

The Influence of Capital Adequacy Ratio, Non-Performing Loan, and Loan to Deposit Ratio on Return on Assets (on State-Owned Enterprise Banks is listed on the Indonesia Stock Exchange for the 2015-2024 Period)

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Abstract

This study examines how CAR, NPL, and LDR influenced ROA of SOE Bank from 2015 to 2024. The study's secondary data was collected from the websites of each bank's financial reports. Hypothesis testing, correlation coefficient analysis, regression analysis, classical assumption testing, and coefficient of determination analysis are examples of statistical analysis procedures. The findings demonstrated that LDR negatively impacts ROA, NPL negatively and significantly impacts ROA, and CAR positively and significantly impacts ROA. All things considered, the ROA of SOE banks that were listed at the time on the IDX was significantly influenced by these three ratios taken together.

Keywords: Capital Adequacy Ratio, Non Performing Loan, Loan to Deposit Ratio and Return on Assets

1. Introduction

1.1 Background

Indonesia formally declared the existence of COVID-19 in March 2020. The national banking industry, especially SOE banks, was significantly impacted by the pandemic, among other sectors. Future bank strength and profitability would be impacted by the pandemic's effects on banking operations. The Covid-19 outbreak presented both chances and dangers to Indonesian banks' performance, posing a challenge to both conventional and Islamic institutions. The Covid-19 epidemic posed a concern to the banking industry since it might lead to a number of hazards, including asset depreciation, market volatility, nonperforming loan risk, and many more, all of which could have an impact on banks' performance and profitability. ([Niu & Wokas, 2021](#))

The Indonesian economy was significantly impacted by the COVID-19 pandemic, resulting in widespread efficiency measures, business restrictions, and declining profitability, which led to numerous layoffs and reduced consumer spending power. Nevertheless, the need for essential goods and services persisted, and businesses had to adapt. This led to an increase in loan applications to banks, although under more challenging conditions. The pandemic heightened the risk of credit defaults, which in turn would affect the profitability of the banks providing the loans.

Observing this phenomenon, the authors feel it is necessary to examine how banking financial performance was before, during, and after the pandemic. How did banks manage to maintain or even increase their profitability (ROA). According to [Riyadi \(2006\)](#) ROA is employed because it focuses more on calculating the ability to manage owned assets. Factors that influence profitability, according to [Brigham & Houston \(2017\)](#) include liquidity ratios, asset management effectiveness, and debt management ratios. One way the bank tries to boost profitability is by distributing money to the general people through debt.

In addition to the factors mentioned above, there are other components that serve as indicators in assessing bank health, including CAR, NPL, LDR, and NIM (Zulvia, 2020).

Table 1. Finance Ratio Data of PT Bank BRI during the 2015-2024 Period

Tahun	CAR	NPL	LDR	ROA
2015	20,6%	1,2%	86,9%	4,2%
2016	22,9%	1,1%	87,8%	3,8%
2017	23,0%	0,9%	87,4%	3,7%
2018	21,2%	0,9%	89,0%	3,7%
2019	22,6%	1,0%	88,6%	3,5%
2020	20,6%	0,8%	83,7%	2,0%
2021	25,3%	0,7%	83,7%	2,7%
2022	23,3%	0,7%	79,2%	3,8%
2023	25,2%	0,8%	84,7%	3,9%
2024	24,4%	0,8%	89,4%	3,8%

Source: Financial Report PT Bank BRI 2015-2024 period

Over the past 10 years, BRI Bank's CAR, LDR, NPL, and ROA have fluctuated. Notably, the ROA ratio experienced a significant decline during the pandemic compared to the previous year, despite NPL decreasing from the previous year. However, ROA rebounded and increased in 2021 and 2022, post-pandemic.

Table 2. Finance Ratio Data of PT Bank BNI during the 2015-2024 Period

Tahun	CAR	NPL	LDR	ROA
2015	19,5%	0,9%	87,8%	2,6%
2016	19,4%	0,4%	90,4%	2,7%
2017	18,5%	0,7%	85,6%	2,7%
2018	18,5%	0,8%	88,8%	2,8%
2019	19,7%	1,2%	91,5%	2,4%
2020	16,8%	0,9%	87,3%	0,5%
2021	19,7%	0,7%	79,7%	1,4%

2022	19,3%	0,5%	84,2%	2,5%
2023	22,0%	0,6%	85,8%	2,6%
2024	21,4%	0,7%	96,1%	2,5%

Source: Financial Report PT Bank BNI 2015-2024 period

It can be seen that there is a similarity in the ROA ratio, which experienced a significant decline in 2020 but rebounded and increased in 2021 and 2022 (post-pandemic).

In an effort to review the influence of banking financial ratios on bank profitability, many previous studies have found diverse results; for example, research from [Mustafa & Sulistyowati \(2022\)](#) on The Impact of CAR, NPL, LDR, and firm size on SOE Bank's Profitability found that among the four hypothesis variables X, only NPL had an impact on profitability. This is because NPL had a significance level below the constant and an average below the maximum limit threshold. Additionally, the four objects of study were banks with good public trust, and although only NPL had an impact on profitability, it did not affect the ratio values of the other three variables X, which remained favorable. A healthy bank must have strong capital and assets to finance operational activities and repay third-party funds to remain liquid.

The research done by [Rahmi et al. \(2022\)](#) on The Impact of Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), And Loan to Deposits Ratio (LDR) On Return On Asset (ROA) in PT Bank Negara Indonesia Persero Tbk 2011-2021 Period found that CAR, NIM, and LDR significantly impacts ROA.

This study's objective is to ascertain how each financial ratio affects the banks' profitability, being researched and can serve as a reference or information for the banks and also add insight for readers. Since this study takes data from a 10-year period, including 2 years of pandemic, where the country's finances, particularly in the banking sector, experienced a significant impact.

2. Literature Review

2.1 Background Theory

1. Return on Assets

Return on Assets (ROA), according to [Kasmir \(2018\)](#) is a ratio that illustrates the return on the quantity of assets utilized by an organization. ROA is a metric that illustrates how assets contribute to the creation of net income. Stated differently, this ratio is employed to calculate the amount of net income that will be produced for each rupiah invested in total assets ([Hery, 2018](#)).

A bank is deemed secure if its return on assets (ROA) is greater than 1.5%, as per the Regulation of the Bank of Indonesia No. 13/1/PBI/2011. This means that if the profitability of a bank (ROA) falls below the established standard, it may indicate that the bank's health condition is not good. The following is the ROA formula.

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$$

2. Capital Adequacy Ratio

Capital Adequacy Ratio (CAR) is the ratio of bank capital to risk-weighted assets (Kasmir, 2018). And the capital adequacy ratio represents the minimum capital required to safeguard the

interests of third parties. It calculates the capital of a bank based on its risk-weighted assets ([Taswan, 2015](#)).

Following government regulations, banks had to maintain a CAR at least 8%, as outlined in Regulation No. 3/21/PBI/2001 of Bank Indonesia's Article 2 on Minimum Capital Requirements for Banks, which was later updated in the Provision of Minimum Capital for Commercial Banks, Article 2. The formula for CAR is as follows.

$$CAR = \frac{\text{Capital}}{\text{Risk - Weighted Assets}} \times 100\%$$

3. Non Performing Loan

Non-Performing Loan (NPL) is a ratio meant to assess a bank's management capacity for handling non-performing loans, according to [Hariyani \(2018\)](#) NPL, which is a proxy for credit risk, is also related to profitability. According to Bank Indonesia, NPLs are classified as loans with substandard, doubtful, or loss quality. NPLs occur when borrowers fail to meet their loan repayment obligations to the bank as agreed. The formula for NPL is as follows.

$$NPL = \frac{\text{Substandard Loans} + \text{Doubtful} + \text{Loss quality}}{\text{Total Loans Disbursed}} \times 100\%$$

Table 3. NPL Ratio Criteria

Rank	Explanation	Criteria
1	Excellent	NPL < 2%
2	Good	2% ≤ NPL < 5%
3	Fair	5% ≤ NPL < 8%
4	Poor	8% ≤ NPL < 12%
5	High-Risk	NPL ≥ 12%

Source: Regulation of Bank Indonesia

4. Loan to Deposit Ratio

The Loan to Deposit Ratio (LDR) is employed to evaluate the makeup amount of the credit issued in comparison to the amount of public funds and own capital used. (Kasmir, 2018).

According to [Dendawijaya \(2015\)](#) this ratio contrasts the bank's entire credit quantity given with the total amount of money it has received. In other words, it gauges how much the bank's commitment to satisfy depositors' requests to take out funds that have been utilized by the bank to grant credit can be countered by the credit it extends to its clients. The following is the formula for LDR.

$$LDR = \frac{\text{Total Loans Disbursed}}{\text{Total funds received}} \times 100\%$$

2.2 Previous Studies

Table 4. Previous Research

No	Author Researcher Journal and Year	Journal Title	Research Result
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1	Rahmi et al., 2022	How PT Bank Negara Indonesia Persero Tbk's Loan to Deposits Ratio (LDR), Net Interest Margin (NIM), and Capital Adequacy Ratio (CAR) Affect Return on Asset (ROA) from 2011 to 2021	The results of the study showed that CAR, NIM, and LDR had a substantial effect on ROA.
2	Putri et al., 2016	Analysis of the Effects of LDR, NIM, BOPO, and NPL on PT Bank Pembangunan Daerah Banten, Tbk's Profitability from 2014 to 2023	According to the study's findings, ROA is significantly impacted by the factors NPL, LDR, NIM, and BOPO all at once.
3	Soviani et al., 2022	An examination of how PT Bank Nusantara Parahyangan, Tbk's Non-Performing Loans (NPL), Operating Expenses to Operating Income (BOPO), Net Interest Margin (NIM), and Loan to Deposit Ratio (LDR) affected Return on Assets (ROA) between 2008 and 2018	The study's conclusions indicate that NPL, NIM, BOPO, and LDR all have a considerable simultaneous impact on ROA.
4	Alfanti et al., 2024	The impact of debt to equity ratio (DER), net interest margin (NIM), operating expenses to operating income (BOPO), and non-performing loans (NPL) on return on assets (ROA) at Bank KB Bukopin from 2012 to 2022	According to the study's findings, ROA is significantly impacted by the factors NPL, BOPO, NIM, and DER all at the same time.
5	Aryanti et al., 2022	The Impact of ROA, ROE, LDR, CAR, and NPL on Indonesia Stock Exchange (IDX) Bank Stock Prices	According to the study's findings, stock prices are significantly impacted by the factors ROA, ROE, LDR, CAR, and NPL all at once.

2.3 Conceptual Framework

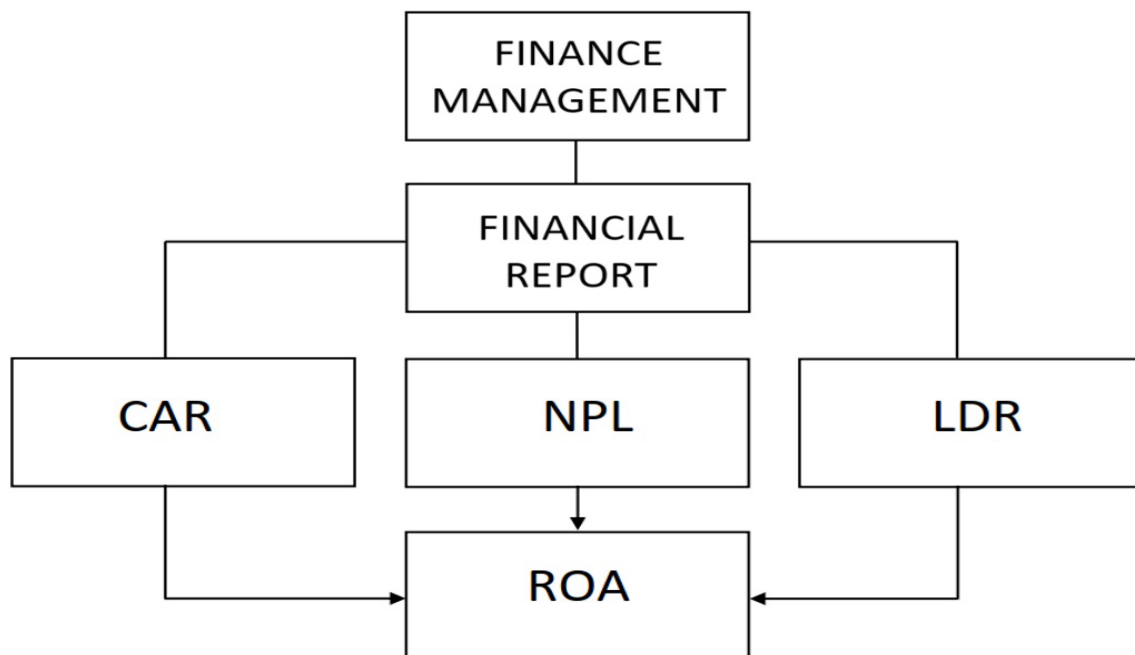


Figure 1. Conceptual Framework

3. Research Method

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3.1 The Research Methodology Employed

[Sugiyono \(2013\)](#) asserts that the research method is a scientific approach to gathering data for certain applications and goals. Two different kinds of variables are included in the secondary data used in this quantitative method study. ROA is the dependent variable, and the independent variables are CAR, NPL, and LDR.

3.2 Types and Sources of Data

The financial ratio information utilized in this research was taken from each bank's financial report, which are accessible to the general public on the business's official website. [Sugiyono \(2013\)](#) defines secondary data is information that comes from sources other than the data collector itself. Secondary data served as the study's data source. The information was taken from the 2015–2024 financial reports of every SOE bank that was on the IDX list.

3.3 Sampling Technique

Purposive sampling is the sample method applied in this study. This method is for selecting samples with particular considerations, claims [Sugiyono \(2013\)](#) Based on this technique, the sample criteria are determined as follows: companies listed on the IDX, companies established before the research period (2015), companies that report complete financial data or annual reports up to 2024, and companies with complete financial reports related to all variables utilized in this research, namely ROA, CAR, NPL, and LDR.

3.4 Data Analysis Techniques

After all necessary data had been fully gathered, data analysis was done. As per Sugiyono (2013), "Data analysis techniques relate to calculations to answer research questions and test hypotheses." Two techniques were used to analyze the data: descriptive analysis and verificative analysis.

3.4.1 Descriptive Analysis

According to [Sugiyono \(2013\)](#) descriptive analysis is the use of statistics to describe the acquired data as it is and to analyze the information without trying to draw inferences or generalizations that apply to a wider audience. In this study, the mean, standard deviation, maximum, and minimum values are examined in descriptive analysis.

3.4.2 Verificative Analysis

According to [Sugiyono \(2013\)](#) verificative analysis is "research aimed at testing theories and will produce new scientific information, namely the status of hypotheses in the form of conclusions about whether a hypothesis is accepted or rejected. The verificative analysis employed in this study comprises several methods, including hypothesis testing, coefficient of correlation analysis, coefficient of determination analysis, regression analysis and classical assumption testing.

4. Findings and Discussions

4.1 Overview of Data

The findings of the descriptive analysis that was carried out provide a broad summary of the research data. Each bank has unique characteristics, according to the findings of a descriptive analysis of the annual financial accounts of four SOE banks that provided the secondary data on the IDX list for the years 2015–2024.



Figure 2. Profile of ROA, CAR, NPL and LDR of State Owned Banks on IDX (2015-2024)

According to Figure 2, it can be seen that the ROA of the four state-owned banks has an average range between 1% and 4%. The findings show that the best performance is indicated by the highest ROA value of 3.9%, achieved by Bank BRI, followed by Bank Mandiri with an average ROA value of 2.91%, and Bank BNI at 1.09%. Furthermore, based on CAR's average value of the four SOE banks, it can be seen that all CAR values are over the established minimum limit by the Bank of Indonesia, which is 8%. This means that in terms of capital adequacy, the four state-owned banks have sufficient capital.

The results of descriptive analysis also show how good the quality of NPL and LDR of the banks. The findings of the analysis show that the majority of banks are still in the "Excellent" category for NPL parameters, with NPL values below 0.2%. However, there are some periods that show the bank has an NPL in the "Good" category, especially for Bank BTN, which is indicated by a maximum NPL value of 3%. Similar to NPL, the average value of LDR parameters also shows that the majority of state-owned banks are still quite efficient or "healthy." Nevertheless, the average LDR of Bank BTN shows a relatively high value, close to the maximum recommended limit (110%). This can be seen because there are periods with average LDR values exceeding the maximum limit, with a maximum value of 113.5%.

4.2 Results of Data Testing

4.2.1 Classical Assumption Test

The normality, linearity, heteroscedasticity, multicollinearity, and autocorrelation tests were the five conventional assumption tests that were carried out prior to regression analysis. These five test's outcomes show that the four models meet the assumptions of normality and linearity and do not exhibit multicollinearity, heteroscedasticity, or autocorrelation. Therefore, the four models can proceed to the next test to test the hypotheses.

4.2.2 Regression Analysis

4.2.2.1 Simple Linear Regression Analysis

Simple linear regression analysis was conducted on Model 1, Model 2, and Model 3 to examine whether each independent variable (CAR, NPL, and LDR) separately influences the dependent variable (ROA).

4.2.2.1.1 The Influence of CAR on ROA

Table 5. Regression Test Results for Model 1

Model		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
1	(Constant)	-4.650	1.396		-3.331	.002
	CAR	.347	.068	.638	5.107	.000

a. Dependent Variable ROA

Source: Processed secondary data, 2025

The analysis results show that the constant is negative (-4,650), indicating that without the influence of CAR, ROA would be negative. Meanwhile, the CAR coefficient of 0,347 suggests that ROA would rise 0,347% for every 1% increase in CAR. For every increase in CAR, this can be represented by the following regression equation:

$$Y = -4,650 + 0,347 X_1$$

4.2.2.1.2 The Influence of NPL on ROA

Table 6. Regression Test Results for Model 2

Model		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			
1	(Constant)	-3.629	.284		12.759	.000
	NPL	-1.157	.242	.613	-4.788	.000

a. Dependent Variable ROA

Source: Processed secondary data, 2025

The analysis results show that the constant is positive at 3,629, indicating that without the influence of NPL, ROA would be positive at 3,629%. Meanwhile, the NPL coefficient of -1,157 indicates that there would be a 1,157% drop in ROA for every 1% increase in NPL. For every increase in NPL, this can be represented by the following regression equation:

$$Y = 3,629 - 1,157 X_2$$

4.2.2.1.3 The Influence of LDR on ROA

Table 7. Regression Test Results for Model 3

Model		Unstandardized Coefficients		Beta	t	Sig.
		B	Std. Error			

1	(Constant)	7.908	1.862		4.248	.000
	LDR	-.060	.021	-.431	-2.946	.005

a. Dependent Variable ROA

Source: Processed secondary data, 2025

The results of analysis show that the constant is positive at 7,908, indicating that without the influence of LDR, ROA would be positive at 7,908%. Meanwhile, the LDR coefficient of -0,060 indicates that for every 1% increase in LDR, ROA would drop by 0,060%. For every increase in LDR, this can be represented by the following regression equation:

$$Y = 7,908 - 0,060 X_3$$

4.2.2.2 Multiple Linear Regression Analysis

Multiple linear regression analysis was performed on Model 4 to ascertain whether the independent variables (CAR, NPL, and LDR) had a combined impact on the dependent variable (ROA).

Table 8. Regression Test Results for Model 4

		Coefficients				
		Unstandardized Coefficients		Unstandardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-4.667	2.519		-1.852	.072
	CAR	-.277	.064	.509	4.362	.000
	NPL	-1.093	.301	-.579	-3.629	.001
	LDR	.028	.023	.203	1.248	.220

a. Dependent Variable ROA

Source: Processed secondary data, 2025

The analysis results show that the constant is negative (-4,667), indicating that without the role of CAR, NPL, and LDR, ROA would be negative. The regression equation that follows can be used to illustrate the link between CAR, NPL, LDR, and ROA.

$$Y = -4,667 + 0,277 X_1 - 1,093 X_2 + 0,028 X_3$$

From the equation, CAR has a positive value, as can be observed (0,277), NPL has a negative value (-1,093), and LDR has a positive value (0,028). Thus, each time each independent variable rises, ROA will drop by 0,277%, for every 1% increase in CAR, and 0,028% for every 1% increase in LDR. Meanwhile, there will be 1,093% drop in ROA for every 1% increase in NPL.

4.2.3 Correlation Analysis

The degree to which the independent factors and the dependent variable are significantly correlated (calculated sig) has a value less than Sig α (0,05), with the calculated r value (Pearson Correlation) outside the rejection area (the 2-tailed r table value for N = 40 is 0,3120, so the acceptance limit for the calculated r is $< -0,3120$ and $> 0,3120$). Therefore, it is evident that the outcomes of the correlation analysis, as shown in Table 5, indicate that CAR, NPL, and LDR possess a substantial correlation with ROA. The correlation occurs positively between CAR

and ROA, while NPL and LDR show a negative correlation.

Table 9. Correlation Analysis Test Results for Model 1, Model 2 and Model 3

Correlation on ROA	Calculated Sig	Pearson Correlation
CAR	0,000	0,638
NPL	0,000	-0,613
LDR	0,005	-0,431

Source: Processed secondary data, 2025

4.2.4 Coefficient of Determination (R^2) Analysis

4.2.4.1 Model 1: The Influence of CAR on ROA

Table 10. Coefficient of Determination (R^2) Test Results for Model 1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.638	.407	.391	.86710

a. Predictors (Constant), CAR

Source: Processed secondary data, 2025

The calculation results show that the R^2 value is 0,407, meaning that 40,7% of the variance in ROA (Y) can be explained by the variance in the independent variable CAR (X1), while the remaining 59,3% is explained by other factors outside the model.

4.2.4.2 Model 2: The Influence of NPL on ROA

Table 11. Coefficient of Determination (R^2) Test Results for Model 2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613	.376	.360	.88930

a. Predictors (Constant), NPL

Source: Processed secondary data, 2025

According to the computation findings, the R^2 value is 0,376, which indicates that the change of the independent variable NPL (X2) may explain 37,6% of the variance in ROA (Y), with factors not included in the model accounting for the remaining 62,4%.

4.2.4.3 Model 3: The Influence of LDR on ROA

Table 12. Coefficient of Determination (R^2) Test Results for Model 3

Model Summary				
Model	R	R	Adjusted R	Std. Error of

	Square	Square	the Estimate
1	.431	.186	.164
			1.01597

a. Predictors (Constant), LDR

Source: Processed secondary data, 2025

According to the computation findings, the R^2 value is 0,186, which indicates that the change of the independent variable LDR (X3) may account for 18,6% of the variance in ROA (Y), with variables outside the model explaining the remaining 81,4%.

4.2.4.4 Model 4: The Influence of CAR, NPL and LDR on ROA

Table 13. Coefficient of Determination (R^2) Test Results for Model 4

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.770	.593	.559	.73825

a. Predictors (Constant), CAR, NPL, LDR

Source: Processed secondary data, 2025

According to the computation's findings, the R^2 value is 0,593, meaning that 59,3% of the variance in ROA (Y) can be accounted for by the variance in the independent variables CAR (X1), NPL (X2), and LDR (X3), with additional factors outside the model accounting for the remaining 40.7%.

4.2.5 Hypothesis Testing

4.2.5.1 Model 1: The Influence of CAR on ROA

4.2.5.1.1 Partial Hypothesis Testing (t-test)

Table 14. Partial Hypothesis Testing Results for Model 1

		Unstandardized Coefficients		Unstandardized Coefficients	
Model		B	Std. Error	Beta	t
1	(Constant)	-4.650	1.396		-3.331
	CAR	-.347	.068	.638	5.107

a. Dependent Variable ROA

Source: Processed secondary data, 2025

The t-test results yield a calculated t-statistic of 5,107 with a p-value of 0,000. The critical t-value at $\alpha = 0,05$ and $df = 38$ is 2,024. Given that the critical t-value is less than the calculated t-statistic ($2,024 < 5,107$) and the p-value is less than the significance level ($0,000 < 0,05$), thus, it may be said that CAR (X1) significantly influences ROA (Y), and therefore H1 is accepted.

4.2.5.1.2 Simultaneous Hypothesis Testing (F-test)

Table 15. Simultaneous Hypothesis Testing Results for Model 1

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.608	1	19.608	26.079	.000
	Residual	28.571	38	.752		
	Total	48.179	39			

a. Dependent Variable ROA

b. Predictors (Constant), CAR

Source: Processed secondary data, 2025

From this ANOVA test results, the calculated F-value (26,079) exceeds the critical F-value (4,098) and the p-value (0,000) is below the level of relevance (0,05). Therefore, it may be said that CAR (X1) significantly influences ROA (Y), and H1 is accepted.

4.2.5.2 Model 2: The Influence of NPL on ROA

4.2.5.2.1 Partial Hypothesis Testing (t-test)

Table 16. Partial Hypothesis Testing Results for Model 2

		Unstandardized Coefficients		Unstandardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	3.629	.284		12.759	.000
	NPL	-1.157	.242	-.613	-4.788	.000

a. Dependent Variable ROA

Source: Processed secondary data, 2025

The t-test results yield a calculated t-statistic of -4,788 with a p-value of 0,000. The critical t-value at $\alpha = 0,05$ and $df = 38$ is 2,024. Considering that the absolute value of the t-statistic (4,788) exceeds the critical t-value (2,024) and the p-value is less than the significance level ($0,000 < 0,05$), it can be inferred that NPL (X2) has a substantial detrimental impact on ROA (Y), and therefore H2 is accepted.

4.2.5.2.2 Simultaneous Hypothesis Testing (F-test)

Table 17. Simultaneous Hypothesis Testing Results for Model 2

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.127	1	18.127	22.921	.000
	Residual	30.052	38	.791		
	Total	48.179	39			

a. Dependent Variable ROA

b. Predictors (Constant), NPL

Source: Processed secondary data, 2025

From the ANOVA test results, the p-value (0,000) is below the level of relevance (0,05), while the computed F-value (22,921) is greater than the critical F-value (4,098). Therefore, it can be inferred that NPL (X2) significantly influences ROA (Y), and H2 is accepted.

4.2.5.3 Model 3: The Influence of LDR on ROA

4.2.5.3.1 Partial Hypothesis Testing (t-test)

Table 18. Partial Hypothesis Testing Results for Model 3

		Unstandardized Coefficients		Unstandardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	7.908	1.862		4.248	.000
	LDR	.060	.021	.431	-2.946	.005

a. Dependent Variable ROA

Source: Processed secondary data, 2025

A computed t-statistic of -2,946 and a p-value of 0,000 are the findings of the t-test. At $df = 38$ and $\alpha = 0,05$, the crucial t-value is 2,024. Given that the p-value is below the significance level ($0,000 < 0,05$) and the absolute magnitude of the t-statistic (2,946) surpasses the necessary t-value (2.024), it can be inferred that LDR (X3) has a substantial detrimental impact on ROA (Y), consequently, H3 is approved.

4.2.5.3.2 Simultaneous Hypothesis Testing (F-test)

Table 19. Simultaneous Hypothesis Testing Results for Model 3

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.956	1	8.956	8.677	.005
	Residual	39.223	38	1.032		
	Total	48.179	39			

a. Dependent Variable ROA

b. Predictors (Constant), LDR

Source: Processed secondary data, 2025

From the ANOVA test results, the p-value (0,000) is below the significance level (0,05), while the computed F-value (8,677) is greater than the critical F-value (4,098). Therefore, it may be said that LDR (X3) significantly influences ROA (Y), and H3 is accepted.

4.2.5.4 Model 4: The Influence of CAR, NPL and LDR on ROA

4.2.5.4.1 Partial Hypothesis Testing (t-test)

Table 20. Partial Hypothesis Testing Results for Model 4

		Unstandardized Coefficients		Unstandardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	-4.667	2.519		-1.852	.072
		.277	.064	.509	-4.362	.000
	CAR	-1.093	.301	-.579	-3.629	.001
	NPL	.028	.023	.203	1.248	.220
	LDR					

a. Dependent Variable ROA

Source: Processed secondary data, 2025

From the t-test results (partial testing), it is found that the independent variable has no discernible effect on ROA is LDR (X3) (t-statistic = 0,028, p-value > 0,05). Meanwhile, the other two independent variables, CAR (X1) and NPL (X2), possess a substantial impact on ROA, with NPL (X2) having a negative influence and CAR (X1) having a positive influence.

Table 21. Partial Hypothesis Testing for Model 4

Variabel	Calculated T	T Tabel (df:38)	Calculated Sig	Sig α	Conclusion
X1	4,362	2,028	0,000	0,05	Significant
X2	- 3,629		0,001		Significant
X3	0,028		0,220		Not Significant

Source: Processed secondary data, 2025

4.2.5.4.2 Simultaneous Hypothesis Testing (F-test)

Table 22. Simultaneous Hypothesis Testing Results for Model 4

ANOVA						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.559	3	9.520	17.467	.000
	Residual	19.620	36	.545		
	Total	48.179	39			

a. Dependent Variable ROA

b. Predictors (Constant), CAR, NPL, LDR

Source: Processed secondary data, 2025

From the ANOVA test results, it is found that the critical F-value (df 1: 3, df 2: 36) is smaller than the calculated F-value ($2.87 < 17.467$), and the calculated significance value is below the alpha significance level ($0.000 < 0.05$). Therefore, it can be inferred that the sum of the three independent factors significantly affects ROA (Y).

4.3 Discussion

4.3.1 The Influence of Capital Adequacy Ratio on Return on Assets

The study's conclusions indicate a robust positive connection between CAR and ROA in SOE banks, supporting the theoretical notion that banks must have enough money in order to become more profitable. CAR is the ratio of bank capital to risk-weighted assets (Kasmir, 2018). A high CAR suggests that a bank has a good ability to absorb potential losses and meet its obligations to customers. This condition provides confidence to regulators, investors, and customers, allowing the bank to operate more freely and optimize the use of its assets to generate profits. SOE banks with an average CAR of around 20% demonstrate a very healthy capital position, far exceeding the minimum requirement of 8%. This condition enables banks to take measured risks in lending and investing, which ultimately contributes to an increase in ROA. Thus, it can be concluded that the four SOE Banks that are the object of this study have a healthy CAR. Nonetheless, [Yuwono's \(2019\)](#) study found that CAR significantly and favorably affects ROA.

4.3.2 The Influence of Non-Performing Loan on Return on Assets

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The study's finding further demonstrate that NPL significantly and negatively affects ROA, consistent with the proposed hypothesis. [Hariyani \(2018\)](#) stated that NPL is a ratio to measure the bank's management capacity to oversee NPL. When credit becomes problematic, it lowers interest income for the bank and increases operational costs through the formation of impairment loss reserves. The NPL coefficient of -1,157 indicates that ROA will fall by 1,157% for every 1% increase in NPL. This relatively large impact highlights the importance of credit risk management in banking. SOE banks with an average NPL of less than 2% are still in the excellent category but need to continue maintaining credit quality to optimize profitability. However, [Yuwono's \(2019\)](#) study found that NPL significantly and negatively impacts ROA.

4.3.3 The Influence of Loan to Deposit Ratio on Return on Assets

Additionally, the study's conclusions show that LDR has a detrimental effect on ROA in the simple regression model, but it is not significant in the multiple regression model. This ratio, according to [Dendawijaya \(2015\)](#) is between the total amount of credit that the bank has extended and the funds that it has received. This suggests that the influence of LDR on ROA is more complex and influenced by other factors. An excessively high LDR can pose liquidity risks, while an overly low LDR indicates inefficiency in fund utilization. SOE banks with an average LDR of around 86% to 100% are still within a relatively optimal range (80%-110%), but they need to balance it with other factors such as credit quality and capital adequacy. However, ROA is negatively impacted by LDR, according to the findings of this study by [Alfian & Pratiwi \(2021\)](#).

4.3.4 The Influence of CAR, NPL and LDR on ROA

From the analysis of Model 4, which is the multiple linear regression analysis, it is shown that collectively, CAR, NPL, and LDR can explain 59.3% of the variation in ROA of SOE banks. This indicates that these three variables play a crucial role in determining bank profitability, although there are still 40.7% of other factors not explained in the model. In this multiple linear regression model, LDR does not have a significant influence, which means that the influence of LDR on ROA is more indirect and moderated by other variables. This suggests that efficient use of funds must be balanced with adequate capital and good credit quality. Simultaneously, CAR, NPL, and LDR possess a significant impact on ROA. However, the results of this study conducted by [Hikmah Juliani & Abrianto \(2023\)](#) stated that CAR, NPL, and LDR possess a substantial effect on ROA.

5. Conclusion

The study's findings indicate that CAR positively and significantly influences ROA, implying that greater ROA for banks is correlated with higher CAR levels. Conversely, NPL has a negative and significant influence on ROA, implying that higher NPL levels lead to decreased ROA. In contrast, LDR exhibits a negative influence in the simple model but lacks significance in the multiple regression model, indicating that its influence on ROA is less pronounced compared to CAR and NPL. The simultaneous analysis's findings demonstrate that ROA is significantly impacted by the three independent factors taken together, accounting for 59.3% of the variation (R^2), while other factors outside the model account for the remaining 40.7%.

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