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ANALYSIS OF THE MACRO AND MICRO DETERMINANTS OF PROFITABILITY OF DEPOSIT MONEY BANKS IN NIGERIA

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ABSTRACT

The study examines the determinants of deposit money banks (DMBs) profitability in Nigeria between the periods of 2001-2017. The determinants (internal and external) are Nonperforming Loans (NPLs), Capital Adequacy (CA), Inflation Rate (INFLR), Interest Rate (INTR) and Gross Domestic Product (GDP) while profitability was proxied with Return on Asset (ROA). The study made use of secondary data that which was sourced from the CBN Statistical Bulletin, CBN Bank Supervisory Annual Report and NDIC Annual Reports. Analysis employed descriptive statistics and correlation matrix. The Multiple Regression Model with SPSS 23 was used to determine if the independent factors and dependent variable have a significant relationship. The findings suggest that NPLs, CA and GDP have significant influence on ROA except INFLR and INTR that is insignificant. Finally, the study concluded that NPLs, CA and GDP are determinants of banks profitability in Nigeria.

Keywords: Profitability, Capital Adequacy, Interest Rate, Inflation Rate and Return on Asset.

INTRODUCTION

Banks are essential intermediaries in a market economy and drive investment and prosperity. Commercial banks help the economy by employing financial tools to get surplus funds from customers who forgo present spending for the future. They invest some funds for the deficit spending unit (borrowers). They provide much-needed investible capital for investment and economic growth (Obaro, Onuorah, Evesi and Ehiedu, 2022). A profitable and sound banking sector is better able to withstand adverse events and adds performance to the financial system. Performance evaluation through profitability is one of the most important ways for enterprises to give incentive and restraint to their operations and for enterprise stakeholders to get performance information (Echekoba, Egbunike & Ezu, 2014). Profitable banks can endure shocks and stabilise the financial system. Several factors affect financial institution profitability. Internal and external factors affect profit performance. Nigeria pushed mergers and acquisitions in 2004 and 2005. This consolidation reduced the number of Nigerian banks from eighty-nine to twenty-five. It's crucial to understand Nigeria's banking sector profitability drivers (Ani, Ugwunta, Ezeudu & Ugwuanyi, 2012; Osiegbu, Nwakanma & Onuorah, 2013).

Strong banks can withstand financial shocks. Internal and external factors affect bank performance. Management decisions on financial statements, bank size, capital, gearing, risk, and expenses directly affect profitability. Economic externalities include inflation, interest rates, money supply, GDP, market concentration, industry size, and ownership status (Almazari, 2014). Commercial banks are the most dynamic financial intermediaries in various economies around the world. They transfer risk, deal with complicated financial instruments and markets, provide market transparency, offer a payment mechanism, balance supply and demand in financial markets, and manage risk. Commercial banks have new opportunities in product development, market penetration, and service bundling, but they also face new hazards that they must manage and overcome (Kenny, Jumoke, & Faderera, 2014; Meteke, Ehiedu, Ndah & Onuorah, 2022).

The strength of a bank is directly related to its profitability; hence the bank's management wants to generate a profit to ensure its survival and national prosperity. Bank managers should know the internal and external elements that affect profitability. The internal determinants of profitability come from bank accounts (statement of financial position/income statement) and are micro or bank-specific, while the external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects financial institutions in that environment (Athanasoglou, Brissimis & Delis, 2005; Onuorah & Nkwazema, 2016).

Due to shareholder and management decisions, bank profitability varies. Past research imply that capital size, deposit size, liabilities, loan portfolio size and composition, interest rate policy, exposure to risk, managerial quality, labour productivity, bank size, age, ownership, ownership concentration, and structural affiliation affect bank profitability. Profitability would vary with its determinants. Although profitability definitions vary, profitability determinants are empirically well-studied. Most banking studies have found that capital ratio, loan-loss provisions, and spending control are crucial to profitability (Adeusi, Kolapo & Aluko, 2012).

According to Olokoyo (2011), the current trend in Nigerian banking suggests that the days of cheap profits are over and that only banks with well-conceived lending and credit administration policies and processes can survive the increased competition. All of the foregoing assertions suggest that banking practises have been substantially threatened, inhibiting savings culture and lowering bank funds. Sharma & Mani (2012) stated that economic planners and policymakers are concerned about bank performance because the real sector's gains depend on how well banks perform financial intermediation. According to Saona (2011), an efficient financial system boosts bank profitability by increasing investment capital and customer service. By allowing external finance, banks help reconcile the financial interests of deficit economic units, which invest more than they save, with those of surplus economic units, which save more than they invest (Ojo, 2010), creating fair income.

As the number of institutions, ownership structure, and activities changed over time, Nigeria's commercial banks became more vulnerable to various threats (Olaere & Wan, 2016). Financial liberalisation created many opportunities (Olusanmi, Uwuigbe, & Uwuigbe, 2015; Suleiman & Abdullahi, 2011). Hence, technical improvement, regulatory rules, and sector globalisation that complies to international standards are the far-reaching changes that also affect the industry. Bank crises in 2005 and 2011 underlined the need of risk management in financial institutions and real-sector enterprises due to diverse financial risks. Bank profitability may alter with macroeconomic conditions (Olaere & Wan, 2016). This research examines Nigerian commercial banks' micro and macro profitability.

Statement of the Problem

In Nigeria, studies on commercial bank profitability are scarce, therefore there is no consensus on whether they are bank-specific or macroeconomic. The relationship has been quantified and conceived in numerous ways, particularly in established economies, while emerging economies still struggle with it. Hence, various theoretical presentations have been made. Many scholars focused on banking characteristics, while others addressed financial structure and macroeconomic aspects. These research determined bank profitability variables. Recent studies identify managerial (internal) and environmental (external) elements affecting bank profitability. Financial market structure and entry obstacles drive bank profits, according to research. TCapital ratio, credit risk, productivity growth, and bank size are internal determinants, according to earlier studies [Echekoba, Egbunike & Ezu, 2014; Olaere & Wan, 2016; Melaku, 2016; Kapaya & Gwahula, 2016].

Several researches have investigated bank profitability to determine its causes. Bank operating performance and earnings have been connected to profitability. The second study analysed bank earnings, balance sheet structure, and profitability. Third literature examined regulatory and macroeconomic implications on bank profitability. Studies have shown that internal factors drive bank profitability, but external factors also matter. Bank efficiency boosts performance. Management-controlled criteria include bank-specific financial ratios for cost efficiency, liquidity, asset quality, and capital sufficiency (Ani, Ugwunta, Ezeudu and Ugwuanyi, 2012).

There is little research on the topic in poor countries like Nigeria. The study's second motivation target gap is the extent of inclusive and contradicting literature. This study examines how CA, NPLR, INFLR, INTR, and GDP affect Nigerian banks' profitability.

LITERATURE REVIEW

Conceptual Framework

Concept of Bank profitability

Profitability is a company's ability to make money. Most companies maximise profits (Niresh & Velnampy, 2014). Profitability means a business can profit from all its operations (Muya & Gathogo, 2016). Profit rewards entrepreneurs for their investments. Indeed, profit drives entrepreneurs. Profit also measures corporate performance (Ogbadu, 2009). Sales income minus total costs—labor, materials, and expenses—is profit (Stierwald, 2010).

Profitability—either accounting or economic—is a business's fundamental goal (Anene, 2014). Profitability shows management's capacity to turn resources into profits (Muya & Gathogo, 2016). Hence, firms may benefit greatly from greater profitability (Niresh & Velnampy, 2014). Profitability is crucial to a company's longevity. Profitability attracts investors and ensures business longevity (Farah & Nina, 2016). Many companies spend hours in meetings seeking to reduce operating expenses and boost sales to increase profitability (Schreibfeder, 2006).

Many organisations' financial reports emphasise profitability (Farah & Nina, 2016). Profitability shows business performance, therefore the management, owners, and other stakeholders need it. Profitability ratios use sales, capital employed, assets, and earnings per share to quantify a firm's earnings over time (EPS). Profitability ratios assess a firm's earning capacity and growth and performance (Majed, Said & Firas, 2012).

Accounting ratios like ROA or ROE are used to measure profitability. ROA determines asset profit per Naira. This shows how well bank management use investment resources or assets to generate income, whereas ROE shows how much the firm ROE holders (Sehrish, Irshad & Khalid, 2010). Both ROE and ROA measurements show how well bank management uses assets to generate earnings. High ROE or ROA ratios indicate a bank's profitability and vice versa (Bentum, 2012).

Every institution, including banks, seeks profit maximisation, according to Kolapo, Ayeni & Oke (2012). Profitability comes from good management and optimal resource use, resulting in a higher return on capital utilised. If a bank is profitable, its management must be able to assess its strengths and weaknesses, exploit opportunities, and address dangers. How successfully a bank produced money in a financial period determines its success. Banks need some risk to make money. Risk-averse bank management hurts performance (Bentum, 2012). Several dangers threaten banks' profitability. Because they manage assets and liabilities, banks face the most risk. Credit, interest rate, and liquidity risks are noteworthy because they are intimately related to banks' lending activities, which generate most of their profit (Sehrish, Irshad & Khalid, 2010).

Determinants of Banks Profitability

Bank profitability depends on bank-specific and macroeconomic factors (Al-Tamimi & Hassan, 2010). Stochastic variables determine output. Internal issues affect bank performance (Ongore & Kusa, 2013). Management and board choices drive these issues. External factors—sector-wide or country-wide factors—affect bank profitability (Ongore & Kusa, 2013). This study examined how NPLR, CA, BS, INFLR, INTR, and GDP affect bank profitability.

Theoretical Framework

Signaling Theory

Ommeren (2011), signalling theory implies that increased capital boosts bank market value. Banks with lower leverage outperform competitors who cannot raise equity without hurting profits. Signaling theory and bankruptcy cost hypothesis suggest capital increases profitability. According to the risk-return theory, increasing company leverage raises predicted returns. More capital signalled a bank's value to the market, according to the signalling hypothesis (Ommeren, 2011). According to Berger (1995) and Trujillo-Ponce (2012), bank management increased capital to convey favourable future prospects. Hence, banks with smaller leverage outperform competitors who cannot raise equity without hurting profitability (Ommeren, 2011).

Market Power and Efficiency Structure Hypothesis

The MP and ES theories detailed how bank size affects profitability. Olweny & Shipho (2011) noted that the market power theory states that banks' performance was influenced by the industry's market structure and that the Efficiency Structure (ES) hypothesis states that banks earn large profits because they are more efficient. Olweny & Shipho (2011) concluded that MP theory assumed bank profitability was impacted by external market conditions, while ES theory assumed it was influenced by internal efficiencies. Politicians presume that value-maximizing banks take greater risks than depositors can tolerate without regulation. Risk-taking is good for typical banks, but a single bank failure is bad for depositors and the banking sector. Minimum capital ratios restrict value-maximizing banks' risk-taking and capital structure, which lowers profitability. Saunders & Cornett (2008) say the net regulatory load could hurt bank performance. Cost minus benefits equals regulatory burden.

Empirical Review

Akinkunmi (2017) used a 2001–2015 panel dataset to study Nigerian banks' profitability. Due to sample duration, estimation method, and country differences, empirical studies on bank performance have yielded conflicting results. Hypothesis testing using Ordinary Least Square (OLS) and Generalized Method of Moment. The results reveal that efficiency ratio, credit risk, and CA determine long-term bank profitability. Only CA matters. In the near term, market concentration and real GDP considerably affect Nigeria's commercial banks' performance during the complete sample period and following bank capitalization. As far as the author knows, no research has examined how relative market power affects Nigerian commercial bank profitability, taking into consideration the 2005 bank capitalisation.

Thevaruban (2017) examined how BS, CA, LIQ, credit risk, and efficiency affect DMBs profitability. The descriptive analysis identified Sri Lankan commercial banks' profitability variables. The study used 2012–2016 secondary data from 11 commercial banks. The study used OLS and Pearson correlation test. According to research, capital adequacy boosts DMBs profitability. The study also found that NPLR raise credit risk and lower profitability.

Melaku (2016) used secondary data to study Ethiopian private bank profitability. Audited financial accounts of six sampled private DMBs from 2004 to 2011 and National Bank of Ethiopia provided the data.. The study found that bank-specific characteristics explained profitability better than external variables. Asset size, capitalization, labour productivity, liquidity, and non-interest income positively and significantly affected bank profitability,

while credit risk and overhead efficiency negatively affected profitability of bank-specific drivers. Secondary data was used to examine Ethiopian private bank profitability.

Olalere and Wan (2016) analysed audited financial reports of sixteen (16) Nigerian DMBs from 2010 to 2015, generating up to 96 observations. They evaluated bank-specific and macroeconomic predictors of bank profitability. Despite many studies in wealthy economies, developing economies have few studies. ROA and ROE assess bank profitability based on bank-specific and macroeconomic factors. The study found that CA and LIQ boost bank profitability using the balanced panel data set. Efficiency ratio hurts bank profits. Economic growth also boosts bank profits. The study found that banks may increase profitability through raising capital and liquidity, lowering operating costs, and being transparent. A healthy financial sector boosts bank profitability.

Kapaya and Gwahula (2016) examined bank, industry, and macroeconomic factors affecting profitability. From 1998 to 2010, Tanzania used a maximum of 35 firms from 52 banks. ROI, ROA, and NIM were used to estimate profitability (NIM). The fixed effects regression model showed that ROA was strongly influenced by CFA, TEA, CFR, DIV, BAR, and MCAd. The dynamic fixed effects regression model showed that lagged ROA, TEA, loan losses provisions (PLT), and BAR significantly influenced ROA.

Antwi and Apau (2015) studied rural and community bank financial performance in Ghana. Thirty rural and community banks were chosen for 2006–2010. Regression study examined RCB performance characteristics using panel data. The regression includes credit risk, capital adequacy, portfolio composition, bank size, operational efficiency, GDP, and inflation (consumer price index). In Ghana, GDP and inflation drive RCB profitability. According to this study, GDP has no effect on bank profitability and is inversely associated to it. Inflation, unlike GDP, appears to have had a beneficial influence on profitability, indicating that industry managers are factoring inflation into their price builds.

RESEARCH METHODOLOGY

This study used ex-post facto and correlational research. This study empirically examines Nigerian DMBs' profitability drivers using the ex-post facto research design. Correlational study examined independent and dependent factors. Because post-event research is unchangeable, this strategy was chosen. The sample size was determined using aggregate secondary data from CBN Statistical Bulletin, CBN Bank Supervision Annual Report, and NDIC Annual Reports from 2004-2020 on the variables under research. Descriptive statistics and correlation matrix were employed with the aid of SPSS 23. The Multiple Regression Model determined if the independent factors and dependent variable have a significant relationship. The symbolic model followed Gul, Faiza & Khalid (2011) and Javaid, Anwar, Zaman & Gafoor (2011), adjusted to fit this study's variables. The model uses Return on Assets (ROA) to proxy profitability, while the internal and external determinants variables include NPLs, Capital Adequacy (CA), Inflation Rate (INFLR), Interest Rate (INTR), and GDP.

$$\text{ROA} = f(\text{NPLs}, \text{CA}, \text{INFLR}, \text{INTR}, \text{GDP})$$

Thus,

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + E$$

$$\text{ROA} = \beta_0 + \beta_1 \text{NPLs} + \beta_2 \text{CA} + \beta_3 \text{INFLR} + \beta_4 \text{INTR} + \beta_5 \text{GDP} + E$$

Where;

B_0 = Intercept

E = Error Term

The Apriori expectation: $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ is less or greater 0.

Measurement of Variables

ROA = as calculated in the CBN Bank Supervisory Annual Report and NDIC Annual Reports

NPLs = as calculated in the CBN Bank Supervisory Annual Report and NDIC Annual Reports

CA = as calculated in the CBN Bank Supervisory Annual Report and NDIC Annual Reports

INFLR = As calculated in the CBN Statistical Bulletin

INTR = As calculated in the CBN Statistical Bulletin

GDP = As calculated in the CBN Statistical Bulletin

RESULT AND DISCUSSION

Table 1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NPLs	17	2.81	21.91	13.6300	5.71616
CA	17	3.23	17.66	9.0006	5.17668
INFLR	17	6.60	23.80	12.4535	4.40523
INTR	17	16.02	24.85	18.1467	2.22036
GDP	17	.82	16.94	7.7259	4.60453
ROA	17	.04	9.28	3.3376	2.50222
Valid N (listwise)	15				

Source: SPSS Version 23 Output, 2022.

NPL descriptive data show a mean of 13.6300, a Std. Dev. of 5.71616, and a maximum-to-minimum difference of 19.1. DMB NPLs vary greatly, which affects bank ROA. The descriptive data for the independent variable show that CA has a minimum value of 3.23 and a maximum value of 17.66, with a mean and Std. Dev. of 9.0006 and 5.17668. This means that DMB CA fluctuate greatly, which is reflected in bank ROA across the study period. INFLR has an average of 12.4535, a maximum of 23.80, a minimum of 6.60, and a Std. Dev. of 4.40523, implying that it changes greatly and affects DMB ROA. The descriptive data show that INTR has a minimum value of 16.02 and a maximum value of 24.85, resulting in a mean and Std. Dev. of 18.1467 and 2.22036. This suggests that INTR fluctuates, which is reflected in bank ROA across the research period. GDP descriptive data show a mean of 7.7259, Std. Dev. of 4.60453, and maximum and minimum values of 0.82 and 16.94. Lastly, descriptive statistics show that ROA ranges from 0.04 to 9.28, with a mean and Std. Dev. of 3.3376 and 2.50222, respectively. This implies that GDP varies greatly, which is reflected in bank ROA. ROA fluctuates across the study period.

Table 2

Correlation Output

		ROA	NPLs	CA	INFLR	INTR	GDP
Pearson Correlation	ROA	1.000					
	NPLs	-.421	1.000				
	CA	.161	-.870	1.000			
	INFLR	.124	.237	-.109	1.000		
	INTR	.328	.226	-.352	.321	1.000	
	GDP	.431	.058	-.361	-.020	.783	1.000

Source: SPSS Version 23 Output, 2022.

NPLs and ROA have a strong negative relationship because the correlation coefficient (r) is more than 0.05. More NPLs would hurt ROA. CA substantially positively correlates with ROA (0.161). CA and ROA have a strong positive association since 0.161 is more than 0.05 and INFLR has a strong positive correlation on ROA. With a correlation value (r) of 0.124, which is greater than 0.05, INFLR increases would affect ROA. INTR positively affects ROA. Since $r > 0.05$, INTR and ROA have a strong positive association. Hence, increasing INTR would strongly impact ROA. GDP positively affects ROA. Since $r > 0.05$, GDP and ROA have a strong positive association. An increase in 0.431 would benefit ROA.

Regression Result

Table 3
Model Summary

Model	R	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-Watson	
				R Square	F Change	df1	df2		Sig. F Change
1	.709 ^a	.903	1.89872	.503	1.823	5	9	.004	1.979

Source: SPSS Version 23 Output, 2022.
 a. Predictors: (Constant), GDP, INFLR, NPLs, INTR, CA
 b. Dependent Variable: ROA

Table 3, the model summary table, shows that the regression's correlation co-efficient (R) is 0.709 (71%), indicating a very strong positive link between ROA and the independent variables [NPLs, CA, INFLR, INTR, and GDP]. The independent variables—NPLs, CA, INFLR, INTR, and GDP—explain 90% of ROA variation ($R^2 = 0.903$). The model explains 90%. A 90% R^2 value verified the strong positive association. Adjusted R^2 assesses model fit. This illustrates the model's quality of fit and 90 ways the dependent variable relates to the independent variables. 10% is the error term and other factors outside the model. The Durbin Watson computed value of 1.979 is less than “2,” proving serial or autocorrelation. Finally, F-change significance is calculated at 0.004. The model fits. This is below the 5% significance threshold.

Table 4
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	5.958	7.029		.848	.419					
NPLs	-.177	.129	-.404	-1.372	.028	-.421	-.498	-.404	.134	7.444
CA	.030	.127	-.061	.236	.020	.161	-.319	.237	.127	7.890
INFLR	.118	.111	.207	1.063	.314	.124	.309	.229	.697	1.436
INTR	.127	.467	.131	.272	.791	.328	.090	.064	.240	4.174
GDP	.368	.099	.764	3.717	.003	.431	.099	.070	.195	5.139

Source: SPSS Version 23 Output, 2022.
 a. Dependent Variable: ROA

The tolerance value (TV) and variance inflation factor (VIF) were utilised to describe multicollinearity in times series data in Table 4. Multicollinearity occurs when the tolerance value (TV) is less than 0.2, yet the tolerance value ranges from 0.127 to 0.677. VIF, the inverse of TV, varied from 1.436 to 7.890, indicating no multicollinearity because VIF values greater than 10 indicate multicollinearity.

NPLs have a coefficient of -0.177, a t-value of -1.372, and a p-value of 0.028. NPLs may hurt ROA. Since 0.028 is more than 0.05 (5%), the effect is significant. NPLs negatively impact ROA with a coefficient of -0.177. ROA would drop 17.7% per 1% NPL movement. NPLs affect Nigerian banks' ROA. Melaku (2016), Ali (2015), and Kapaya & Gwahula (2016) agree with this, while Nkegbe & Yazidu disagree (2015).

The Multiple Regression result in Table 4 shows a CA coefficient of 0.030, a t-value of 0.236, and a p-value (sig. value) of 0.020. CA improves ROA. As 0.020 is smaller than 0.05 (5%) significance, the effect is significant. CA is 0.030, indicating a positive correlation with ROA. 1% CA movement increases ROA by 3%. CA significantly affects Nigerian banks' ROA. Akinkunmi (2017), Olalere & Wan (2016), Dawood (2014), Babalola (2012), and Thevaruban (2017) agree with this, although Ali (2015), Saona (2011), and Echekeba, Egbunike, and Ezu disagree (2014).

The coefficient of INFLR is 1.118 with a t-value of 1.063 and a p-value of 0.314 from the Multiple Regression results in Table 4 INFLR may boost ROA. Since 0.314 is more than 0.05 (5%), the effect is not significant. INFLR boosts ROA since NPLs coefficient is 1.118. 1% INFLR movement increases ROA by 111.8%. INFLR has little impact on Nigerian bank ROA. This finding supports Nkegbe & Yazidu (2015) and Vong & Chan (2009) but contradicts Antwi & Apau (2015) and Adeusi, Kolapo & Aluko (2015).

Table 4 shows that INTR has a coefficient of 0.127, a t-value of 0.273, and a sig. value of 0.791 in multiple regression. INTR may improve ROA. As 0.791 is more than 0.05 (5%), the effect is not significant. INTR has a positive trend with ROA because its coefficient is 0.146. 1% INTR movement increases ROA by 5%. INTR barely affects Nigerian banks' ROA. Saona (2011) and Vong & Chan (2009) agree with this finding, while Adeusi, Kolapo & Aluko (2012) disagree.

GDP has a coefficient of 0.368, a t-value of 3.717, and a p-value of 0.003. GDP boosts ROA. Since the p-value is 0.003, the effect is substantial. GDP positively affects ROA with a coefficient of 0.368. 36.8% ROA gain for 1% GDP change. GDP affects Nigerian bank ROA. Olalere & Wan (2016), Nkegbe & Yazidu (2015), and Antwi & Apau (2015) agree with this conclusion, although Saona (2011) and Adeusi, Kolapo & Aluko (2012) disagree.

CONCLUSION AND RECOMMENDATIONS

The 2004–2020 study studied macro and micro drivers of DMB profitability in Nigeria. According on results, NPLs, CCA, INFLR, INTR, and GDP all affect ROA except INFLR and INTR. The study found that macro and micro profitability drivers are linked. The report suggests: This study recommended that banks increase their equity capital and labour productivity to improve their profitability, as NPLs and CA have a significant impact on bank profitability. Equity capital can be raised by issuing new shares to potential investors; GDP has a significant influence on bank profitability, so this study recommended that macroeconomic policies of economic growth should be well planned to achieve economic growth that will positively affect the profitability of the deposit money bank; INTR has a

negligible influence on bank profitability, so this study recommended that interest rates should be properly structured to have effect on bank profitability.

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