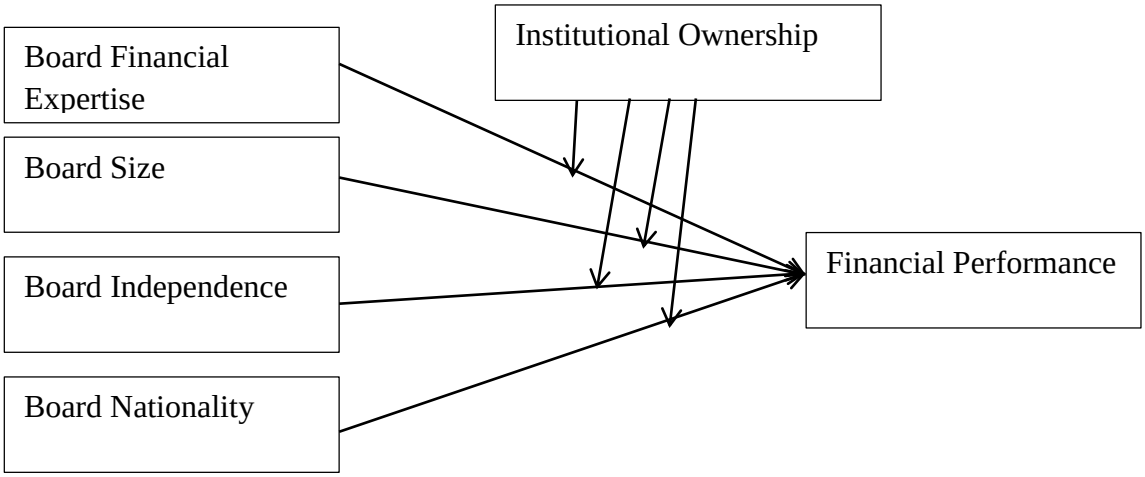

Figure 1: Conceptual Framework

Empirical Review and Hypotheses Development

Board Financial Expertise and Financial Performance

Board expertise refers to the knowledge, skills, and professional background of directors, particularly in areas such as finance, accounting, law, and industry-specific operations. Directors with relevant expertise can better evaluate financial reports, assess strategic opportunities, manage risks, and provide informed advice to management. Resource Dependence Theory emphasizes that expertise enables boards to access valuable knowledge and resources, enhancing firm performance (Pfeffer & Salancik, 1978). Empirical studies suggest that board expertise positively influences financial performance. Omotoye et al. (2021) highlighted that boards with higher levels of financial and managerial expertise positively affect market performance in Nigerian banks. Similarly, Aliyu et al. (2021) and Musa et al. (2020) report that firms benefit when boards possess directors with relevant financial and industry knowledge, although the magnitude of the effect can vary depending on firm size and ownership structure. The presence of expertise allows boards to make informed decisions, improve risk management, and enhance strategic oversight, all of which translate into improved financial outcomes.

Based on the above empirical evidence and theoretical underpinnings, this study hypothesizes that:

Ho_1: Board financial expertise has no significant effect on financial performance of listed manufacturing firms in Nigeria.

Board Size and Financial Performance

Empirical studies on the relationship between board size and financial performance present mixed but largely negative evidence regarding the impact of board size on firm performance. Omotoye et al. (2021) examined twelve listed deposit money banks between 2013 and 2017 and found a significant negative relationship between board size and market performance, measured by Tobin's Q. Similarly, Farouk and Abdullahi (2020) reported that board size negatively and significantly influenced financial performance in listed banks, using Net Interest Margin as a performance measure. Musa et al. (2020) and Oyedokun (2019) also observed a negative relationship between board size and performance using ROA and ROCE as dependent variables though the results were not statistically significant. Dobbin and Jung (2022) and Dakhlallh and Dakkhlallh (2023) corroborated these findings, reporting that larger boards reduced financial performance in Nigerian financial institutions, albeit with varying significance levels. In contrast, Aliyu et al. (2021) found that larger boards had a positive and significant effect on firm performance in a sample of Nigerian firms, though gender diversity showed no significant impact. Based on the above empirical evidence and theoretical underpinnings, this study hypothesizes that:

Ho_2: Board size has no significant effect on financial performance of listed manufacturing firms in Nigeria.

Board Independence and Financial Performance

Board independence, defined as the proportion of non-executive or independent directors on a firm's board, is widely recognized as a key corporate governance mechanism that can enhance monitoring, reduce managerial opportunism, and improve financial performance (Fama & Jensen, 1983). Empirical evidence in Nigeria suggests that independent directors generally contribute

positively to firm performance. For instance, Alekiri, et al (2023) found a significant positive relationship between board independence and return on assets (ROA) in consumer goods firms. ahaya (2025) analyzed 153 publicly traded firms from 2014 to 2023. Using a random effects model (REM) regression, the study found that higher proportions of independent directors positively influence financial performance, with firms exhibiting stronger return on assets (ROA) outcomes. In contrast, Aloamaka and Ononye (2025) examined 46 quoted manufacturing firms in Nigeria between 2013 and 2022 using fixed effects, random effects, and least squares dummy variable models. Inferential analysis revealed no statistically significant effect on earnings per share (EPS) and a negative relationship with ROA under the fixed effects model, suggesting that structural compliance with independence norms does not necessarily translate into improved performance. More so, Ngo et al. (2023) investigated Vietnamese listed firms between 2016 and 2020, incorporating market competition as a moderating factor. Using pooled OLS, FEM, REM, and GMM estimations, the study found that non-executive board members positively affect financial performance, though the strength of this effect diminishes in highly competitive markets. Based on the above empirical evidence and theoretical underpinnings, this study hypothesizes that:
Ho_3: Board Independence has no significant effect on financial performance of listed manufacturing firms in Nigeria.

Board Nationality and Financial Performance

Empirical evidence on the effect of board nationality on financial performance presents mixed results across different contexts. Ogbeide and Adediran (2023) investigated the relationship between board nationality and the financial performance of listed insurance firms using a sample of 42 firms spanning 2010 to 2021. Employing descriptive statistics and panel ordinary least squares (POLS) estimation after robustness testing, the study found that board nationality exerted a negative and non-significant impact on firm financial performance, suggesting that the mere presence of foreign directors does. Shatnawi et al. (2022) examined Australian listed firms over the period 2010 to 2020 and reported a significant positive relationship between board nationality diversity and corporate social responsibility (CSR) performance, including environmental and social sub-dimensions. Their findings, derived from fixed-effect, IV-GMM, and dynamic panel model estimations, highlight that nationality diversity enhances performance outcomes in highly regulated sectors, Similarly, Nobert et al. (2018) studied the effect of board diversity on financial performance among 33 non-financial firms listed on the Nairobi Securities Exchange from 2012 to 2017. Using regression analysis, the study revealed a strong positive and significant correlation between board diversity and firm performance, with higher diversity associated with increased sales turnover.
Based on the above empirical evidence and theoretical underpinnings, this study hypothesizes that:
Ho_4: Board nationality has no significant effect on financial performance of listed manufacturing firms in Nigeria.

Institutional Ownership as a Moderator

Institutional ownership, defined as the proportion of a company's shares held by institutional investors such as pension funds, mutual funds, insurance companies, and investment firms, is widely recognized as a key mechanism for monitoring managerial decisions and reducing agency conflicts (Shleifer & Vishny, 1986). The presence of institutional investors can strengthen board oversight, influence strategic decision-making, and potentially enhance firm performance by promoting effective governance practices.
Recent empirical evidence suggests that institutional ownership may also moderate the relationship between board attributes and financial performance, either amplifying or constraining the effect depending on the institutional context and investor orientation. Yahaya (2025) examined the effect of institutional ownership on the financial performance of 150 publicly traded firms between 2014 and 2023 using panel data and a random effects model (REM). The study reported a positive and significant relationship between institutional ownership and return on assets (ROA), highlighting the role of institutional investors in monitoring managerial decisions and improving firm outcomes. Similarly, Abedin et al. (2022) employed Ordinary Least Squares (OLS) on a sample of 180 listed firms from 2008 to 2018 and found that both domestic and foreign institutional investors positively affected financial performance, measured by Tobin's Q and ROA, consistent with the "active monitoring" hypothesis. Conversely, Boudermine and Keddam (2022), investigating 15 French firms listed on the CAC40 between 2015 and 2022, found that higher percentages of ownership by both domestic and foreign institutional investors were associated with a statistically significant negative effect on firm performance, suggesting that institutional ownership can sometimes exert pressure for short-term gains or may be ineffective in certain governance contexts. Chen et al. (2022) analyzed data from 2007 to 2020 and found that a higher proportion of institutional investors generally improved firm performance, supporting the view that institutional involvement can enhance operational efficiency and value creation in emerging markets.
Ho_5: Institutional ownership does not moderate the relationship between board financial expertise and financial performance of listed manufacturing companies in Nigeria.
Ho_6: Institutional ownership does not moderate the relationship between board size and financial performance of listed manufacturing companies in Nigeria.
Ho_7: Institutional ownership does not moderate the relationship between board independence and financial performance of listed manufacturing companies in Nigeria.
Ho_5: Institutional ownership does not moderate the relationship between board nationality and financial performance of listed manufacturing companies in Nigeria.

3. METHODOLOGY

This study examines the effect board attributes and financial performance of the listed manufacturing firms in Nigeria: Moderating effect of institutional ownership using ex-post facto research design. The study population consists of listed manufacturing firms. Thirty (30) listed manufacturing firms were selected using the purposive sampling technique in the period 2015 to 2024. This represents about three hundred firm- annual observations. The descriptive statistics and panel least squares (POLS) were employed to analyze the data. The robustness tests were also carried out using STATA 13 software. The model used in the study is adapted from the studies of Omotola and Yahaya (2024). The models were modified, stated in a stochastic form as follow

$ROAit = \alpha_O + \beta_1 BSZ_{it} + \beta_2 BFEXP_{it} + \beta_3 BIN_{it} + \beta_4 BNT_{it} + \beta_5 IOWN_{it} + \varepsilon it$ ---------- (1)

$ROAit = \alpha + \beta_1 BSZ_{it} + \beta_2 BFEXP_{it} + \beta_3 BIN_{it} + \beta_4 BNT_{it} + \beta_5 IOWN_{it} + \beta_6 BSZ_{it} * IOWN + \beta_7 BFEXP_{it} * IOWN + \beta_8 BIN_{it} * IOWN + \beta_9 BNT_{it} * IOWN + \beta_{10} IOWN_{it} * IOWN + \varepsilon it$ ----(2)

Where: ROAit = Return on assets of firm I in year t, $\beta_1 BSZ_{it}$ = Board size, $\beta_2 BFEXP_{it}$ = Board Financial Expert, $\beta_3 BNT_{it}$ = Board Nationality, $\beta_4 BIN_{it}$ = Board independence, $\beta_5 IOWN$= Institutional Ownership. The moderating variable of the study is Institutional ownership proxied by percentage of institutional ownership.

Table 1: Measurement of the Variables

S/N	Variable	Type	Measurement	Source
1	ROA	Return on Asset (Dep)	PBIT/TotalAsset	Abdulwahab (2022)
2	BOZ	Board Size (Indp)	Total number of directors on the board	Omotoye et al. (2021)
3	BEXP	Board Expertise (Indp)	Percentage of directors with higher degrees/relevant professional certifications	Aliyu et al. (2021)
4	BIND	Board Independence (Indp)	Percentage of Independent Directors to Board size	Alekiri, et al (2023
5	BND	Board Nationality (Indp)	Number of foreign members/total number of boards	Ogbeide and Adediran (2023)
6	IOWN	Institutional Ownership (Mod)	Number of shares owned by institutions to total number of share	Yahaya (2025)

Source: Generated by the Author

4. RESULT AND DISCUSSION

This sub-section involves the analysis of the data, interpretation and discussion of results obtained from the estimation methods employed.

Table 2: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
ROA	300	0.5589	0.0521	0.0356	0.2076	0.9486	3.4528
BFE	300	0.3016	0.1201	0.125	0.6667	1.1670	4.3308
BSZ	300	10.71	3.2866	6	19	0.7417	2.4986
BIN	300	0.6261	0.1160	0.35	0.9	0.4413	2.6098
BNT	300	1.1767	1.3803	0	5	0.9955	3.1211
INO	300	0.1556	0.1718	0	0.6565	1.2010	3.5578

Source: Stata 14 output based on data extracted from listed manufacturing firms

Based on the descriptive statistics analysis as presented in Table 2, it can be seen that the mean value for return on asset (ROA) is 0.0559 within the listed Manufacturing firms in Nigeria. The ROA has a minimum value of -0.0356, maximum value of 0.2076 and a standard deviation of 0.0521 indicating that there is narrow variation between listed Manufacturing firms in regards to ROA. Moreover, the mean value for board financial expertise (BFE) approach is 0.3016, minimum of 0.125, maximum of 0.6667, and a standard deviation of 0.1201. Considering board size (BSZ) approach, the mean value is 10.71, minimum is 6, maximum is 19, and standard deviation stood at 3.2866. However, the average value for board independence (BIN) is 0.6261, minimum and maximum values are 0.35 and 0.9 respectively, while standard deviation is 0.1160. The average value for board nationality (BNT) is 1.1767, minimum and maximum values are 0 and 5 respectively, while standard deviation is 1.3803. Considering the moderating variable, the descriptive statistics shows that institutional ownership (INO) has a mean value of 0.1556, a minimum of 0, a maximum of 0.6565, and a standard deviation of 0.1718 indicating that there is narrow variation between sampled listed manufacturing firms in regard to institutional ownership.

Another important thing to consider is the statistics for Skewness and Kurtosis for the purpose of testing normality of the data distribution. According to West, Finch, and Curran (1995), skewness and kurtosis values should be less than two (2) and less than seven (7) respectively. Therefore, all the variables in this study are assumed to be normally distributed since the values of skewness ranges 0.4413 to 1.4776, while kurtosis value ranges from 2.4986 to 4.3308 as shown in Table 2. Therefore, this indicates that the data are normally distributed.

Table 3: Diagnostic Tests for Multiple Regression Assumptions

Variance	**VIF**	**1/VIF**
BSZ	1.58	0.63
BIN	1.49	0.67
BFE	1.44	0.69
BNT	1.40	0.71
Heteroskedasticity Test	**Chi2 (1)**	**Prob > Chi2**
	45.65	0.0000
Test for Model Specification	**Coefficient**	**Sig**
_hatsq	-7.0527	0.288

Source: Researchers' Computation from STATA 14

The tolerance and Variance Inflation Factor (VIF) values for the independent variables are presented in Table 3. The results indicate no evidence of multicollinearity. Specifically, tolerance values range from 0.63 to 0.77, all well above the minimum acceptable threshold of 0.10 (Hair et al., 2014; Pallant, 2005). Similarly, the VIF values range from 1.30 to 1.58, which are substantially below the critical value of 10. These results confirm that multicollinearity is not a concern in this analysis. To detect heteroscedasticity in this study, the Breusch-Pagan/Cook-Weisberg test is used which gives the chi-square value and its probability at a 5% significance level. Consequently, the result from Table 3 indicates that the model has a p-value of 0.0000 which is significant at the 0.01 level, and thus, the model rejected the null hypothesis as there is an issue of heteroscedasticity. Moreover, the outcome indicates that the variance is widely spread which needs to be corrected. Therefore, in handling the problem of heteroscedasticity, the Panel Corrected Standard Errors (PCSEs) was employed as suggested and used by previous scholars (for instance, Bailey & Katz, 2011; Reed & Ye, 2009). Finally, based on the results of link tests for model specification presented in Table 4, the null hypotheses which assume that the model is correctly specified was not rejected because the p-values of _hatsq is not significant (p>0.05), hence, the regression models is said to be correctly specified.

Table 4: Regression Result

	Direct Effect			**Indirect Effect**		
Variable	**Coef.**	**T**	**p>t**	**Coef**	**T**	**p>t**
Constant	0.1324	4.83	0.000***	0.1263	3.43	0.001
Independent:						
BFE	0.0389	1.05	0.294			
BSZ	-0.0019	-1.55	0.122			
BIN	-0.0833	-2.01	0.044**			
BNT	0.0067	-4.55	0.000***			
INO	-0.0533	-1.73	0.083*			
BFExINO				-0.4020	-1.48	0.138
BSZxINO				-0.0039	-0.66	0.511
BINxINO				0.2702	1.82	0.052
BNTxINO				-0.0174	-1.93	0.049
Obs		300		300		
No. of groups		30		30		
R^2		0.2394		0.2578		
Wald chi2 (5)		108.51		77.29		
Prob>chi2		0.0000		0.000		

Source: Researchers' Computation from STATA 14

The result of panel corrected standard errors regression from Table 4 shows that board financial expertise (BFE) has an insignificant positive effect on return on asset (ROA) (β= 1.05; p>0.10). This indicates that when board financial expertise increases, it will not result in any significant increase or decrease in the return on asset of listed manufacturing firms in Nigeria. The findings is contrary

to Omotoye et al. (2021) who found that boards with higher levels of financial and managerial expertise positively affect market performance. This finding support the null hypothesis one which states that board financial expertise does not have a significant impact on the financial performance of listed manufacturing firms in Nigeria. Hence, hypothesis one is accepted

However, the same regression result from Table 4 shows that board size (BSZ) has an insignificant positive effect on return on asset (ROA) (β=-1.55; p>0.10). This portrays that any increase in the board size of listed manufacturing firms in Nigeria will not result in any significance increase or decrease in their return on asset (ROA). The finding is in line with Dobbin and Jung (2022) and Dakhlallh and Dakkhlallh (2023), who reported that larger boards reduced financial performance in Nigerian financial institutions, albeit with varying significance levels. This finding does support the null hypothesis two which states that board size does not have a significant impact on the financial performance of listed manufacturing firms in Nigeria. Hence, hypothesis two is accepted.

In addition, the same regression result from Table 4 shows that board independence (BIN) has a significant negative effect on return on asset (ROA) at a 5% statistical significance level (β=-2.01; p<0.05). This indicates that any increase in the board independence of listed manufacturing firms in Nigeria may result in a decrease in their return on asset (ROA) by 201%. This finding is contrary to Aloamaka and Ononye (2025) who found negative relationship between board independence and financial performance but in line with Alekiri et al (2023). This finding does not support the null hypothesis three of this study which states that; board independence does not have a significant impact on the financial performance of listed manufacturing firms in Nigeria. Therefore, hypothesis three is rejected.

Moreover, the same regression result from Table 4 shows that board nationality (BNT) has a significant negative effect on return on asset (ROA) at a 1% statistical significance level (β=-4.55; p<0.01). This indicates that any increase in foreign nationality on the board of listed manufacturing firms in Nigeria may result in a decrease in their return on asset (ROA) by 455%. The finding is in line with those of Usman, et al., (2020) and Mohsni, et al., (2021). This finding fail to support the null hypothesis four which states that board nationality does not have a significant impact on the financial performance of listed manufacturing firms in Nigeria. Hence, hypothesis four is rejected.

Table 4 also shows that the interaction between board financial expertise and institutional ownership is negative but statistically insignificant ($\beta = -0.4020$, $p = 0.138$). This suggests that institutional ownership does not significantly condition the relationship between board financial expertise and financial performance. From a theoretical standpoint, this finding implies that board financial expertise operates largely through an advisory or resource-provision function rather than a monitoring function. Consistent with The External Control of Organizations, financial expertise represents a board resource whose effectiveness may not depend on ownership concentration. Similarly, the interaction between board size and institutional ownership is statistically insignificant ($\beta = -0.0039$, $p = 0.511$), indicating the absence of a moderating effect. This finding suggests that institutional investors neither strengthen nor weaken the structural influence of board size on firm performance.

However, the interaction term between board independence and institutional ownership is positive and significant at 10% ($\beta = 0.2702$, $p = 0.052$). Given that board independence exhibits a negative direct effect, the positive interaction term indicates that institutional ownership mitigates this adverse relationship. This result supports the monitoring argument advanced in Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. Agency theory posits that effective governance arises when multiple monitoring mechanisms operate jointly to reduce agency conflicts. The evidence therefore suggests a complementary relationship between institutional ownership and board independence; whereby institutional investors enhance the monitoring effectiveness of independent directors.

Conversely, the interaction between board nationality and institutional ownership is negative and statistically significant ($\beta = -0.0174$, $p = 0.049$). Although board nationality is positively associated with financial performance, the negative interaction indicates that institutional ownership weakens this positive effect. This finding is consistent with the governance substitution hypothesis, which argues that the presence of one strong governance mechanism reduces the marginal contribution of another. In this case, institutional investors may substitute for the strategic and monitoring benefits provided by nationality diversity on the board.

5. CONCLUSION AND RECOMMENDATIONS

This study examined the relationship between board attributes and financial performance of listed manufacturing firms in Nigeria, with particular emphasis on the moderating role of institutional ownership. The results reveal that board independence significantly influences financial performance, while board nationality demonstrates a positive association. In contrast, board financial expertise and board size do not exhibit statistically significant direct effects. More importantly, the study provides evidence of a moderating role for institutional ownership. Institutional ownership strengthens the association between board independence. However, institutional ownership weakens the positive effect of board nationality, supporting the governance substitution hypothesis. No significant moderating effect is observed for board financial expertise and board size.

Based on the findings, the study offers the following recommendations:

i. Regulators and policymakers should encourage greater participation of institutional investors in the Nigerian capital market. Institutional ownership enhances the effectiveness of independent directors and strengthens corporate monitoring mechanisms.

ii. Firms should not only increase the proportion of independent directors but also ensure that such directors are empowered and supported. The complementary effect observed suggests that independent directors perform more effectively in environments with strong institutional oversight.

iii. While board nationality diversity contributes positively to performance, firms with high institutional ownership should carefully evaluate the marginal benefits of additional nationality diversity. Governance mechanisms should be structured to avoid redundancy and inefficiencies arising from overlapping monitoring roles.

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