Innovations

Effect of Bank Size, Age and Growth on Profitability of Quoted Deposit Money Banks in Nigeria

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Abstract: *This research explores the impacts of bank size, age and growth on profitability of quoted deposit money banks (DMBs) in Nigeria. DMB are crucial for allocating funds from savers to investors and managing financial risk. This study aims to determine how bank size, age and growth influence ROE. An ex-post factor research design and fixed-effect and random-effect panel estimation technique was employed to conduct the data analysis. Data were generated from the annual reports and accounts of the sampled quoted Deposit Money Banks (DMBs) from 2010 – 2023. The findings establish that the independent variables bank size and bank growth have significant positive effects on the DMBs' profitability, while bank age have an insignificant effect on profitability represented by ROE. It was concluded that bank size and growth are positively related to profitability and bank age is negatively related to profitability. The study recommends that DMBs should prioritize expanding their size and sustaining moderate growth while ensuring operational efficiency. Age should not be considered a limiting factor, as both younger and older firms can achieve profitability with effective management and strategic agility.*

Keywords: *Bank's Size, Age, Growth, Deposit Money Banks (DMB), Profitability, Nigeria*

Introduction

The banking sector serves as a cornerstone of economic growth, providing vital financial intermediation and support for economic activities in both developed and developing economies. In Nigeria, Deposit Money Banks (DMBs) play a crucial role in driving financial inclusion and fostering economic stability by facilitating the flow of funds from savers to borrowers, serving as key channels for allocation. These banks ensure that everyone, regardless of income level or location, has access to affordable and appropriate financial services, contributing to a stable and resilient

economy. Understanding the profitability of DMBs requires examining key factors such as bank size, age, and growth, as these significantly influence operational capabilities, market influence, and strategic decision-making.

The global economy, as well as those of developing nations, have benefited greatly from the banking sector. The idea of large-scale production states that a bank's size reflects both the number and diversity of its goods and services as well as its capacity to offer them to clients. The success of a bank in securing financing is significantly influenced by its size. The financial choice is often focused on researching and evaluating profitability as a gauge of performance, which entails providing services at the lowest feasible cost in order to maximize earnings (Al Nawaiseh, 2020).

Research on bank age is now blossoming and yielding new insights in bank-level and industrial dynamics, much to how bank size created a rapid increase in attention over the past few years. The amount of time from the bank's creation as a physical and legal entity is referred to as its age(Coad, Holm, Krafft, & Quatraro, 2018).

For any bank, increasing bank profitability is a highly important indication. Higher bank profitability enables the institution to outperform rivals and expand more quickly. Profitability is mostly determined by growth. Growth in assets, equity, deposits, and loans has both positive and negative effects on bank profits. For instance, asset growth and bank profitability are positively correlated (Chronopoulos, Liu, McMillan, & Wilson, 2015). Banks are said to expand in a variety of ways, with a bank's growth style being correlated with its age, size, and profitability (Delmar, Davidson and Gartner 2003). It was noted that business growth is not constant and that there may be significant variations over time. Growth along this axis can be analyzed in terms of return on assets or net profit margin. Profit is a key determinant of a bank's success, and it is considered that profitability measurements are especially appealing in terms of a company's performance.

According to Marris (1964) and Mueller (1972), the managerial growth maximizationhypothesissuggests that firms prioritize growth over profit. In competitive markets, this can lead to a trade-off between growth and profitability, where growth may come at the expense of profit. Although profits are necessary for long-term survival, they alone do not guarantee development. Barriers to entry may limit revenue growth, however, innovative management can reduce costs. According to Foreman et al. (2006), a firm with low profits lacks the resources to expand, whereas a highly profitable firm may deem expansion unnecessary if the benefits are limited.

This study aims to provide new insights into how the size, age, and growth of deposit money banks (DMBs) in Nigeria affect their profitability. It addresses existing gaps in literature, especially where findings have been inconsistent or contradictory regarding the relationship between these variables and profitability. The study also

provides valuable information for the management of DMBs. By understanding the impact of firm size, age, and growth on profitability, bank management can make informed decisions to enhance operational efficiency and profitability, potentially leading to increased shareholder value. However, the findings are expected to guide financial analysts and consultants in providing better advisory services to banks. Additionally, it could serve as a reference for policymakers and regulators in designing policies to improve the performance of the banking sector in Nigeria. Finally, the outcomes of this study will help banks understand the important of optimizing their resources and growth.

The main objective of this study is to examine the influence of bank size, age and growth on profitability of DMBs in Nigeria. The research question allows us to drive the following hypotheses:

H_{01}: Bank age has no significant effect on the profitability of DMBs in Nigerian

H_{02}: Bank size has no significant effect on the profitability of quoted DMBs in Nigeria

H_{03}: Bank Growth has no significant effect on the profitability of quoted DMBs in Nigeria

H_{04}: Bank size, bank age, bank growth has no significant effect on the profitability of quoted

DMBs in Nigeria.

Literature Review

Babalola and Abiola (2018) argue that larger banks have greater influence over strategic decisions, stakeholders, competitors, and operational efficiency, resulting in higher profitability compared to smaller banks. The unique characteristics of a bank's size—such as its deposits, assets, capital, and loans—can shape decision-making and impact financial performance (Olowokure, Tanko, & Nyor, 2015). Bank size can be categorized into vertical integration within specific activities and products or horizontal expansion across multiple entities. This has fueled ongoing discussions about the optimal bank size, management complexities, and risks associated with various operations. Larger banks increasingly engage in non-traditional market activities, which have grown substantially over time (Teimet & Lishenga, 2019). Due to these shifts, regulatory limits have been introduced in industrialized nations to restrict banks' exposure and size (Vinals et al., 2013). Compared to smaller banks, larger banks often have lower capital bases, less stable funding sources, and more involvement in market-based operations, adding complexity. However, failures of larger banks can have more severe repercussions on the financial system (Laeven, Ratnovski, & Tong, 2014).Sritharan (2015) defines

business size by its production capacity and the variety of products or services it can provide simultaneously. Studies on bank size and age explore economies of scale in banking, as larger banks typically reduce costs through scale and scope efficiencies. These efficiencies are assessed using indicators such as sales, assets, employees, and turnover. However, excessively large firms may encounter drawbacks like bureaucracy (Yuqi, 2017).

Theoretical Framework

This study is underpinned by two major theories that explain the relationship between organizational characteristics such as size, age, and growth, and firm profitability. These are the Resource-Based Theory (RBT) and the Structure-Conduct-Performance (SCP) Theory.

The Resource-Based Theory (RBT), popularized by Barney (1991), asserts that a firm's long-term profitability is largely determined by its access to and control over valuable, rare, inimitable, and non-substitutable (VRIN) resources. In the banking sector, these resources may include financial strength, customer loyalty, skilled personnel, branch networks, and technological assets. Bank size is often associated with resource accumulation, which can result in economies of scale, improved market reach, and increased operational efficiency. According to Penrose (1959), firm growth and size stem from the internal development of capabilities and the strategic exploitation of opportunities. Furthermore, Coad (2009) emphasized that older firms typically accumulate more market experience, institutional knowledge, and stakeholder trust, which can enhance profitability. Growth, as an indicator of expansion in operations or customer base, may also signify effective strategy execution and resource utilization, ultimately impacting profitability.

From the RBT perspective, therefore, the profitability of quoted deposit money banks in Nigeria can be linked to how effectively these institutions develop and leverage their internal resources in relation to their size, age, and growth.

The Structure-Conduct-Performance (SCP) Theory, introduced by Bain (1951), provides a framework for analyzing how market structure affects firm conduct and ultimately firm performance. The core idea is that the structure of the industry—defined by market concentration, firm size, and barriers to entry—influences the behavior of firms in terms of pricing, competition, and investment decisions, which in turn affects profitability. In the context of Nigerian deposit money banks, firm size and market dominance may afford larger institutions a competitive advantage, enabling them to influence pricing, lower average costs, and generate higher profits. Berger (1995) distinguishes between the market power hypothesis—which suggests that larger firms gain profits through market control—and the efficient structure hypothesis, which argues that larger or older firms are more profitable due to operational efficiencies, not monopolistic behavior. This theory is particularly relevant to the study as it explains the external structural dynamics influencing the

relationship between size, age, growth, and bank profitability in a competitive market like Nigeria's banking industry.

Empirical Review

Several empirical studies have explored the relationship between bank size, age, growth and profitability.

Adewale, Shittu and Adewole (2023) examined the impact of bank size and age on the financial performance of Nigerian Deposit Money Banks (DMBs) from 2015 to 2021. Using panel data analysis, the results showed a strong positive relationship between bank size, age, and financial performance (ROA and ROE). The study recommends that DMBs should pursue strategic expansion to enhance performance and suggests further research with a broader sample and diverse analytical tools. Also, Sanyaolu et al. (2019) examined the profitability of eleven DMBs on the NGX from 2008 to 2017 and found that firm age negatively affects profitability, while firm size, capital adequacy, non-performing loans, and loan-to-total assets ratio positively impact profitability, they also observed that economic growth and interest rates had no significant effect, while inflation had a slight negative impact. The study recommends government measures to boost bank profitability.

Teimet and Lishenga's study (2019), which covered the period from 2009 to 2018, examined the effect of bank size on the profitability of 42 commercial banks in Kenya. The direction and size of the correlations were determined using regression analysis, and the stability and speed of reaching equilibrium were evaluated by the autoregressive distributed lag model. The results indicate bank volume had a favourable and significant impact on asset return rates. Similar to this, Muhindi & Ngaba (2018) examined how the number of branches, capital base, client deposits, loans, and advances affected the financial performance of Kenyan banks using a panel data set from 2012 to 2016. The study discovered a correlation between bank size and financial performance that is favourable, and it also showed that larger banks have greater ROA than medium-sized and small-sized banksAbubakar (2021) examined the effect of firm size on the profitability of listed Deposit Money Banks (DMBs) in Nigeria from 2005 to 2014 using fixed-effect and random-effect GLS regression. The study found that firm size had a negligible positive impact on ROA and ROE, indicating no significant effect on DMB profitability.

Ogunleye, Adeyemi, and Asamu (2018) analyzed data from the Nigerian Stock Exchange between 2007 and 2011 and found an independent relationship between firm size and growth, supporting Gibrat's law (also known as the Law of Proportionate Effect,). While firm growth showed an insignificant link to profitability, business size negatively correlated with profitability, with profitability accounting for 82% of size variations.Aladwan (2015) analyzed Jordanian commercial banks

from 2007 to 2012 and found that profitability varied significantly across different bank sizes. Using ROE as a proxy, the study showed that asset size impacted profitability. Similarly, Ali and Ghazali (2012) found a positive relationship between firm size and profitability in Pakistani commercial banks, while Islamic banks showed no such relationship, as they generated profits despite smaller sizes.

Furthermore, Alex, Jacob, Jackie, and Francesco (2017) explored the impact of firm age on performance, focusing on innovation, financial performance, exports, survival, and growth. Using diverse national contexts and econometric analysis, the study found that firm age influences both economic and innovation outcomes, offering a comprehensive review of age-performance relationships in evolutionary economics.Hameed and Tsoho (2020) examined the impact of financial performance and firm size on the value of 21 Nigerian insurance companies from 2012 to 2019. Using Tobin's Q as a proxy for firm value, the study found that return on assets and firm size positively and significantly affect firm value, while return on equity has little impact. The study recommends that managers focus on improving return on assets and optimizing firm size to enhance firm value.

Methodology

This study employs panel data and an ex-post facto research design, as it relies on secondary data to examine the relationship between variables being tested. The population of this study comprisedall deposit money banks (DMBs) listed on the Nigerian Exchange Group (NGX) during the study period, which as of January, 2025, totaledThirteen (13) institutions.This formed a finite population from which the sampling frame was established.As a result, the sample for this study consisted of ten (10) banks which were selected purposively based on the availability of data during the years 2010 to 2023.Therefore, this study relied on secondary data sources, primarily drawn from the published audited financial statements of each bank, accessed through their websites, and ER (Exchange Rate) was sourced from the world bank data for the study period. The data were analyzed using descriptive statistics, and correlation analysis of panel data covering the period from 2010 to 2023, conducted with E-View analytical software. The study involved the use of dependent, independent and control variables. The return on equity is the dependent variable, while bank age, size, growth, capital adequacy ratio (CAR), cash to asset ratio (CTAR), debt to equity ratio (DETE), loan loss provision to loans (LLPV), non-performing loans to loans (NPLL) and exchange rate (EXR) are the independent and control variables.

Model Specification and Measurement of Variables

Following the works of Adewale, Shittu, and Adewole (2023), and Sanyaolu et al. (2019), this study adopts an econometric model to examine the effect of bank size, age, and growth on the profitability of quoted Deposit Money Banks (DMBs) in Nigeria. The model is designed to assess both internal bank-specific variables and selected macroeconomic indicators that may influence bank performance.

The mathematical function is stated as:

ROE = F (SIZE, AGE, GROWTH, CTAR, NPLL, LLPV, CAR, DETE, NFL, EXR)……. (Eq1)

The econometric equation is is specify below:

$ROE_{it} = \alpha_0 + \beta_1 SIZE_{it} + \beta_2 AGE_{it} + \beta_3 GROWTH_{it} + \beta_4 CTAR_{it} + \beta_5 NPLL_{it} + \beta_6 LLPV_{it} + \beta_7 CAR_{it} + \beta_8 DETE_{it} + \beta_9 INFL_{it} + \beta_{10} EXR_{it} + \varepsilon_{it})$……(Eq2)

Where;

ROE = Return on Equity;α = a constant; $\beta_1 - \beta_{11}$= independent variables' regression slopes;**CTAR** = Cash to Assets Ratio; **NPLL** = NonPerforming Loans to Total Loans; **LLPV =** Loan Loss Provisions to Total Loan; **CAR** = Capital Adequacy Ratio; **DETE** = Debt to Equity Ratio; **ER** = Exchange Rate; ε = error term

Data Analysis Techniques

The study used EViews statistical software to perform descriptive and inferential statistical analysis for variable relationship evaluation. The researchers started by performing descriptive analysis to understand the key features of the dataset which revealed essential information about dependent variable and all independent variables' central tendencies and dispersion together with their distribution patterns. The research conducted a correlation analysis to determine the direction and intensity of variable relationships. The Variance Inflation Factor calculation helped detect multicollinearity between explanatory variables and researchers studied variables with high VIF results for potential model specification problems. This research utilized Fixed Effects Model (FEM) and Random Effects Model (REM) within panel data regression analysis to measure the bank-specific and macroeconomic variables' effects on profitability. The Hausman test indicated to use the fixed effects model when the p-value fell below 0.05 otherwise the random effects model was selected. The panel regression results gained robustness through tests which confirmed the independence of residuals between different cross-sectional units (banks).

Table 1: Description of Research Variables

Return on Equity (ROE)	ROE measures a bank's profitability by showing how much profit is generated with shareholders' equity.
Age	The number of years a bank has been in operation, indicating its experience and stability.
Size	A measure of a bank's scale, typically defined by total assets, total deposits, or the number of branches.
Growth	Growth is the rate at which a bank's assets or revenue increase, reflecting its expansion capabilities.
Cash to Asset Working Capital Ratio	The ratio of cash and cash equivalents to total assets, indicating liquidity position of the bank.
Non-Performing Loans to Total Loans	The ratio of non-performing loans to total loans, is a key financial metric used to assess a bank's asset quality and credit risk.
Loan Loss Provisions to Total Asset	The ratio of loan loss provisions to total assets reflects the proportion of a bank's assets set aside to cover expected loan defaults, indicating its risk management and financial health.
Capital Adequacy Ratio (CAR)	The Capital Adequacy Ratio measures a bank's capital compared to its risk-weighted assets, ensuring it can absorb loses.
Debt to Equity Ratio	The debt-to-equity ratio measures the proportion of a company's debt relative to its shareholders' equity.
Exchange Rate	This is the value of one currency in relation to another, impacting international transaction.

Source: Author's Compilations

Analysis and Result

Descriptive Statistics

Table 2: Descriptive Statistics summary

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Obs
ROE	11.863	14.381	110.694	-394.318	37.157	-9.345	103.996	140
SIZE	21.879	21.757	27.297	19.195	1.387	1.371	6.759	140
CAR	15.097	14.471	32.600	0.523	4.873	0.654	4.362	140
CTAR	14.473	14.256	34.325	0.579	6.509	0.322	2.971	140
GROWTH	22.130	14.643	269.733	-34.245	35.283	3.257	20.363	140
DETE	6.513	5.776	190.210	0.049	16.132	10.682	121.901	140
AGE	43.600	32.000	129.000	20.000	28.877	1.974	5.834	140
LLPV	-0.589	-0.827	50.276	-17.557	5.372	5.740	59.426	140
NPLL	5.453	3.803	86.852	0.585	8.670	6.859	59.663	140
EXR	292.760	279.640	738.660	150.300	158.075	1.468	4.898	140

Source: Authors computation, 2025.

The distribution of the sample, as determined by the skewness and kurtosis, and the Jarque-Bera statistics were all examined in the aforementioned table 1, along with descriptive statistics like mean, median, skewness, and minimum value. The standard deviation estimates showed that all variables are volatile except for ROE and LLPV that are least volatile variables. ROE is negatively skewed. It is important to note that descriptive statistics were used to make sure the estimated model coefficient did not have the issues of inconsistency and inefficiency, and they also urged caution while analysing the variable. The mean of ROE is 11.863 with a minimum value of -394.3182 and a maximum value of 110.693. The table also reveals that the oldest firms has existed for 129 years while the average age of deposits money bank is 43.6 years with a minimum of 20 years. The average size of deposit money banks is 21.879with a minimum value of 19.195 and a maximum value of 27.297.

Correlation Analysis

Table 3: Correlation Matrix

	ROE	SIZE	CAR	CTAR	GROWTH	DETE	AGE	LLPV	NPLL	EXR
ROE	1									
SIZE	0.200	1								
CAR	0.304	0.148	1							
CTAR	0.129	0.013	-0.165	1						
GROWTH	-0.022	0.125	0.232	-0.025	1					
DETE	-	-0.210	-0.420	-0.049	0.008	1				

	0.932									
AGE	0.013	0.138	-0.121	0.044	0.023	-0.054	1			
LLPV	0.298	-0.031	0.020	-0.183	0.033	-0.126	-0.081	1		
NPLL	0.059	-0.149	-0.076	-0.234	-0.107	0.120	0.083	0.541	1	
EXR	0.134	0.419	0.343	-0.023	0.428	-0.205	0.124	0.226	-0.087	1

Source: Authors Computations

The correlation matrix reveals the relationships between Return on Equity (ROE) and various financial variables. The correlation coefficient between ROE and SIZE is 0.200, indicating a weak positive relationship. This suggests that as firm size increases, there is a slight tendency for profitability to improve. Larger firms often benefit from economies of scale, greater market power, and better access to financial resources, which can contribute to higher returns. The relationship between ROE and CAR exhibits a moderate positive correlation of 0.304. This suggests that firms with higher capital adequacy ratios tend to experience better profitability. A strong capital base can enhance a firm's ability to absorb financial shocks, take advantage of investment opportunities, and maintain market confidence. The correlation between ROE and CTAR is 0.129, indicating a weak positive relationship. This implies that firms with higher cash holdings relative to total assets tend to have slightly higher returns on equity. This relationship might reflect the importance of liquidity in supporting operational flexibility and investment capacity.

The matrix also indicates a negative correlation between ROE and GROWTH of -0.022, suggesting an almost negligible inverse relationship. This result indicates that growth rates in firm revenues or assets have little to no direct association with profitability. This finding could reflect variations in how firms manage growth, with some firms expanding efficiently while others experience growth that dilutes profitability due to increased costs or operational challenges. A strong negative correlation of -0.932 is observed between ROE and DETE. This significant negative relationship implies that firms with higher debt-to-equity ratios tend to experience lower profitability. High leverage can increase financial costs and amplify the impact of negative shocks, reducing net returns. The negative correlation supports the pecking order theory, which suggests that firms with higher reliance on external debt may face profitability constraints due to increased interest payments and financial risk (Myers & Majluf, 1984).

The correlation between ROE and AGE is 0.013, indicating a negligible positive relationship. Firm age appears to have little influence on profitability within the sample. This result suggests that both younger and older firms can achieve similar levels of performance, depending on factors such as market strategy, industry conditions, and operational efficiency. The correlation between ROE and LLPV is 0.298, indicating a moderate positive relationship. This suggests that proactive provisioning can reflect sound risk management practices, which can enhance long-term profitability by mitigating potential credit losses

The matrix further shows a weak positive correlation of 0.059 between ROE and NPLL. This suggests that firms with higher non-performing loan ratios tend to have slightly higher profitability, the correlation between ROE and EXR is 0.134, indicating a weak positive relationship. This suggests that fluctuations in exchange rates have a minor impact on firm profitability. The positive correlation may reflect the influence of currency depreciation on export-oriented firms or foreign currency earnings

Regression

Table 4: Hausman Test

Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000	9	1.000

Source: Author's computation, 2025

The Hausman test is employed to determine the appropriate model—Fixed Effects or Random Effects. The null hypothesis for the Hausman test states that the random effects model is more appropriate, assuming no correlation between the regressors and the individual-specific effects. In this case, the Chi-Square Statistic is 0.000 with a p-value of 1.000. Since the p-value exceeds the conventional significance level of 0.05, we fail to reject the null hypothesis. This result indicates that the Random Effects Model is the suitable estimator for the analysis, as it assumes that individual heterogeneity is uncorrelated with the regressors.

Table 5: Random Effect Regression

Dependent Variable: ROE				
Method: Panel EGLS (Cross-section random effects)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	1.815	0.613	2.960	0.004
CAR	-0.853	0.204	-4.174	0.000
CTAR	0.539	0.128	4.202	0.000

GROWTH	0.062	0.022	2.788	0.006
DETE	-2.205	0.051	-42.934	0.000
AGE	-0.095	0.076	-1.251	0.213
LLPV	-1.114	0.174	-6.392	0.000
NPLL	-0.576	0.104	-5.555	0.000
EXR	-0.021	0.006	-3.446	0.001
C	-1.876	14.288	-0.131	0.896
	Effects Specification			
R-squared	0.953	Mean dependent var		3.648
Adjusted R-squared	0.950	S.D. dependent var		35.542
S.E. of regression	7.975	Sum squared resid		8268.884
F-statistic	292.277	Durbin-Watson stat		1.717
Prob(F-statistic)	0.000			

Source: Author's computation, 2025

The results of the random effects regression analysis, as presented in Table 4. The relationship between firm size and profitability is found to be positive and statistically significant, with a coefficient of 1.815 and a p-value of 0.004. This indicates that larger firms tend to experience higher returns on equity, potentially due to economies of scale, better access to financial resources, and operational efficiencies that come with size. The positive relationship suggests that firm size plays a notable role in shaping profitability within the sampled firms.

In contrast, the capital adequacy ratio exhibits a negative and statistically significant relationship with ROE, with a coefficient of -0.853 and a p-value of 0.000. This finding suggests that firms with higher capital adequacy ratios tend to have lower returns on equity. A possible explanation for this relationship could be the conservative financial approach adopted by firms with high capital reserves, as maintaining excess capital might limit the proportion of assets allocated to revenue-generating activities, thereby constraining profitability.

The cash to asset ratio is positively associated with ROE, with a coefficient of 0.539 and a p-value of 0.000. This result indicates that higher liquidity, as measured by the cash-to-asset ratio, contributes to improved profitability. The positive impact suggests that firms that maintain sufficient cash reserves are better positioned to respond to unexpected financial needs and investment opportunities, ultimately supporting their profitability. However, the magnitude of the relationship indicates that while liquidity is beneficial, excessive cash holdings may result in opportunity costs if not deployed into productive investments.

Growth, measured by changes in firm performance over time, demonstrates a positive and significant impact on ROE, with a coefficient of 0.062 and a p-value of 0.006. This indicates that firms experiencing higher growth rates tend to achieve better returns on equity. Growth often reflects increased market presence, enhanced operational capacity, and revenue expansion, which contribute to improved profitability. However, the relatively modest coefficient suggests that growth alone does not guarantee profitability, and firms must complement growth strategies with efficient resource management to sustain positive financial performance.

The debt-to-equity ratio presents a strong negative relationship with ROE, as evidenced by a coefficient of -2.205 and a p-value of 0.000. This finding indicates that higher financial leverage is associated with reduced profitability. The result supports the notion that excessive reliance on debt financing increases interest expenses and financial risk, ultimately eroding returns for shareholders. The magnitude of the coefficient highlights the significant impact of leverage on firm performance, suggesting that prudent debt management is essential to maintain profitability.

Firm age appears to have an insignificant relationship with ROE, as reflected by a coefficient of -0.095 and a p-value of 0.213. This result implies that the number of years a firm has been in operation does not substantially influence profitability within the sample. The finding challenges traditional assumptions that older firms benefit from accumulated experience and established market presence, suggesting instead that firm age alone is not a determinant of financial performance.

The relationship between loan loss provisions and ROE is negative and statistically significant, with a coefficient of -1.114 and a p-value of 0.000. This indicates that an increase in loan loss provisions, typically set aside to cover potential credit losses, negatively affects profitability. The negative relationship suggests that deteriorating loan quality, which necessitates higher provisions, adversely impacts the financial performance of firms, especially within the banking sector where credit risk management is crucial for sustaining profitability.

Non-performing loans also exhibit a negative and significant relationship with ROE, with a coefficient of -0.576 and a p-value of 0.000. This finding indicates that higher levels of non-performing loans, indicative of problematic credit portfolios, reduce profitability. The result aligns with expectations, as non-performing loans diminish interest income and increase the likelihood of credit losses, thereby undermining overall firm performance.

Exchange rate fluctuations similarly demonstrate a negative relationship with ROE, with a coefficient of -0.021 and a p-value of 0.001. The negative impact suggests that currency depreciations or exchange rate volatility may increase the costs of foreign currency-denominated liabilities and disrupt financial stability. The significant relationship highlights the relevance of foreign exchange risk management, particularly for firms with substantial international transactions or currency exposure.

The model's diagnostic statistics provide additional insights into its reliability and explanatory power. The R-squared value of 0.953 indicates that approximately 95.3% of the variation in ROE is explained by the independent variables, suggesting a high level of model fit. The adjusted R-squared value of 0.950 confirms the model's robustness even after accounting for the number of predictors. The F-statistic of 292.277, with a corresponding p-value of 0.000, indicates that the overall model is statistically significant and that the explanatory variables, collectively, have a meaningful impact on ROE. Additionally, the Durbin-Watson statistic of 1.717 suggests the absence of severe autocorrelation, enhancing confidence in the regression results.

Post Estimation Test

Table 6: Cross-Section Dependence Test

Residual Cross-Section Dependence Test			
Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	1.650	45	0.121
Pesaran scaled LM	0.863		0.208
Pesaran CD	1.651		0.119

Source: Author's Computations 2025

The Cross-Section Dependence Test results indicate that there is no significant cross-sectional dependence in the panel data, as all three tests (Breusch-Pagan LM, Pesaran Scaled LM, and Pesaran CD) have p-values greater than 0.05. This means that the residuals of different cross-sections (firms) are not significantly correlated, ensuring that standard regression techniques, such as the Random Effects Model, remain valid without the need for adjustments. As a result, the regression estimates in Table 4 are reliable and unbiased, with no concern for dependence-related distortions in the findings.

Discussion

The random effects regression analysis reveals important insights about the factors which affect return on equity (ROE) for selected firms. The research demonstrates that bigger firms show a significant positive link to ROE because they achieve higher profitability rates. Akinlo and Asaolu (2012) established similar results when they discovered that firm size creates a positive impact on firm performance. Babalola (2013) showed that firm size produces positive effects on profitability within manufacturing firms operating in Nigeria. Larger companies achieve better profitability because they benefit from economies of scale and enhanced resource access as well as superior market power. The capital adequacy ratio (CAR) demonstrates a negative correlation with ROE indicating that increased capital adequacy leads to profitability restrictions. Ekrezi (2015) confirmed this same negative association between capital adequacy ratio and bank profitability in Albanian banking institutions. Higher capital reserves require financial resources which reduces the amount of assets available for generating revenue thus creating a negative relationship.

Higher firm liquidity measured through CTAR leads to superior profitability levels based on the positive association between these variables. Rahman (2015) confirmed in his study that liquidity enhances profitability in Bangladeshi banking institutions. Companies with sufficient cash reserves gain operational flexibility through which they can pursue investment opportunities to increase their profitability. Higher growth rates lead to improved returns according to the positive and significant relationship between growth and ROE. The positive relationship between growth and future profitability was already established by Bohrem and Mogensen (2010). Companies that experience rising market penetration and greater revenue streams tend to demonstrate higher profitability through their high growth rates.

The analysis demonstrates that Debt to equity ratio (DETE) creates substantial negative effects on ROE because elevated leverage negatively impacts profitability. The findings match Ibrahim et al. (2018) who reported that financial risk combined with short-term indebtedness reduces profitability levels. The negative consequences of using excessive debt arise because increased financial expenses and the elevated default risk from borrowing too much. The relationships between Loan Loss Provision (LLPV) and Non-Performing Loans (NPLL) with ROE are negative and significant showing that bad loan quality degrades profitability. Sanyaolu et al. (2019) discovered that non-performing loans cause negative impacts on bank profitability which supports this finding. The release of higher loan loss provisions indicates elevated predicted credit losses that lead to reduced net earnings. The analysis indicates that exchange rate fluctuations (EXR) negatively impact ROE

because they create adverse effects on profitability. The research findings of Abeyrathna and Priyadarshana (2019) match the results obtained for Sri Lankan manufacturing firms. Fluctuating exchange rates lead to higher costs of foreign currency debts while diminishing international market competitiveness.

Conclusion

This study examined the effects of various financial factors on the profitability of deposit money banks (DMBs) in Nigeria, using Return on Equity (ROE) as the dependent variable. The analysis employed panel data from 2010 to 2023 and utilized the Random Effects Model based on the results of the Hausman Test.

The findings reveal that **firm size (SIZE)** and **growth rate (GROWTH)** have a positive and significant impact on profitability, indicating that larger and faster-growing banks tend to generate higher returns due to economies of scale and expanded market presence. Similarly, the **cash-to-asset ratio (CTAR)** positively influences ROE, suggesting that maintaining sufficient liquidity supports operational flexibility and investment capacity.

Conversely, the **capital adequacy ratio (CAR)**, **debt-to-equity ratio (DETE)**, **loan loss provisions (LLPV)**, **non-performing loans (NPLL)**, and **exchange rate fluctuations (EXR)** negatively affect profitability. Higher capital reserves, while enhancing financial stability, may limit revenue-generating activities, while excessive leverage increases financial costs and default risk. Poor loan quality, as indicated by higher loan loss provisions and non-performing loans, further reduces profitability. Additionally, exchange rate volatility negatively impacts financial performance, particularly for banks with foreign currency exposure.

Firm age (AGE) was found to have an insignificant effect on profitability, suggesting that operational longevity alone does not guarantee superior financial performance. Overall, the model explains 95.3% of the variation in ROE, demonstrating its robustness and reliability.

Recommendation

To optimize firm size and growth, banks should focus on sustainable expansion strategies, leveraging their size to achieve economies of scale, enhance operational efficiency, and improve profitability while managing operational costs. Maintaining adequate liquidity is essential to support operational flexibility and minimize the opportunity costs of excessive cash reserves. Banks should enhance capital efficiency by optimizing capital allocation to maximize revenue-generating activities without compromising financial stability. Prudent debt management is necessary to balance debt financing with equity, mitigating the risks of excessive leverage and financial costs. Additionally, improving credit quality through effective credit risk

management, including rigorous credit assessments, proactive monitoring, and timely recovery of overdue loans, is crucial to reducing non-performing loans and loan loss provisions. Given the impact of foreign exchange fluctuations, banks with foreign currency exposure should implement robust risk management strategies, such as hedging, to mitigate exchange rate risks. Regulatory compliance must also be prioritized, ensuring adherence to capital adequacy and liquidity requirements while seeking innovative ways to maintain profitability. Lastly, future research should explore the influence of non-financial factors, such as corporate governance, management efficiency, and technological innovation, on the profitability of Nigerian DMBs to provide a more comprehensive understanding of performance drivers.

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