

The Effect of Capital Adequacy Ratio (CAR), Operational Expenses on Operating Income (OEOI), Loan Deposit Ratio (LDR), and Non-Performing Loan (NPL) on Return on Asset (ROA) with Net Interest Margin (NIM) as an Intervening Variable on SOEs Bank 2014-2022

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ABSTRACT

This research aims to determine whether the Capital Adequacy Ratio, Operational Expenses on Operating Income, Loan Deposit Ratio, and Non-Performing Loans affect Return On Assets. Apart from that, this research also aims to find out whether Net Interest Margin can be used as an intervening variable for the influence of Capital Adequacy Ratio, Operational Expenses on Operational Income, Loan Deposit Ratio, Non-Performing Loans on Return on Assets in State-Owned Bank Companies in 2014-2022.

The research design carried out was causal associative research using a quantitative approach. The population used in this research is state-owned bank companies during the 2014-2022 period, and a purposive sampling technique was used. The data analysis techniques used are multiple linear regression analysis and interaction tests carried out with the help of SPSS software.

The results found in this research indicate that partial NPL has a negative and significant effect on NIM. CAR has a significant positive effect on NIM. OEOI and LDR do not affect NIM. Then, CAR and OEOI have a significant negative effect on ROA. LDR has a significant positive effect on ROA. NPL does not affect ROA. Meanwhile, the results of testing the intervening variables show that the Net Interest Margin is unable to moderate the influence of the Capital Adequacy Ratio, Operational Expenses on Operational Income,

Loan Deposit Ratio, and Non-Performing Loans on Return on Assets at State-Owned Banks in 2014-2022.

Keywords: CAR, OEOI, LDR, NPL, NIM, and ROA

INTRODUCTION

The banking system has shown very rapid development after the issuance of statutory provisions. In the financial industry, banks strive to increase their profitability continuously. One way to increase and maintain profitability is to look at the bank's financial performance in generating profits shown in financial reports. Based on the financial report, some financial ratios can be calculated, which can be used to assess the bank's health level. The level of bank health can be assessed from several indicators. One of the leading indicators used as the basis for assessment is the financial report of the bank concerned. The financial report analysis results will help interpret critical relationships and trends that can provide a basis for considering the potential for banking success.

In financial reports, there is analysis and calculation of banking financial performance ratios to predict the bank's future growth potential. These calculations can be

measured using financial ratios according to applicable standards. One way is to use ROA as a financial ratio in the calculations. Return on Assets (ROA) is a crucial profitability ratio for banks because it describes their ability to generate profits effectively. Profit or loss affects a company's ability to obtain funding through debt and equity.

Table 1.ROA RATIO

Year	ROA Ratio			
	BRI Bank	BNI Bank	Mandiri Bank	BTN Bank
2014	4.74%	3.49%	3.57%	1.12%
2015	4.19%	2.64%	3.15%	1.61%
2016	3.84%	2.69%	1.95%	1.76%
2017	3.69%	2.75%	2.72%	1.71%
2018	3.68%	2.78%	3.17%	1.34%
2019	3.50%	2.42%	3.03%	1.30%
2020	1.98%	5.60%	1.64%	6.90%
2021	2.72%	1.43%	2.53%	8.10%
2022	3.76%	2.46%	3.30%	1.02%

The table above explains that the Return On Assets of Bank BNI, Bank Mandiri, and Bank BTN experienced fluctuations during 2014-2022. This differs from Bank BRI, which experienced a consecutive decline in the ROA ratio during the 2014-2020 period but experienced an increase in 2021-2022. BRI Bank is the only one that can achieve an ROA value of almost 5% in 2014 and 2015. The safe limit for the ROA ratio is 1.5%. And if the ROA ratio value is above 5%, then the ROA ratio is categorized as very good. Quoted from the Neraca Economic Daily, the level of banking profitability continued to decline during the 2014-2018 period due to weak margins from credit distribution, plus the high ratio of non-performing loans. One of the causes of weakening interest margins is the downward trend in credit interest. This makes banks look for ways to generate high profits. The decline in national banking profits was partly caused by the high rate of credit failures and company operational expenses that were too large and inefficient. Meanwhile, from 2019 to 2020, the ROA ratio decreased due to the COVID-19 pandemic and increased again from 2021 to

2022. During the COVID-19 pandemic, it became a big challenge for every bank to maintain the ROA ratio value. Only BTN bank could increase the ROA ratio value during the 2019 pandemic, even though it did not meet the established regulatory standards. The COVID-19 pandemic has had a severe impact on banking. One of the problems that arises is the increase in non-performing loans, giving rise to risks faced by banks that can affect profitability.

Return on Assets is influenced by the level of interest income from the bank. The greater the ROA, the better the bank's performance because the return rate is greater. In this case, ROA shows how bank management can manage its assets to obtain comprehensive profits. In this case, the return on assets is to determine the good results from the assets obtained by the bank. Return On Assets of national banks in Indonesia fluctuates yearly due to the unstable growth of banking profits in Indonesia. Banks in Indonesia must maintain positive performance and company stability to maintain public trust in increasingly competitive market conditions. The decline in profit from banking ROA illustrates the decline in banking profitability.

The factors that influence Return On Assets (ROA) come from external and internal companies. External factors occur due to factors not directly related to bank management, but as a result, these factors can affect the economy. Meanwhile, internal factors originate from operational activities within the banking itself, which are related to financial ratios. In this research, researchers will analyze factors that are thought to influence ROA, namely Capital Adequacy Ratio (CAR), operational expenses to operating income (OEOI), Non-Performing Loans (NPL), Loan Deposit Ratio (LDR), and Net Interest Margin (NPL) as a moderating variable.

The bank used in this research is a BUMN (State-Owned Enterprise) bank for 2014-2022. State-owned banks consist of PT Bank Rakyat Indonesia, Tbk. (BBRI), PT Bank

Negara Indonesia, Tbk. (BBNI), PT Bank Mandiri, Tbk. (BMRI), and PT Bank Tabungan Negara, Tbk. (BBTN). The reason for choosing a state-owned bank is the high level of customer trust in state-owned banks and state-owned banks as managers of state assets. Then, looking at the return on assets phenomenon, the researcher wants to study it more profoundly using several factors that influence the return on assets. Therefore, this research is entitled "The Effect of Capital Adequacy Ratio (CAR), Operational Expenses on Operating Income (OEOI), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL) on Return on Assets (ROA) with Net Interest Margin (NIM) as an Intervening Variable in State-Owned Banks 2014 – 2022”.

LITERATURE REVIEW

Return on Assets (ROA)

Return on Assets is a ratio that shows the company's ability to measure the effectiveness of the capital invested in all assets to gain profits. According to Gitman (2009), ROA is used to measure the overall effectiveness of management in generating profits with available assets.

Based on the relationship between signaling theory and ROA, if the Return on Assets value is high, then the profit earned by the company is quite large. This influences the increase in company profitability and can be used as a signal for investors to invest in the company. ROA is an essential ratio for banking health. Banks must maintain their performance well because it affects the bank's health level. ROA is one factor that can be used as a benchmark to assess whether a bank's performance is good or bad. ROA can show the amount of profit generated from each existing asset. ROA helps management and investors to know whether their investment in assets will generate profits or not. Based on Bank Indonesia regulations, a good ROA standard is around 1.5%. The grouping of ROA criteria set by Bank Indonesia is as

follows:

1. $ROA > 1.5\%$, then it is categorized as very healthy
2. $1.25\% < ROA \leq 1.5\%$, then it is categorized as healthy
3. $0.5\% < ROA \leq 1.25\%$, then it is categorized as quite healthy
4. $0\% < ROA \leq 0.5\%$, then it is categorized as unhealthy
5. $ROA \leq 0\%$, then it is categorized as unhealthy

ROA is not only beneficial for banking management but also for interested external parties. The following are the objectives of ROA, according to Kasmir (2015):

1. Know the level of profit obtained by the company in one period.
2. Know the company's profit position from the previous year to the current year.
3. Know the development of profits from time to time.

The measurement to obtain the ROA ratio value uses the following formula:

$$ROA = \frac{\text{Earning After Tax}}{\text{Total Assets}}$$

Vernanda and Widyarti (2016) explain that CAR, LDR, NPL, and OEOI simultaneously influence ROA. This indicates that several variables included in the internal factors directly influence measuring the bank's ability to generate profits. Several variables included in internal factors consist of several ratios, which are indicators of the bank's financial performance. This ratio consists of CAR, LDR, NPL, and OEOI.

Net Interest Margin (NIM)

Net Interest Margin is one of the profitability ratios in banking. NIM is one of the main ratios that can be used to measure the ability of productive assets to generate profits. The NIM ratio helps estimate the possibility that a bank can develop in the long term and helps investors make decisions as a reference for

their investment strategy. The measurement of the NIM ratio is also carried out to determine the ability of banking management to manage its productive assets. From the management of productive assets, it can be seen whether banking productive assets produces optimal profits or net profits. NIM shows how much interest the bank earns, so banks must always maintain this ratio at a high position.

NIM is an important indicator of a bank's financial health. The standard set by Bank Indonesia for a healthy Net Interest Margin ratio is 3% and above. The greater the value of the NIM ratio, the greater the profit the bank obtains from its productive assets. And conversely, the smaller the NIM ratio, the smaller the profit obtained by the bank on its productive assets. The grouping of NIM criteria determined by Bank Indonesia is as follows:

1. $NIM > 3\%$, then it is categorized as very healthy
2. $2\% < NIM < 3\%$, then it is categorized as healthy
3. $1.5\% < NIM < 2\%$, then it is categorized as quite healthy
4. $1\% < NIM < 1.5\%$, then it is categorized as unhealthy
5. $NIM < 1\%$, then it is categorized as unhealthy

The influence of NIM on ROA is related to the grand theory used in this research, namely the signal theory, which explains that an excellent financial report depicts a positive signal for the performance of a company that is operating well. NIM functions to measure a bank's ability to earn income from interest by looking at the bank's performance in disbursing credit, where the greater the NIM achieved by a bank, the higher the interest income on productive assets managed by the bank so that bank profits (ROA) will increase. The NIM calculation aims to assess the bank's ability to manage risks related to interest rates. To find out the NIM calculation value, use the following formula:

$$NIM = \frac{\text{Net Interest Income}}{\text{Productive Assets}}$$

Several previous studies that tested NIM on ROA, among others, were carried out by Gelos (2006), and the results showed that NIM affected ROA. Anindiansyah et al., (2020) stated that NIM does not on ROA. These results show that if NIM and asset turnover increase, ROA will also increase, which means profitability will increase. So, the increase in ROA value can result from increased net interest income at the bank. Meanwhile, the results of Bukhori's (2018) research prove that NIM does not affect ROA.

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a ratio that shows how much a bank's ability to manage its capital to finance risky assets. The better the CAR percentage of a bank, the better the bank can protect itself when a problem occurs. This follows the Signalling Theory, which describes that information availability signals primarily convey how companies should signal the information they need. The results of previous research by Nasserinia (2015) and Khanh (2015) suggest that CAR positively and significantly influences NIM. This differs from Kharisma's (2019) research, which states that CAR does not affect NIM.

The decrease in the CAR value was caused by a decrease in the amount of bank capital or an increase in the amount of Risk Weighted Assets (RWA). Banks are tasked with collecting funds and channeling them back in the form of credit with sufficient CAR or meeting the requirements so that banks can operate to obtain greater profits. The higher the CAR of a bank, the higher the ROA of that bank because the amount of capital it owns will be greater than the RWA of the capital it owns. Pecking order theory explains that CAR can be measured by how significant

a bank's capital ownership is. The capital owned is used to bear the risks of productive assets. The results of this research align with Wibisono and Wahyuni (2017) and Choudhry et al. (2018), who state that CAR affects ROA. And it is not in line with research by Altunbas et al. (2005).

To calculate the Capital Adequacy Ratio, it can be measured as follows:

$$CAR = \frac{\text{Bank Capital}}{\text{Total ATMR}}$$

Operating Expenses to Operating Operating Income (OEOI)

OEOI is a ratio that measures banking efficiency in managing operational expenses and income. OEOI influences banking performance. Signal theory explains that banks must reduce operational expenses for a higher margin. The higher the banking operational expenses, the lower the bank's Net Interest Margin. Research conducted by Durguti et al. (2014) and Zhou et al. (2008) shows that OEOI affects NIM. This differs from research by Pincur et al., which showed OEOI did not affect NIM.

A high level of OEOI indicates the bank's lack of ability to control costs incurred, which are greater than the income earned, affecting the profits obtained. In signal theory, OEOI is used as a signal from management to analyze the bank's efficiency level in managing operational expenses to generate certain income. Thus, the operational efficiency of a bank related to the OEOI ratio will affect the bank's performance. The results of this research are in line with research conducted by Anindiandyah et al. (2020), Elshaday et al. (2018), and Farhanditya and Mawardi (2021), which shows that OEOI results have a positive effect on ROA. However, this is not in line with research conducted by Rohimah (2021), which shows that OEOI does not affect ROA.

The calculation to find the OEOI ratio can be calculated as follows:

$$OEOI = \frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100\%$$

Non-Performing Loan (NPL)

Non-Performing Loan (NPL) is a ratio that describes a condition where the debtor cannot pay his debt within the specified time. The factor that frequently causes NPL problems is banking policies that maintain high credit interest rates when the economy is unstable. A low NPL value indicates that the bank's funds will be greater so that the funds can be used for bank operations to gain profits. In this way, NPL is inversely proportional to NIM. The research results conducted by Lin (2011) and Khanh et al. (2015) show that NPL negatively affects Net Interest Margin. Then, different results from research conducted by Dezmercoledi (2013) stated that NPL did not affect NIM. NPL is a ratio used to measure bank management's ability to manage problematic financing provided by the bank. Financing distributed by banks can give rise to the potential for financing problems. In signal theory, management uses NPL as a signal to analyze the problematic financing level affecting bank profitability. The more financing is distributed to customers, the more income they earn. However, non-smooth financing will reduce the bank's profits. This is supported by research by Bhatia et al. (2012) and Choerudin et al. (2016), which states that NPL affects ROA. This differs from Nurwita's (2021) research, which states that NPL does not affect ROA.

The following is the formula for calculating NPL:

$$NPL = \frac{\text{Problems Credit}}{\text{Total Credit}}$$

Loan Deposit Ratio (LDR)

Loan Deposit Ratio is a financial ratio that functions as a banking intermediary to determine the level of banking liquidity and

shows the total amount of credit disbursed. The increasing LDR can mean an increase in credit successfully distributed by the bank, thus influencing increasing NIM. This is due to the high interest income received from the credit distribution. Based on the concept of signaling theory, if the level of credit risk is high, banks will usually implement a policy to obtain high margins. High receipt of interest income from disbursed credit. The results of research conducted by Bektas (2014) and Durguti et al. (2014) show that LDR has a negative effect on NIM. Meanwhile, the results differ from research by Farhanditya and Mawardi (2021), which states that LDR does not affect NIM.

LDR is a ratio used to measure bank liquidity by showing the bank's ability to provide funds and channel funds to customers or third parties. The value of the LDR ratio shows whether the bank is effective in distributing financing. If the LDR value shows a percentage that is too high or too low, the bank is considered ineffective in collecting and distributing customer funds. Based on signal theory, it shows that a high LDR ratio is an advantage for banks in obtaining an increase in a bank's achievements. This indicates that an increase in LDR provides a positive signal for an increase in ROA. This is supported by research by Voldova (2012) and Kunarsih et al. (2019), which state that LDR affects ROA. This result does not align with Sasongko's (2011) and Nurfitriani's (2021) research, which states that LDR does not affect ROA.

To find out the Loan to Deposit Ratio value, you can use the following formula:

$$LDR = \frac{\text{Total Loans}}{\text{Total Third Party Funds}}$$

Framework

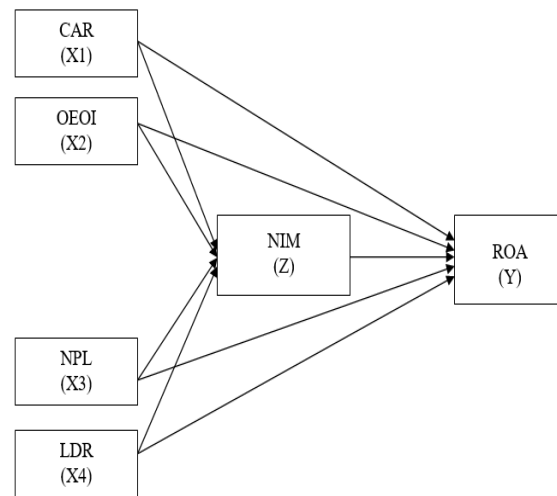


Figure 1. Framework

H1 = Capital Adequacy Ratio has a positive effect on Net Interest Margin.

H2 = Operational Expenses to Operational Income has a negative effect on Net Interest Margin.

H3 = The loan-to-deposit ratio has a negative effect on the net interest margin.

H4 = Non-performing loans have a negative effect on Net Interest Margin.

H5 = Capital Adequacy Ratio has a positive effect on Return on Assets.

H6 = Operational Expenses to Operational Income have a negative effect on Return on Assets.

H7 = Loan Deposit Ratio positively affects Return on Assets.

H8 = Non-performing loans have a negative effect on Return on Assets.

H9 = Net Interest Margin has a positive effect on Return on Assets.

H10 = Net Interest Margin can mediate the influence of Capital Adequacy Ratio on Return on Assets.

H11 = Net Interest Margin can mediate the influence of Operational Expenses to Operational Income on Return on Assets.

H12 = Net Interest Margin can mediate the influence of Loan Deposit Ratio on Return on Assets.

H13 = Net Interest Margin can mediate the effect of Non-Performing Loans on Return on Assets.

MATERIALS & METHODS

The research design used in this research is associative causal. Causal associative research identifies and interprets causal relationships between the variables in the research using theories or hypotheses related to the phenomena that occur. This research uses independent variables, namely Capital Adequacy Ratio (X1), Operational Expenses to Operational Income (X2), Loan Deposit Ratio (X3), and Non-Performing Loans (X4). The intervening variable used is Net Interest Margin (Z), and Return On Assets is the dependent variable (Y).

Population is the entire collection of objects or units with specific characteristics that can be used to form a conclusion. The population of this research is Indonesian state-owned banks in 2012-2022, namely PT. Bank Rakyat Indonesia, PT. Bank Negara Indonesia, PT. Bank Mandiri, PT. Bank Tabungan Negara, PT. Bank Sharia Indonesia.

The sampling technique used in this research was the purposive sampling method. The purposive sampling technique is a technique for selecting or determining samples using specific criteria. The sample criteria included in this research category are as follows:

1. State-owned banks that publish financial reports for ten consecutive years and are registered with the OJK during 2014-2022.
2. BUMN Bank has the required data for measuring research variables used in 2014-2022.

Based on the sample selection criteria that meet the requirements, the research sample was obtained from as many as 4 State-Owned Commercial Banks in Indonesia that consistently publish annual bank reports during the 2014-2022 period, namely PT. Bank Rakyat Indonesia, PT. Bank Negara Indonesia, PT. Bank Mandiri, PT. Tabungan Negara.

RESULT

A. Descriptive Statistical Analysis

Table 2. Results of Descriptive Statistical Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
CAR	36	14.64	24.67	19.7014	2.14416
OEOI	36	57.35	98.12	75.5542	9.65758
LDR	36	77.61	113.50	90.2122	8.86238
NPL	36	1.66	4.78	2.8658	0.80080
NIM	36	0.13	4.74	2.4603	1.12887
ROA	36	3.06	8.51	5.6236	1.33510
Valid N (listwise)	36				

Source: SPSS Output Results

Table 2 shows that CAR, as the first independent variable in state-owned bank companies for the 2014-2022 period, shows a maximum value of 24.67 obtained by Bank Rakyat Indonesia in 2021. The increase in CAR was also contributed by the Company's success in carrying out a rights issue as part of the process. The formation of Ultra Micro Holding, which also recorded history as the largest rights issue transaction in Indonesia. With a capital adequacy ratio that is still high, BRI can anticipate all the main risks that occur in bank management, including market risk, credit risk, and operational risk. The minimum value was 14.64, obtained by Bank Tabungan Negara in 2014. This was because the increase in equity was lower than the increase in credit provided. With this value, the company's capital structure can offset market risk, credit risk, and operational risk where the ratio is higher than BI's minimum adequacy ratio, and the company's capital structure complies with BI regulations. Then, the resulting average value is 19.7014, while the standard deviation value for the CAR variable is 2.14416. The data in this variable is quite good because the average value is still above the standard deviation.

OEOI, as the second independent variable, shows a maximum value of 98.12 obtained by Bank Tabungan Negara in 2019. The OEOI value is due to general and administrative expenses, employee salaries

and benefits, and unrealized losses from changes in the fair value of government bonds - net, guarantee program premiums, government, and others. The minimum value is 57.35, obtained by Bank Mandiri in 2022. The decreasing OEOI value is due to Bank Mandiri's digitalization, which makes the company more business efficient. It believes that digital development will capture the potential for long-term business growth. Then, the resulting average value was 75.5542, while the standard deviation value for the OEOI variable was 9.65758. The average value is still above the standard deviation, indicating that the data in this variable is quite good.

As the third independent variable, LDR shows the maximum value of 113.50 obtained by Bank Tabungan Negara in 2019. The considerable LDR value is due to the higher growth in securities than in Third Party Funds. Increasingly limited banking liquidity has resulted in slower credit growth. In addition to tightening liquidity, the slowdown in credit growth in 2019 was also caused by the behavior of investors who tended to wait to take investment action due to political conditions after the 2019 Indonesian election. The minimum score was 77.61, obtained by the Bank Mandiri in 2022. This is because Bank Mandiri successfully distributed increased credit, and the funding was supported by adequate liquidity with an increase in third-party funds. Then, the average value is 90.2122, while the standard deviation value for the LDR variable is 8.86238. The data in this variable is quite good because the average value is still above the standard deviation.

Then, NPL, as the fourth independent variable, shows a maximum value of 4.78. The increase in the NPL value was caused by a decrease in credit collectibility and BTN's policy not to carry out re-structuring for debtors who had been given relief twice, and this policy was also caused by the company seeing that the apartment, hotel, and office building business was still tricky. The minimum score of 1.66 was obtained by

Bank Mandiri in 2014. This is due to improvements in Bank Mandiri's performance to maintain credit quality. Several strategies have been carried out by selecting customers/customer projects and preparing Credit Analysis Notes that remain prudent by paying attention to the customer's financial condition, then monitoring debtors through the Wallet Tool (Watch List and Review Collectibility) once every three months and on the spot periodically and finally maintaining good relations with debtors, so that the debtor's condition can always be well monitored. The average value is 2.8658, while the standard deviation value for the NPL variable is 0.80080. The data in this variable is quite good because the average value is still above the standard deviation.

The NIM variable as an intervening variable in state-owned bank companies during the 2014-2022 period shows a maximum value of 8.51 obtained by Bank Rakyat Indonesia in 2014, with this value showing that Bank BRI is the top bank in Indonesia with the highest NIM ratio profitability level. The minimum value was 0.13, obtained by Bank Tabungan Negara in 2020. The NIM ratio value decreased due to the Covid-19 pandemic. The average value is 2.4603, while the standard deviation value for the NIM variable is 1.12887. The average value is still above the standard deviation, indicating that the data in this variable is quite good.

The ROA variable as a dependent variable in state-owned bank companies during the 2014-2022 period shows a maximum value of 4.74 obtained by Bank Rakyat Indonesia in 2014. This decrease is a consequence of increasing BRI liquidity, among other things, through increasing the portion of securities owned. The minimum score was 3.06, obtained by Bank Tabungan Negara in 2019. BTN bank is ineffective in using its assets to generate profits, or its ability to generate profits with the resources/total assets owned is inferior. Then, the average value is 5.6236, while the standard deviation

value for the LDR variable is 1.33510. The average value is still above the standard deviation, indicating that the data in this variable is quite good.

B. Classic Assumption Test

1. Normality Test

The normality test aims to determine whether the data results from the regression model are normally distributed. If the K-S statistical test value with a significance probability is greater than 0.05, then the residual data is normally distributed. However, if the value is smaller than 0.05, the residual data is not normally distributed. The results of the normality test in this study are as follows:

Table 3. Normality Test Results

	Unstandardized Residual
Test Statistic	.130
Asymp. Sig. (2-tailed)	.127 ^{c,d}

Source: SPSS Output Results

Based on the results from Table 3, the Test Statistics (K-S) value is 0.130, and the value of Asymp. Sig. (2 tailed) of 0.127. So, it can be concluded that the residual data from the regression model in this study is normally distributed. The K-S value and significance greater than 0.05 means the data is normally distributed.

2. Multicollinearity Test

The multicollinearity test is carried out to determine whether there is a correlation between the independent variables in the regression model. The absence of multicollinearity or correlation between the independent and dependent variables is a good regression model. It can be seen from the tolerance value or variance inflation factor (VIF) to determine whether there is multicollinearity in the regression model. The cut-off value usually used to determine multicollinearity is the Tolerance value < 0.10 or the same as VIF > 10.

Table 4. Multicollinearity Test Results

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	CAR	0.629	1.589
	OEOI	0.187	5.359
	LDR	0.566	1.766
	NPL	0.223	4.475
	NIM	0.432	2.316

a. Dependent Variable: ROA

Source: SPSS Output Results

Table 4 shows that no independent variables have a tolerance value of < 0.10, which means there is no correlation between independent variables whose value is more than 95%. The results of calculating the Variance Inflation Factor (VIF) value also show that none of the independent variables have a VIF value > 10. So, it can be concluded that there is no multicollinearity between the independent variables in the regression model of this research.

C. Hypothesis test

1. T-statistical test

The t-test was carried out to determine how the influence of the independent variable partially influences the dependent variable. This test can be done by looking at the significance column or comparing the calculated t with the t table. If the significance level is <5% and the t value is >> t table, then the independent variable partially affects the dependent variable.

Table 5. T-test results (Regression Equation I)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.007	3.093		1.619	0.116
	CAR	0.224	0.083	0.360	2.686	0.012
	OEOI	-0.006	0.038	-0.040	-0.147	0.884
	LDR	-0.010	0.024	-0.065	-0.413	0.683
	NPL	-0.873	0.386	-0.524	-2.265	0.031

a. Dependent Variable: NIM

Source: SPSS Output Results

Based on the results of the path I analysis, it is concluded that the CAR (X1) and NPL (X4) variables can influence NIM (Z), while

OEOI (X2) and LDR (X3) cannot influence NIM (Z).

Table 6. T-test results (Regression Equation II)

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.733	0.581		9.874	0.000
	CAR	-0.038	0.017	-0.072	-2.268	0.031
	OEOI	-0.073	0.007	-0.622	-10.678	0.000
	LDR	0.009	0.004	0.072	2.139	0.041
	NPL	-0.074	0.075	-0.052	-0.982	0.334
	NIM	0.419	0.032	0.495	12.935	0.000

a. Dependent Variable: ROA

Source: SPSS Output Results

Based on the results of the partial test (t-test) in the table above, it can be concluded that CAR (X1) and OEOI (X2) partially have a negative and significant effect on ROA (Y). LDR (X3) and NIM (Z) partially have a positive effect on ROA (Y). NPL (X4) partially does not affect ROA (Y).

2. Coefficient of Determination (R²)

The determination test, or R² test, determines how much variation in the dependent variable can be explained by the independent variable. The determination test provides information on whether the regression model is good by looking at the coefficient of determination value between zero and one. If the coefficient of determination is closer to zero, the ability of the independent variable to explain variations in the dependent variable is smaller. A value close to one means that the independent variable provides almost all the information needed. The coefficient of determination value in this research can be seen in the following table:

Table 7. Coefficient of Determination Test Results (Regression Equation I)

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.754 ^a	.568	.512	.93222

a. Predictors: (Constant), NPL, CAR, LDR, OEOI
b. Dependent Variable: NIM

Source: SPSS Output Results

The value of R² in the second equation is 0.568. This R² value is used to obtain the results of calculating the e1 value so that the variance of the ROA variable that FDR, NIM, and NPF do not explain can be known with e1. The magnitude of $e1 = \sqrt{1-R^2} = \sqrt{1-0.568} = 0.432$.

Table 8. Coefficient of Determination Test Results (Regression Equation II)

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990 ^a	.981	.978	.16803

a. Predictors: (Constant), NIM, CAR, LDR, NPL, OEOI
b. Dependent Variable: ROA

Source: SPSS Output Results

The table above shows that the Adjusted R² value is 0.978, which means that all independent variables can influence the dependent variable by 97.8%. A coefficient of determination value close to 100% shows that the dependent variable can be perfectly interpreted as an independent variable. Meanwhile, the remaining 2.2% can be explained by other variables not examined in this research.

The following image shows the results of the path analysis used in this research, explained in the following image:

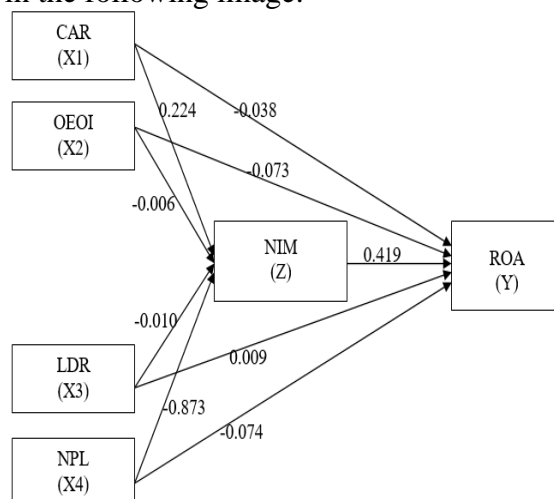


Figure 2. Path Analysis Results

3. Sobel Test

In this research, the Sobel test shows how the independent variable influences the

dependent variable through intervening variables. A variable can be an intervening variable if the variable can influence the relationship between the independent and dependent variables. The results of the Sobel test in this study are explained in the following table:

Table 9. Sobel Test Results

	t-count	t table (sig = 0,05)	Description
CAR	-1.72149	1.98861	t-count < t table
OEOI	0.15787	1.98861	t-count < t table
LDR	-0.40970	1.98861	t-count < t table
NPL	-2.22865	1.98861	t-count < t table

Source: Sobel test output, quantspy.org

The results of the path analysis and tests above show how direct and indirect the influence is. Then, there is also a comparison of the t count with the t table between the independent and dependent variables. For more detailed results, the results are as follows:

1. The direct influence exerted by CAR on ROA is -0.038, while the indirect influence of CAR via NIM on ROA is $0.224 \times 0.419 = 0.093$. So, ROA's total influence on NIM is direct and indirect, namely $-0.038 + 0.093 = 0.055$. Based on the calculation results, it is known that the indirect influence value is greater than the direct influence value. Then, the result of the calculated t value is -1.72149, and the value from the t table is 1.98861. So, the results of this comparison show that the calculated t value < t table.
2. The direct influence of OEOI on ROA is -0.073, while the indirect influence of OEOI through NIM on ROA is $-0.006 \times 0.419 = -0.002$. So, the total influence that ROA has on NIM is the direct and indirect influence: $-0.073 - 0.002 = -0.075$. Based on the calculation results, it is known that the indirect influence value is greater than the direct influence value. Then, the result of the calculated t

value is 0.15787, and the value of the t table is 1.98861. So, the results of this comparison show that the calculated t value < t table.

3. The direct influence of LDR on ROA is 0.009, while the indirect influence of OEOI through NIM is $-0.010 \times 0.419 = -0.004$. So, ROA's direct and indirect influence on NIM, namely $0.009 - 0.004 = 0.005$. Based on the calculation results, it is known that the indirect influence value is smaller than the direct influence value. Then, the result of the calculated t value is -0.40970, and the value from the t table is 1.98861. So, the results of this comparison show that the calculated t value < t table.
4. The direct influence of NPL on ROA is 0.419, while the indirect influence of NPL through NIM on ROA is $-0.873 \times 0.419 = -0.036$. So, ROA's direct and indirect influence on NIM is $0.419 - 0.036 = 0.383$. Based on the calculation results, it is known that the indirect influence value is smaller than the direct influence value. Then, the result of the calculated t value is -2.22865, and the value from the t table is 1.98861. So, the results of this comparison show that the calculated t value < t table.

CONCLUSION

Based on the results of the analysis and processing of research data above, it can be concluded that:

1. Capital Adequacy Ratio positively and significantly affects Net Interest Margin in BUMN Banks in 2014-2022.
2. Operational Expenses to Operational Income do not affect Net Interest Margin in BUMN Banks in 2014-2022.
3. Loan Deposit Ratio does not affect Net Interest Margin at BUMN Banks in 2014-2022.
4. Non-performing loans negatively and significantly affect the Net Interest Margin in BUMN Banks in 2014-2022.
5. The Capital Adequacy Ratio negatively and significantly affects the Return on

- Assets in BUMN Banks in 2014-2022.
6. Operational Expenses to Operational Income negatively and significantly affect Return on Assets in BUMN Banks in 2014-2022.
 7. The loan-to-deposit ratio positively and significantly affected the return on assets at BUMN Banks in 2014-2022.
 8. Non-performing loans do not affect Return on Assets at BUMN Banks in 2014-2022.
 9. Net Interest Margin positively and significantly affects Return on Assets at State-Owned Banks in 2014-2022.
 10. Net Interest Margin cannot mediate the influence of the Capital Adequacy Ratio on Return on Assets in BUMN Banks in 2014-2022.
 11. Net Interest Margin cannot mediate the influence of Operational Expenses to Operational Income on Return on Assets at State-Owned Banks in 2014-2022.
 12. Net Interest Margin cannot mediate the influence of the Loan Deposit Ratio on Return on Assets at BUMN Banks in 2014-2022.
 13. Net Interest Margin cannot mediate the effect of Non-Performing Loans on Return on Assets in BUMN Banks in 2014-2022.

LIMITATIONS

This research has several limitations that limit the object study. The limitations of the research in this study are as follows:

1. This research is still limited to research variables, which only discuss the performance of state-owned banking with four factors that can influence the ROA variable with one mediating variable, namely NIM. Meanwhile, the rest can be explained by other variables not examined in this study.
2. Research only on research objects in the state-owned banking sector in Indonesia. So, the results of this research cannot be generalized to

develop other cases outside the research object, such as private commercial banks and Sharia commercial banks, because the banking sector influences differences in research results.

SUGGESTIONS

The suggestions that can be given based on the results of the research and discussions that have been presented previously include the following:

1. Banks are expected to be able to use their productive assets optimally to increase the net interest income ratio and to properly consider the quality of credit disbursed to obtain optimal profits.
2. It is recommended for future researchers to increase the research period to provide more samples and obtain more accurate results. Then, using other more dominant variables that reflect a company's value is recommended to obtain valid results.
3. This research shows that Net Interest Margin cannot be used as an intervening variable in the influence of CAR, OEOI, LDR, and NPL on ROA in BUMN Banks. So, in future research, it is hoped that we can re-test Net Interest Margin as an intervening variable or as an independent variable

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