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FINANCIAL INCLUSION AND FINANCIAL PERFORMANCE: EXAMINING THE ROLE OF CORRUPTION AND RULE OF LAW IN NIGERIA

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Abstract

Financial inclusion is vital for economic growth by providing affordable financial services to all. In Nigeria, disparities in financial inclusion persist due to low level of institutional. This study explores the relationship between financial inclusion and financial performance using institutional quality moderating variables. Analyzing data from 13 banks listed on the Nigerian Stock Exchange using ARDL bounds testing approach. The results show that ATM as a measure of financial inclusion improves return on equity while CBB as a measure of financial inclusion does not enhance financial performance. The study also found that rule of law contributes to ROA in the short run while control of corruption significantly enhances ROE in the long-run. The interaction of corruption and ATM enhances ROE in the short run. However, the interaction CBB and rule of law promotes the ROA in the long run. The study therefore, recommended policy for addressing corruption, strengthening legal institutions, and promoting inclusive financial practices to boost financial performance in Nigeria.

Keywords: Financial inclusion, financial performance, corruption, rule of law, Nigeria

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1 Introduction

Financial performance is a crucial indicator of the health and stability of any economy. It encompasses various aspects, including profitability, revenue growth, cost management, and the overall financial health of businesses and financial institutions. Studies have shown that high financial performance not only attracts investment but also enhances a company's reputation and market position (Beck *et al.*, 2010). Numerous factors, including market dynamics, financial inclusion, regulatory frameworks, and macroeconomic conditions, influence the financial performance of banks globally. The banking sector plays a crucial role in economic growth, yet it faces unique challenges such as limited financial infrastructure, regulatory inefficiencies, and socio-economic disparities.

Financial performance of banks across countries has shown considerable variability, with some countries experiencing robust growth while others lag due to structural and policy-related issues (Beck *et al.*, 2011). In Nigeria, the financial sector also plays a crucial role in mobilising savings, providing credit, and facilitating investments (Beck *et al.*, 2010). Improved financial performance can enhance the capacity of financial institutions to support economic activities, contributing to higher economic growth and poverty reduction. Financial inclusion is also a vital component of economic growth, particularly in developing countries such as Nigeria. It involves the provision of affordable financial services to all individuals and businesses, irrespective of their net worth or size. Financial inclusion aims to integrate more people into the financial system, enabling them to contribute to and benefit from economic growth (World Bank, 2023).

Despite the Nigerian government's efforts to enhance financial inclusion, significant challenges remain, such as pervasive corruption and weak rule of law. These factors complicate the relationship between financial inclusion and financial performance, necessitating a comprehensive examination of their interplay. Corruption is a significant impediment to economic development in Nigeria, affecting various sectors, including finance. Transparency International's Corruption Perceptions Index consistently ranks Nigeria among countries with high levels of perceived corruption (Transparency International, 2023). Corruption in the financial sector manifests in various forms, such as bribery, embezzlement, and fraud, which

undermine financial stability and performance. High levels of corruption increase transaction costs, create uncertainties, and deter investment, both domestic and foreign (Mauro, 1995). Addressing corruption is crucial for improving the effectiveness of financial inclusion initiatives and enhancing financial performance. In a similar way, the rule of law, which is defined as the principle that all individuals and institutions are accountable to laws that are fairly applied and enforced, is fundamental for economic stability and growth. A strong rule of law ensures property rights, enforces contracts, and maintains order, providing a predictable legal framework within which economic activities can thrive (North, 1990). Corruption is a rather serious problem in developing countries, mainly, due to a lack of legal independence, inefficient prudential regulations, and weak internal control of banks (Asteriou *et al.*, 2021; Ghardallou, 2022), as well as the strong state presence in the bank ownership structure. Corruption causes negative effects on the financial performance of any organisation (Van Vu et *al.*, 2018). There is no consensus in the literature on the effect of corruption on economic outcomes, though several studies found an adverse relationship between corruption and financial performance (Ajide, 2020; Ajide & Olayiwola, 2021; Ghardallou, 2022; Setor *et al.*, 2021; Son *et al.*, 2020; Trabelsi & Trabelsi, 2020). Also, other studies such as Thus, Bougatef (2015), Mohammad *et al.*, (2019), and Toader *et al.*, (2018) report the positive effects of corruption on bank profitability and stability in their studies. Furthermore, studies have shown that strengthening the rule of law is essential for creating a conducive environment for financial activities and ensuring the effective implementation of financial inclusion initiatives (North, 1990; La Porta *et al.*, 1998; Acemoglu, & Robinson, 2012). Moreso, Nigeria has been ranked among the most unbanked countries in the world (Global Finance, 2021). The country has also been ranked among countries with weak levels of institutions. It is not clear whether corruption and rule of law could positively or adversely moderate the relationship between financial inclusion and financial performance in Nigeria. This study diverges from the recent empirical study of Ashiru *et al.*, (2023), which focused on the impact of financial innovation on bank financial performance in Nigeria, but did not empirically explore how institutional quality moderates the relationship between financial inclusion and financial performance within the context of

deposit money banks in Nigeria. This study contributes to the literature by deepening the understanding of the complex interplay between financial inclusion, institutional quality, and financial performance. By integrating measures of institutional quality such as corruption control and the rule of law, this research underscores the varied effects these factors have on both asset-based and equity-based profitability metrics. The objective of this study is to examine the role of institutional quality in moderating the impact of financial inclusion on financial performance. In addition to the introductory section, Section 2 reviews relevant studies, while Section 3 presents the methods and materials employed in the study. Section 4 presents and discusses the study's findings, while Section 5 provides the concluding remarks

2 Literature Review

The section reviewed relevant existing literature on the relationship between financial inclusion and financial performance. These involve the conceptual, theoretical, and empirical review of the subject matter.

2.1 Conceptual Review

Financial inclusion involves making financial services accessible, usable, and available to all individuals and businesses, particularly those underserved by traditional banking systems. It is crucial for economic growth as it integrates excluded groups into the formal financial system, promoting efficient resource allocation and economic development (Hussain *et al.*, 2023). However, its effectiveness is significantly influenced by institutional quality, especially in developing economies such as Nigeria, where corruption and the rule of law are critical factors. Corruption, defined as the abuse of power for private gain through activities such as bribery, embezzlement, fraud, and nepotism, undermines economic development, social equity, and public trust. It distorts markets, deters investment, and increases business costs, hindering economic growth and exacerbating inequality (Rose-Ackerman & Palifka, 2016). The rule of law, which ensures that all members of society, including government officials, are subject to publicly disclosed legal codes and processes, is essential for protecting human rights, reducing corruption, and creating a stable legal environment for businesses (Tamanaha, 2012).

Financial performance is a crucial indicator of the health and stability of an economy. It encompasses various aspects, including profitability, revenue growth, cost management, and the overall financial health of businesses and financial institutions. The importance of financial performance to economic growth and development is multifaceted and profound, impacting various sectors and facets of society. The significance of financial performance extends beyond internal management to external stakeholders, including investors, creditors, and regulatory bodies. High financial performance not only attracts investment but also enhances a company's reputation and market position. According to recent studies, organisations that consistently demonstrate strong financial performance are better positioned to weather economic downturns and capitalise on growth opportunities (Kaplan & Norton, 2020).

2.2 Theoretical Review

Financial intermediation theory argued that financial institutions act as intermediaries between savers and borrowers, facilitating fund flow within the economy. Increased financial inclusion expands their customer base, enhancing their capacity to mobilise savings and extend credit, leading to improved financial performance (Diamond, 1984). However, the positive impact is contingent on institutional quality; high corruption and weak rule of law can erode, reducing the effectiveness of financial inclusion initiatives (Acemoglu & Robinson, 2012). Another relevant theory is the financial deepening hypothesis, which posits that a more inclusive financial system leads to broader economic benefits, including higher economic growth and reduced income inequality (King & Levine, 1993). By integrating previously excluded individuals and businesses into the formal financial system, financial inclusion promotes more efficient allocation of resources and fosters economic development. Moreover, the theory of economic institutions posited that the effectiveness of economic policies, including financial inclusion, depends on the quality of institutions. High corruption and weak rule of law can undermine institutional quality, reducing the positive impact of financial inclusion on financial performance (North, 1990; Acemoglu & Robinson, 2012). This study is hinged on the theory of economic institutions, which advocates for strong quality institutions and regulatory mechanisms

that would ensure that the gains that have been attributed to financial inclusion translate to enhanced financial performance.

2.3 Empirical Review

Empirical studies provide mixed evidence on the relationship between financial inclusion and financial performance. Some studies suggest that financial inclusion positively impacts economic growth and financial stability. For example, Andrianaivo and Kpodar (2011) examined the impact of information and communication technologies (ICT), especially mobile phone rollout, on economic growth in a sample of African countries from 1988 to 2007. The study addressed any endogeneity issues by using the System Generalised Method of Moment (GMM) estimator. Financial inclusion is captured by variables measuring access to financial services, such as the number of deposits or loans per head, compiled by Beck, Demirguc-Kunt, and Martinez Peria (2007) and the Consultative Group to Assist the Poor (CGAP, 2009). The study found that increased financial inclusion positively impacts economic growth in African countries. Sahay *et al.* (2015) examined the linkages of financial inclusion with economic growth, financial and economic stability, and inequality. The study adopted the use of systematic literature review by synthesising previous relevant existing studies on the subject matter. The study found that financial inclusion promotes financial stability by diversifying the customer base and reducing reliance on large, potentially unstable depositors. However, other studies highlight potential risks if not managed properly. Beck, Demirgüç-Kunt, and Levine (2007) study access to financial services varies sharply around the world. This study adopted an analytical approach, including case-study analyses of specific policies and interventions, as well as systematic analyses of extensive cross-country and microdata sets. The study found that rapid expansion of financial services to unbanked populations can lead to increased risks, potentially exacerbating financial instability and leading to poor financial performance. Corruption consistently negatively impacts financial performance by increasing transaction costs and creating uncertainties (Mauro, 1995). The study analyses a newly assembled data set consisting of

subjective corruption, the amounts of red tapes, the efficiency of the judiciary system, and various categories of political stability for a cross section of countries. The study found that corruption reduces investment and economic growth by increasing transaction costs and creating uncertainties. Barth, Caprio, and Levine (2004) the study examines: (i) regulatory restrictions on bank activities and the mixing of banking and commerce; (ii) regulations on domestic and foreign bank entry; (iii) regulations on capital adequacy; (iv) deposit insurance system design features; (v) supervisory power, independence, and resources; (vi) loan classification stringency, provisioning standards, and diversification guidelines; (vii) regulations fostering information disclosure and private-sector monitoring of banks; and (viii) government ownership. The study uses our new database on bank regulation and supervision in 107 countries to assess the relationship between specific regulatory and supervisory practices and banking-sector development, efficiency, and fragility. The findings showed that corruption is associated with weaker banking regulation and supervision, leading to poorer financial performance. Similarly, Allen *et al.,* (2014) this study tries to understand the individual and country characteristics associated with the use of formal accounts and what policies are effective among those most likely to be excluded: the poor and rural residents. The study employed a systematic review of the existing literature. The study found that the benefits of financial inclusion are significantly reduced in countries with high levels of corruption. Jungo *et al.,* (2023) examined the impact of financial inclusion and financial innovation on corruption, considering the moderating role of education, as well as identify the specific modality of digital inclusion and payments that contribute to corruption reduction. The study uses a representative sample consisting of 46 African countries in three different years: 2011, 2014, and 2017. On the data, feasible generalised least squares (FGLS), instrumental variables—two-stage least squares (IV-2SLS), and two-stage generalised method of moments (IV-2GMM) model estimation methods were employed. The study found that corruption undermines the effectiveness of financial inclusion initiatives by diverting resources away from productive uses, leading to suboptimal financial performance. Studies also confirm that a

strong rule of law enhances financial performance by ensuring property rights, enforcing contracts, and reducing transaction costs.

Hussain *et al.*, (2023), the study examined the role of financial inclusion and ICT for sustainable economic development in developing countries. The study adopted an extended sample of 110 developing countries from 2004 to 2020. Through principal component analysis, we formulate composite financial inclusion and ICT indicators based on broader attributes. We employed Driscoll–Kraay standard errors (D-K), generalised linear model (GLM), feasible general least squares (FGLS), and difference GMM to obtain compressive and consistent regression coefficients without the need to address temporal dependence and heteroscedasticity. The study found a positive impact of financial inclusion on economic growth is contingent upon the quality of legal institutions. This implies that countries with strong rule of law exhibit higher levels of financial inclusion and better financial performance compared to those with weak legal institutions.

H1: Corruption does not significantly enhance the effect of financial inclusion on financial performance

Existing studies in the literature have shown that corruption can create barriers to accessing financial services, especially for marginalised groups. This can limit the reach of financial inclusion efforts, reducing their overall effectiveness (Allen *et al.,* 2016). Similarly, the study by Park & Mercado (2018) opined that corruption can lead to increased transaction costs and inefficiencies within financial institutions. This can undermine the benefits of financial inclusion, as higher costs can deter individuals and businesses from participating in the financial system. A more recent study by Abdullah *et al.* (2020) has also shown that corruption often results in the misallocation of resources, where funds that could be used for productive investments are syphoned off for personal gain. This can negatively impact financial performance by reducing the available capital for businesses. On the other hand, high levels of corruption can erode public trust in financial institutions, leading to lower participation rates in financial services. Trust is a critical component for the success of financial inclusion initiatives (Omar *et al.*,

2021). This indicator captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the extent to which elites and private interests exert influence over the state (Kaufmann, Kraay, & Mastruzzi, 2010). The role of control of corruption is also important in terms of enforcement of regulations. Theoretical models in the legal and economic literature provide strong support for the concept that corruption reduces regulatory compliance (Acemoglu and Verdier, 2000; Aidt, 2003). In support of these theoretical predictions, many studies provide empirical evidence that firms operating in a corrupt environment attempt to circumvent regulations through bribery (Mendoza *et al.*, 2015; Oliva, 2015). Therefore, this study hypothesised that an environment of high control of corruption could promote the relationship between financial inclusion and financial performance.

H2: Rule of law significantly enhance the effect of financial inclusion on financial performance

The rule of law measures the extent to which agents have confidence in and abide by the rules of society, including the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (World Bank, 2023). The rule of law, which is a measure of perceptions of law observance and judicial efficiency, could also induce regulatory enforcement which could give lesser punishment to corrupt and financial offenders. Berger and Udell, (2006) point out the complementary relationship of regulations with the judicial environment. Several studies provide empirical evidence that higher levels of rule of law and judicial efficiency enhance regulatory enforcement (Caballero *et al.*, 2013; Daher, 2017). The channels through which higher rule of law and judicial efficiency could lead to stronger regulatory enforcement is through the higher probability of detection of irregularities (Olken, 2007) and an increase in the probability of prosecution and conviction (Alt and Lassen, 2014). However, the institutional approach examined here is exogenous to the organization of money transfer and crowd-funding institutions, but, an intrinsic perspective that focuses on economic and political institutions. It

seems relevant to consider not only exogenous institutions but, more importantly, the endogenous characteristics of financial institutions. We then consider a composite index of institutions to test its effect on financial inclusion in Nigeria. In addition, Nigeria has received little attention in previous studies. However, this country of the world, in addition to having fragile institutions, is rife with corruption and weak rule of law. Hence, this study tends to adopt the use of corruption, the rule of law, and democracy as proxies for institutional quality.

3 Methodology and Data sources and Measurement

3.1 Methodology

This study employed the use of an ARDL-bound testing approach. Based on the bounds-testing approach proposed by Pesaran and Shin (1998) and Pesaran, *et al.*, (2001), adopted by (Okunlola & Akinlo, 2021; Okunlola, Sani, & Ayetigbo, 2023; Okunlola & Ayetigbo, 2024) the long-run relationship is given:

$$\Delta Perf_{it} = \beta_0 + \beta_1 FIN + \beta_2 COR + \beta_3 RLAW + \beta_4 GDP = \beta_5 INT + \varepsilon it \quad 1$$

Where:
Perfit = Financial Performance
FIN = Financial Inclusion
COR = Corruption
RLAW = Rule of Law
GDP = Gross Domestic Product
INT = Interest Rate
εit = error term

$$\Delta Perf_{it} = \beta_0 + \sum_{i=o}^{q_2} Perf_{t-1} + \sum_{i=0}^{q_1} \omega_i \Delta FIN_{it-i} + \sum_{i=o}^{q_2} INS_{it-i} + \sum_{i=o}^{q_2} GDP_{t-i} + \sum_{i=o}^{q_2} (FIN * INS)_{it-i} + \sum_{i=o}^{q_2} INT_{t-i} + \varphi_0 Perf_{it-1} + \varphi_1 FIN_{it-1} + \varphi_2 INS_{t-1} + \varphi_3 GDP + \varphi_3 FIN * INS + \varepsilon_t \quad 2$$

where q is the optimal lag length, and Δ refers to the first difference of variables. The hypothesis for testing the existence of any long-run

co-integration among the variables is given thus:
H0: φ1 = φ2 = φ3= φ4= φ5= φ6= φ7=0
H1: φ1 ≠ 0, φ2≠0, φ3≠ 0, φ4≠ 0, φ5 ≠0, φ6≠0, φ7≠0

The short-run model is stated below:

$$\Delta Perf_{it} = \beta_0 + \sum_{i=o}^{q_2} Perf_{t-1} + \sum_{i=0}^{q_1} \omega_i \Delta FIN_{it-i} + \sum_{i=o}^{q_2} INS_{it-i} + \sum_{i=o}^{q_2} GDP_{t-i} + \sum_{i=o}^{q_2} FIN * INS_{it-i} + \sum_{i=o}^{q_2} INT_{t-i} + \varepsilon_t \quad 3$$

The Error correction model is:

$$ECM_t = \Delta Perf_t - (\beta_0 + \sum_{i=o}^{q_2} Perf_{t-1} + \sum_{i=0}^{q_1} \omega_i \Delta FIN_{t-i} + \sum_{i=o}^{q_2} COR * RLAW_{t-i} + \sum_{i=o}^{q_2} GDP_{t-i} + \sum_{i=o}^{q_2} INT_{t-i} + \varepsilon_t) \quad 4$$

Equation 2 states the short-run and long-run ARDL bound testing approach that achieves the objective of the study.

3.2 Data Sources and Measurement

The study utilised secondary data from 2006 to 2022 to examine the financial performance of deposit money banks. The dependent variable, financial performance, is influenced by financial inclusion, corruption, and rule of law, with GDP and interest rates as control variables. Financial inclusion, the independent variable, was measured using ATM penetration and commercial bank branches. Financial performance was assessed using Return on Assets (ROA), defined as profit before interest and taxes as a percentage of total assets. Corruption was measured using Transparency International's composite index, ranging from 1 (most corrupt) to 100 (least corrupt). The rule of law was measured using worldwide governance indicators on a scale from -2.5 (weak) to 2.5 (strong). Data on financial inclusion, GDP, and interest rates were sourced from the World Bank's World Development Indicators, while ROA and return on equity (ROE) data came from the NDIC's Quarterly report. The selected timeframe was based on data availability. The descriptive characteristics of the variables are

presented in Table 1, while the correlation matrix is presented in Table 2. Table 1 shows the descriptive statistics. The mean values represent the central tendency of each variable. Similarly, the mean value of ATM is around 13.08. The median values indicate the middle point of the distribution. For example, the median value of CBB is approximately 4.98. The median of ROE is approximately 0.12. Also, the maximum and minimum values provide insights into the range of each variable. The highest value for INT is 18.18, while the lowest value for RLAW is approximately -5.63. The standard deviation measures the dispersion or variability around the mean. ATM has the highest variability, with a standard deviation of approximately 4.57. Skewness indicates the symmetry of the distribution. In comparison, some variables have negative skewness in ATM, GDP, and ROA, while other variables such as CBB, COR, INT and RLAW are positively skewed. Kurtosis describes the shape of the distribution positive kurtosis (greater than 3) suggesting heavier tails for COR. The Jarque-Bera test assesses whether the data follows a normal distribution. The p-values are relatively high, indicating that the variables are not significantly different from a normal distribution. These statistics provide valuable insights into the distribution and characteristics of the variables under consideration.

Table 1 Descriptive Statistics

	ATM	CBB	COR	GDP	INT	RLAW	ROA
Mean	13.0809	5.1935	-1.1075	13.786	6.3605	-1.0220	0.0174
Median	16.1500	4.9800	-1.1010	13.832	6.0559	-1.0383	0.0190
Maximum	17.1900	6.5600	-0.9009	13.879	18.180	-0.8426	0.0433
Minimum	1.78000	3.7800	-1.2835	13.614	-5.627	-1.1788	-0.0138
Std. Dev.	4.5737	0.9094	0.0842	0.0841	5.4862	0.1102	0.0153
Skewness	-1.2293	0.1990	0.1689	-0.8209	0.0450	0.1478	-0.2795
Kurtosis	3.5579	1.6417	4.0737	2.3176	3.4096	1.6865	2.2730
Jarque-Bera	4.5023	1.4188	0.8974	2.2394	0.1246	1.2838	0.5957
Probability	0.1052	0.4919	0.6384	0.3263	0.9395	0.5262	0.7424
Sum	222.370	88.290	-18.827	234.365	108.129	-17.375	0.2972
Sum Sq. Dev.	334.707	13.234	0.1136	0.1132	481.589	0.1945	0.0037
Observations	17	17	17	17	17	17	17

Source: Author's Computation's (2024)

Table 2 presents a correlational matrix of the variables. The variables included in the analysis are listed across the top and down the left side of the table. The variables are labelled as ATM, CBB, COR, GDP, INT, and RLAW. The correlation coefficients range from -1 to 1. A correlation of 1 indicates a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 indicates no correlation. A correlation of 1.000 between a variable and itself (diagonal elements) is expected since it represents the correlation of a

variable with itself, hence always 1. For example, the correlation between ATM and CBB is -0.1847. This negative correlation indicates that as ATM increases, CBB tends to decrease. The correlation between GDP and INT is 0.9611, indicating a strong positive correlation. This implies that as GDP increases, INT tends to increase as well. Similarly, the value of RLAW is 0.5319, indicating a moderately positive correlation. The numbers below the correlation coefficients represent the probability associated with each correlation coefficient. For example, the probability associated with the correlation coefficient between ATM and CBB is 0.4779.

Table 2: Correlational Matrix

	ATM	**CBB**	**COR**	**GDP**	**INT**	**RLAW**
ATM	1000					
CBB	-0.1847	1000				
COR	-0.2094	0.0455	1000			
GDP	0.9611	-0.3491	-0.3273	1000		
INT	0.2385	0.5019	-0.0595	0.0704	1000	
RLAW	0.5341	-0.7786	0.1302	0.6120	-0.2460	1000

Source: Author's Computation, (2024)

4 Results and Discussion

4.1 Unit Root Test

Table 3 presents the results of unit root tests for several variables using both the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test. Unit root tests are commonly used in time series analysis to determine the stationarity level of a variable. Stationary time series have stable statistical properties over time, while non-stationary time series exhibit trends or patterns that change over time. The results from Table 3 show that some variables are stationary at a level while some are stationary at first difference using the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP).

Since there exists a mixed order of stationarity, it is expedient to conduct a bound cointegration test to confirm the existence of a long-run relationship among the variables.

Table 3: Unit Root Test Results

Variable	ADF Levels	ADF First Difference	Remarks	PP Levels	PP First Difference	Remarks
ATM	-2.1949	-4.7293**	I(1)	-2.5122	-4.1165**	I(1)
CBB	-5.7225**	---	I(0)	-5.4535	----	I(0)
COR	-2.2311	-4.0207**	I(1)	-2.2949	-4.0463**	I(1)
GDP	-1.3711	-5.488**	I(1)	-1.3824	-5.3235**	I(1)
INT	-4.7745**	---	I(0)	-4.7745**	---	I(0)
RLAW	-2.2505	-4.6758**	I(1)	-2.1423	-4.7091**	I(1)
ROA	-5.0149**	---	I(0)	-7.3154**	---	I(0)

***, **, ***, represents significance levels at 1%, 5%, and 10% respectively.**
Source: Author's Computation, (2024)

4.2 Cointegration Test

The bound test result from Table 4 indicates that the underlying ARDL model indicates long-run slope-estimated coefficients and short-run dynamic-estimated coefficients. The ARDL Bounds test evaluates whether there are long-run relationships among the variables in the model. The test compares the calculated F-statistic to critical values at 5%. The F-statistic is greater than the upper bound at 5%. Henceforth, we concluded that there exists a long-run relationship between the variables under consideration.

Table 4: Cointegration Results

Test Statistics	**Value**	**K**
F-statistic	4.2619	4
Critical Value Bounds		
Significance	Lower Bond I(0)	Upper Bound I(1)
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

4.3 VAR Lag Order Selection Criteria

Table 5 presents the VAR Lag order selection criteria. The asterisks (*) indicate the lag order selected by a specific criterion (e.g., AIC, SC, HQ). For example, in the second row, each criterion chooses different lag values, in this case, the value of the Schwarz information criterion (SC) is considered superior to other results. Therefore, the lag order selected is 1 based on SC criteria.

Table 5: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	10.574	NA	4.90e-06	-0.8765	-0.6877	-0.8785
1	54.945	59.162*	1.24e-07	-4.6594	-3.7153*	-4.6695
2	75.763	16.654	1.23e-07*	-5.3018*	-3.6024	-5.3199*

* Indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

4 Empirical Results

Table 6 presents the short-run and long-run of the role of institutional

quality on the relationship between financial inclusion and financial performance. In models 1 and 3, ROA is used as a dependent variable, while in models 2 and 4, ROE is used as a dependent variable. In models 1 and 2, rule of law is used as an institutional quality measure, while in models 3 and 4, corruption is used as an institutional quality measure. Starting with the short-run analysis, the results showed that ATM has a negative impact on ROA as its coefficient is statistically significant at 5%. However, ATM has a positive and significant effect on ROE. The implies that an increase in ATM penetration reduces ROA while it enhances ROE. This suggests that ATM has a different impact on the measures of financial performance in the short run. In Models 3 and 4, CBB has no effect on ROA and ROE. Similarly, corruption has no significant effect on ROA and ROE in the short run. Rule of law enhances ROA in model 1, as its coefficient is significant at 5%. However, rule of law has no effect on ROE as its coefficient is insignificant.

On the interactive term, the interaction of ATM and control of corruption (ATM*COR) has a significant negative effect on ROA but has an insignificant negative effect on ROE. This suggests that corruption does not limit the impact of CBB on ROE. The interaction term of commercial bank branches and rule of law (CBB*RLAW) has an insignificant impact on ROA and ROE in models 3 and 4 in the short-run.

On the control variables, GDP growth has a positive and significant impact on ROA in model 3, while it has an insignificant impact in other models in the short run. The positive effect of GDP on ROA is consistent with Levine and Zervos (1998). The interest rate has a positive and significant impact on ROA, while its impact on ROE is not significant. The (ECM (-1)) results show that all models show significant negative values, indicating a quick adjustment to long-run equilibrium after short-run deviations.

In the long-run, the results showed that ATM has an insignificant impact on ROA and ROE. In Models 3 and 4, CBB has no effect on ROA and ROE in the long run. Corruption has a positive effect on ROA as its coefficient is statistically significant at 5%, while it has an insignificant effect on ROE in the long run. The effect of the rule of law on ROA and ROE is insignificant in the long run.

On the interactive term, the interaction of ATM and control of

corruption (ATM*COR) fails to significantly impact ROA and ROE. The interaction term of commercial bank branches and rule of law (CBB*RLAW) has a positive and significant impact on ROA in model 3, while it has an insignificant impact on ROE in model 4 in the long run.

On the control variables, GDP growth has a positive and significant impact on ROA in model 3, while it has an insignificant impact in other models in the long-run. Interest rate have a positive and significant impact on ROA in models 1 and 3, while its impact on ROE is not significant. The R-squared and adjusted R-squared show that the larger percentage changes in the dependent variables are caused by the independent variable. Also, the F-statistic results show that all variables are statistically significant. Finally, the Durbin Watson result results show that there are no cases of autocorrelation among the variables as the estimated values fall between 1.5 and 2.5 intervals.

Table 6: The role of institutional quality on the nexus between financial inclusion and financial performance

Variable	Model 1 (ROA)	Model 2 (ROE)	Model 3 (ROA)	Model 4 (ROE)
Short-run				
D(ATM)	-0.0685** (0.0162)	0.5196*** (0.0884)	-----	-----
D(CBB)	-----	-----	0.0228 (0.6702)	0.0402 (0.7247)
D(COR)	-----	-----	0.1678 (0.6211)	-0.2557 (0.6878)
D(RLAW)	0.7700** (0.0333)	-6.6430 (0.1048)	-----	-----
D(ATM*COR)	-0.0528** (0.0310)	0.4712*** (0.0973)	-----	-----
D(CBB*RLAW)	-----	-----	0.0382 (0.1295)	0.0368 (0.7235)
D(GDP)	0.0469 (0.6822)	0.3426 (0.8056)	3.0361** (0.0513)	-0.6788 (0.2072)
D(INT)	0.0025* (0.0039)	0.0029 (0.6245)	0.0194* (0.0053)	-0.0008 (0.3469)
ECM(-1)	-0.8967* (0.0052)	-0.9994* (0.0071)	-0.9090* (0.0036)	-1.2710** (0.0172)
Long-run				
ATM	-0.0047 (0.8555)	0.0538 (0.8332)	-----	-----
D(CBB)	-----	-----	0.0251 (0.6664)	0.1755 (0.2436)
COR	-----	-----	1.1326** (0.0101)	-1.0336 (0.2131)
RLAW	0.1531 (0.6596)	-0.2380 (0.9460)	-----	-----
D(ATM*COR)	-0.0025 (0.9142)	0.0794 (0.7466)	-----	-----
D(CBB*RLAW)	-----	-----	0.0760** (0.0309)	0.1660 (0.2270)
GDP	0.0523 (0.6785)	0.3428 (0.8069)	3.3399*** (0.05980)	0.0303 (0.7178)
INT	0.0028** (0.0404)	0.0153 (0.1360)	0.0395** (0.0087)	-0.0006 (0.3010)

C	-0.5272 (0.7529)	-4.6245 (0.8159)	-44.0737*** (0.0663)	-1.4893 (0.2865)
R-squared	0.961213	0.912064	0.921676	0.858221
Adjusted R-squared	0.903032	0.780161	0.804190	0.574662
F-statistic	16.52110	6.914641	7.844977	3.026609
Prob (F-statistic)	0.001411	0.014380	0.010435	0.116647
Durbin-Watson stat	2.637114	2.514454	3.033577	2.294225

*, **, ***, represents significance levels at 1%, 5%, and 10% respectively.

Source: Author's Computation, (2024)

4.1 Discussion of Findings

The study found that ATM enhances ROE in the short run while it has no effect on the ROE in the long run. However, ATM negatively impacts ROA in the short run and has insignificant impact on ROA in the long run. This dual effect of ATMs aligns with previous studies such as Kagan *et al.* (2005) and Hernando and Nieto (2007), who found that while ATMs initially raise operational costs, they also contribute to higher customer satisfaction and transaction volumes, thereby boosting equity returns. Commercial bank branches (CBB), on the other hand, show no significant effect on either ROA or ROE both in the short run and long run. This implies that the mere presence of more branches does not immediately improve financial performance. This finding is consistent with Beck *et al.*, (2007), who noted that the benefits of branch expansion are often realised over a longer period.

The study found that the rule of law significantly enhanced ROA in the short run. This is an indication that a robust legal framework can foster a more secure operating environment, positively impacting asset returns. This supports La Porta *et al.*, (1998), who emphasised the positive impact of strong legal institutions on financial development. Conversely, corruption does not significantly impact either ROA or ROE in the short run. This implies that control of corruption is very low to have any significant impact on financial performance. However, in the long run, control of corruption enhances ROA. This finding suggests that control of corruption can play a

significant role in promoting ROA if the government can decrease the level of corruption. The study found that the interaction of ATMs with corruption (ATM*COR) negatively affects ROA but has a significant effect on ROE in the short run. This finding indicates that control of corruption and ATM act as substitutes in ROA development, while control of corruption complements ATM in enhancing ROE. The interaction of CBB with the rule of law (CBB*RLAW) has an insignificant impact on both ROA and ROE in the short run. This indicates that the interaction of the rule of law and CBB plays a neutral role in financial performance. The interaction of CBB and rule of law found to enhance ROA in the long run suggests that rule of law and CBB complement each other in enhancing ROA.

The study found that GDP growth contributed to the performance of ROA in the short run and long run. This indicates that economic growth supports better asset returns. Similarly, interest rates positively impact ROA both in the short run and long run. This finding is in line with Demirgüç-Kunt and Huizinga (1999). Increased lending rates enhance asset returns. The significant negative ECM values across all models suggest that the financial system quickly adjusts to long-run equilibrium after short-term deviations, indicating stability and predictability.

The findings of the interaction effect on the relationship between financial inclusion and financial performance and the moderating role of corruption and rule of law depict that financial inclusion and institutional quality are complementary. This implies that both variables can be used together in enhancing commercial financial performance. For financial inclusion to achieve the desired results, strong institutional quality is required. This institutional quality leads to a low level of corruption and effectiveness of rule of law, which tends to enhance stability in the political environment, reduce corruption, strengthen adherence to rule of law, and abolish underground dealing in the financial sector. If these qualities are not put in place, financial inclusion would be distorted in the pursuit of enhancing and improving financial performance.

5 Conclusion and Recommendations

This article examined the role of quality institutions on the relationship between financial inclusion and the financial performance of selected deposit money banks in Nigeria from 2006 to 2022. The study employed Autoregressive Distributed Lag (ARDL) Bound Testing approach to examine the short-run and long-run dynamics among the variables under consideration. The empirical results reveal that institutional quality plays a crucial role in the relationship between financial inclusion and financial performance. However, the role of institutional quality depends on the measure of financial performance used. Strong institutional frameworks, particularly in terms of corruption control and rule of law, are essential in leveraging the benefits of financial inclusion. These findings underscore the need for robust governance structures to optimise the positive impacts of financial inclusion on both asset and equity profitability. The study therefore recommended the following: First, the policymakers should focus on strengthening institutional frameworks to maximise the benefits of financial inclusion initiatives. The efforts to increase financial inclusion should be coupled with initiatives to improve institutional quality. This means that financial inclusion policies should be designed with a focus on integrating governance reforms to ensure sustainable financial performance. This alignment can lead to sustainable improvements in both asset and equity profitability, fostering overall economic growth and stability. Second, stakeholders in the banking industry should focus on establishing more ATMs in rural areas for effective network services to foster financial inclusion. Furthermore, regulatory agencies such as the Central Bank of Nigeria (CBN) and the National Deposit Insurance Corporation (NDIC) should enforce regulatory standards to prevent underground dealings in deposit money banks and monitor the interaction between banks and point-of-sale (POS) operators to protect customers from extortion

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