



The Effect of NPL, LDR, CAR, NIM, and BOPO on Profitability

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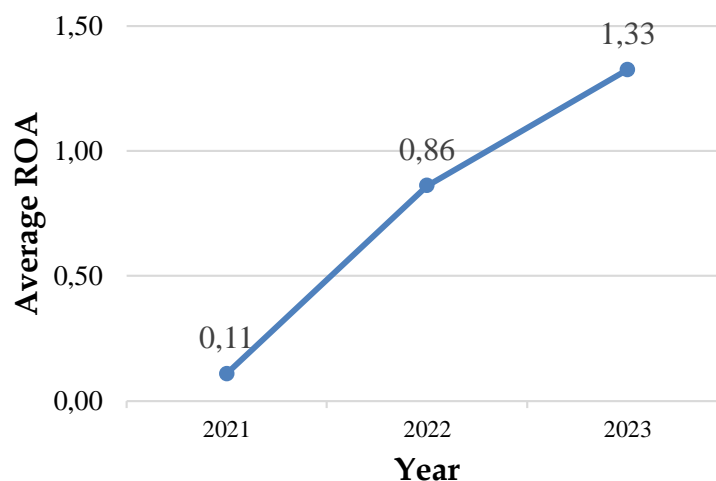
ABSTRACT

Profitability, as reflected through An important metric for assessing Return on assets, or ROA, measures a bank's ability to efficiently and successfully manage its assets. Investigating the effects of the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Net Interest Margin (NIM), and Operating Expenses to Operating Income (BOPO) on Return on Asset (ROA) is the goal of this study. An example of 31 conventional banks was chosen by simple random selection, and the research population consists of 34 banks that were listed between 2021 and 2023 on the IDX. The main tool for examining the relationship between variables in this study is multiple linear regression, which is the analytical technique employed. The study found a significant negative correlation between ROA and BOPO and NPL. In the meanwhile, ROA is greatly enhanced by LDR and NIM. On the other hand, ROA is not greatly impacted by CAR. Conclusions drawn from this research enhance the understanding of elements influencing bank ROA and support bank managers in formulating effective decisions

INTRODUCTION

Bank is a driver of the economy that plays several roles, such as fostering the growth of small businesses, improving the economic capacity of entrepreneurs and MSMEs, and serving as a source of funding. In Indonesia's financial system, banks dominate the market, and their collapse could lead to financial instability. Therefore, it is crucial to guarantee the stability and profitability of banks. The majority of the time, banks receive money from customers and then lend it out again. A bank's profitability is a major indicator of how effectively it is managed. The ability to make money is commonly assessed using Return on Asset (ROA), which indicates The amount of money made from the assets (Murhadi, 2013: 62).

Regulation of Bank Indonesia Number 23/15/PBI/2021, commercial banks are categorized into two distinct entities, commercial banks that conduct their operations in accordance with conventional principles and those adhering to sharia-based principles. Both types of banks provide services related to payment traffic. Conventional commercial banks are more widely used, and the services they offer are generally more familiar to the public. According to Statistics Indonesia (2022), the number more conventional banks than sharia-compliant commercial banks.



Source: Data Processing, 2025

Figure 1. Graph of Return on Asset (ROA) of Conventional Banks for the Period 2021–2023 (Percent)

Figure 1 shows the average ROA of Conventional banks that were listed between 2021 and 2023 on the IDX. The data indicate a consistent increase in ROA over the three years. In 2021, the average ROA was 0.11%. The average ROA value jumped to 0.86% in 2022 and continued to increase in 2023 to reach 1.33%. ROA reflects improvements in the financial performance of the banking sector, particularly regarding banks' ability to generate earnings. This improvement is closely linked to internal factors within the banks. A bank's health can be evaluated through its profitability, which is influenced by several financial ratios outlined in the RGEC approach, namely Operating Expense to Operating Income (BOPO), Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), Non-

Performing Loan (NPL), and Capital Adequacy Ratio (CAR) (VMS & Maryono, 2020). The factors that impact the bank's profitability are under the control of bank managers. This covers the functions of banks in the economy, management risk control, bank promotion, and money collection and disbursement.

Non-Performing Loan (NPL) ratio shows how good a bank's income-producing assets are compared to its bad loans. A higher ratio means the quality of these income-producing assets is worse. NPL recovery is carried out through rescheduling, reconditioning, restructuring, combination, and seizure of collateral (Kasmir, 2018, pp. 120). Anggreningsih and Negara (2021) state that loans are a bank's main way of making money, so if loans aren't paid back, the bank won't be able to give out as many new loans.

Research by Hidayat, et al. (2022), Saleh & Winarso (2021), Mawarto (2020), Yulyanti, et al. (2022), Pertiwi (2024), and Kinanti & Putra (2024) confirms the significant negative influence of NPL on ROA. Research by Mufarodi & Meliza (2024) confirms the significant and positive influence of NPL on ROA. Conversely, study carried out by Tami & Dewi (2022) reveals that the association between NPL and ROA does not attain statistical significance.

Loan to Deposit Ratio (LDR) is a ratio reflects how well a bank is capable of repaying its short-term debts using its deposits. LDR measures how much a bank should lend compared to the money it has from customer deposits and its own funds, so it can stay liquid (Giri & Purbawangsa, 2022). Putra and Rahyuda (2021) emphasize that the effectiveness of liquidity management plays a crucial role in a bank's capacity to generate revenue from its primary operations. This can be accomplished through minimizing short-term obligations and broadening the range of income-generating activities.

Research by Anggreningsih & Negara (2021), Giri & Purbawangsa (2022), Supriyatna & Candradewi (2023), Sochib, et al. (2023), and Mufarodi & Meliza (2024) indicate a statistically significant and positive association between LDR and ROA. The study carried out Adhim & Mulyati (2024) and Rifansa & Pulungan (2022) indicate that significant negative relationship between LDR and ROA. Research by Damanik & Manda (2021), Kinanti & Putra (2024), and Polimpung & Irawan (2021) revealed conflicting results, indicating that LDR had no effect on ROA.

Capital Adequacy Ratio (CAR) represents the lowest threshold of capital level that banks are required to maintain (Riyadi, 2006, p. 161). According to Kasmir (2018, p. 235), This ratio functions as a measure of a bank's capital adequacy and its capacity to absorb prospective loan losses, particularly those arising from outstanding interest obligations. An increase in CAR indicates a greater availability of capital for operational activities, which in turn can enhance a bank's profitability (Giri & Purbawangsa, 2022). Furthermore, a strong CAR enables more effective and efficient management of capital-related risks within the banking sector (Anggreningsih & Negara, 2021).

Research by Artha & Sudirman (2023), Sunaryo (2020), Fanny, et al. (2020) indicate that CAR has a significant positive influence on ROA. In contrast, research conducted by Pertiwi (2024) and Alaziz (2020) found that CAR has a significant negative effect on ROA. Meanwhile, studies by Rafinur et al. (2023), Adhim & Mulyati (2024), Widyastuti & Aini (2021), Sochib et al. (2023), and Mongdong et al. (2024) suggest that CAR has no effect on ROA.

Net Interest Margin (NIM) constitutes a financial indicator that gauges a bank's proficiency in optimizing its income-generating assets in order to produce net interest returns. This ratio also serves as an instrument to assess the institution's aptitude in navigating interest rate fluctuations (Rahayu & Rahyuda, 2024). Net Interest Margin (NIM) signifies a bank's adeptness in orchestrating interest-based inflows and outflows by leveraging its earning assets, thereby augmenting its aggregate financial yield (Siagian et al., 2021). Earning assets, such as loans, securities, and bonds, are financial instruments that generate interest income when reinvested (Sunaryo et al., 2021).

Research by Putra & Rahyuda (2021), Supriyatna & Candradewi (2023), Rifansa & Pulungan (2022), and Akbar & Nurdiansyah (2024) suggest that NIM exerts a significantly positive influence on ROA. Conversely, the inquiries of Hidayat et al. (2022) and Alaziz (2020) show that Net Interest Margin (NIM) imposes a significant adverse effect on Return on Asset (ROA). Meanwhile, the study undertaken by Rembet & Baramuli (2020) indicates that NIM bears does not impact on ROA.

Operating Expense to Operating Income (BOPO) represents a financial metric that delineates the extent to which a bank's aggregate operating expenditures correspond to its total operating revenues. This ratio serves as an indicator of operational efficiency within the banking institution. These expenses encompass costs incurred in executing core banking operations, including interest expenses, marketing costs, employee salaries, and other operational expenditures (Mandala et al., 2023). As articulated by Artha and Sudirman (2023), operational expenditures can additionally be assessed through the ratio of operating expenses to total assets. Furthermore, BOPO functions as a diagnostic tool in quantifying a bank's vulnerability to operational risk (Anggreningsih & Negara, 2021).

Research by Artha & Sudirman (2023), Putra & Rahyuda (2021), Dewi & Badjra (2020), Adhim & Mulyati (2024), and Alaziz (2020) confirms the existence of a significant negative correlation between BOPO and ROA. The study by Hidayat et al. (2022) reveals that NPL exerts a significant and positive impact on ROA. Conversely, investigations carried out by Rembet & Baramuli (2020) and Akbar & Nurdiansyah (2024) indicate that BOPO does not exert a statistically significant influence on ROA.

Grounded in theoretical divergences and empirical regularities identified in prior observations, this study aims to further investigate the influence of NPL, LDR, CAR, NIM, and BOPO on bank profitability, as measured by Return on Assets (ROA).

LITERATURE REVIEW

Bank Management

Desiyanti (2024, p. 3) Banking management refers to a series of coordinated activities that include planning, organizing, executing, and evaluating general banking operations. These operations involve managing funds through the processes of collecting and distributing financial resources, as well as overseeing human resource functions. Furthermore, the domain of banking management encompasses the administration of funds, risk governance, marketing activities within the banking industry, and the institution's role in fostering economic development.

Bank

Pursuant to Law Number 10 of 1988 on Banking in the Republic of Indonesia A bank is a type of financial institution that takes deposits from members of the public with the main objective of improving the welfare of society. and then uses those funds to provide credit or other financial products. Banks are naturally engaged in financial activity as they are organizations that function within the financial sector. Therefore, the core functions of a bank can be identified as fund collection, fund distribution, and the provision of various banking services.

Profitability

Bank profitability serves as an important indicator to evaluate how effectively and efficiently To make money, a bank uses its resources (Anggreningsih & Negara, 2021). In the banking industry, the Return on Assets (ROA) is commonly used to evaluate profitability. encapsulates the degree to which a bank's asset base is effectively utilized to yield net earnings (Murhadi, 2013, p. 62). ROA is regarded as a more accurate measure of profitability since it reflects the overall effectiveness of bank management in producing net income. Moreover, ROA emphasizes the bank's capacity to generate earnings through its operational activities, implying that a higher ROA indicates stronger profit-generating ability (Putra & Rahyuda, 2023).

Non-Performing Loan (NPL)

The number of loans that are categorized as non-performing and the quality of a bank's earning assets are reflected in non-performing loans, or NPLs. Delays in receiving anticipated income due to an increased non-performing loan level can have a detrimental impact on the bank's profitability. Conversely, a lower NPL typically contributes to a higher Return on Asset (ROA), while a higher NPL tends to reduce ROA (Yuliani et al., 2023). This statement is supported by empirical studies from Giri & Purbawangsa (2022), Hidayat, et al. (2022), Widyastuti & Aini (2021), Damanik & Manda (2021), Saleh & Winarso (2021), Mawarto (2020), Yulyanti, et al. (2022), Pertiwi (2024), and Kinanti & Putra (2024), which found that NPL has a negative effect on ROA.

H₁: Non-Performing Loan (NPL) has a negative effect on Return on Asset (ROA).

Loan to Deposit Ratio (LDR)

Loan to Deposit Ratio (LDR) serves as a financial index that evaluates the level to which a bank allocates its loan portfolio relative to the aggregate funds mobilized from the public in conjunction with its internal capital resources (Kasmir, 2018, p. 319). A high LDR suggests the potential for increased profitability, as long as the bank is able to manage its lending activities efficiently while maintaining a low level of non-performing loans, thereby contributing positively to Return on Asset (ROA) (Widyastuti & Aini, 2021). This statement is supported by empirical studies from Anggreningsih & Negara (2021), Giri & Purbawangsa (2022), Supriyatna & Candradewi (2023), Sochib, et al. (2023), Mufarodi & Meliza (2024), and Bagus & Taswan (2019), which state that LDR has a positive and significant effect on ROA.

H₂: Loan to Deposit Ratio (LDR) has a positive effect on Return on Asset (ROA).

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) serves as the minimum of capital that a bank is required to maintain (Riyadi, 2006, p. 161). A higher CAR reflects a stronger capacity of the bank to cover unforeseen losses that may emerge from credit or other risk-bearing assets. An increase in CAR also implies a greater amount of capital available to support operational activities, which can positively influence the profitability of bank's (Giri & Purbawangsa, 2022). This perspective is affirmed by empirical studies from Artha & Sudirman (2023), Suroso (2021), Rembet & Baramuli (2020), Sunaryo (2020), and Fanny, et al. (2020).

H₃: The Capital Adequacy Ratio (CAR) has a positive effect on Return on Asset (ROA).

Net Interest Margin (NIM)

The A financial indicator called net interest margin (NIM) assesses how well a bank uses its assets that produce income to create net interest returns. A rising trend in NIM indicates an increase in interest-bearing income from productive assets, strengthening the institution's overall financial stability and profitability. Empirical research from Bagus & Taswan (2019), Putra & Rahyuda (2021), Supriyatna & Candradewi (2023), Rifansa & Pulungan (2022), and Akbar & Nurdiansyah (2024) supports this viewpoint by demonstrating that NIM significantly improves ROA. H₄: Net Interest Margin (NIM) has a positive effect on Return on Asset (ROA).

Operating Expenses to Operating Income Ratio (BOPO)

The Operating Expenses to The percentage of the proportion of total operating income to entire operating costs is known as the Operating Income Ratio (BOPO) (Artha & Sudirman, 2023). More effective management is shown in a lower BOPO ratio performance, suggesting that the bank is utilizing its available resources more effectively. This statement is supported by empirical studies from Putra & Rahyuda (2021), Artha & Sudirman (2023), Dewi & Badjra (2020), Adhim & Mulyati (2024), and Alaziz (2020), which show that BOPO has a negative and significant effect on ROA.

H₅: Operating Expenses to Operating Income (BOPO) has a negative effect on Return on Asset (ROA).

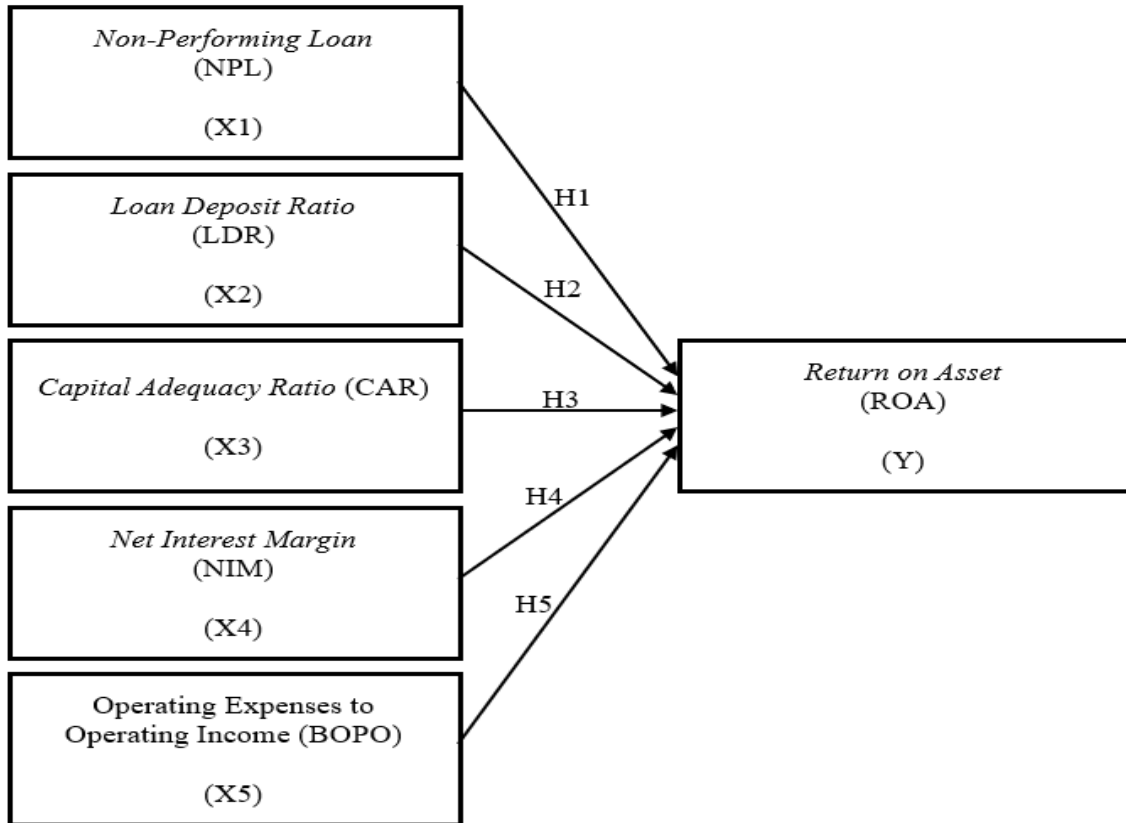


Figure 2. Conceptual Framework

METHODOLOGY

The effects and causal relationships between the variables under examination are investigated in this study using a quantitative technique and a causal-associative design. The audited financial reports of conventional banks that were obtained from the Indonesia Stock Exchange's (IDX) official website, www.idx.co.id, served as secondary sources of the data used. The 34 conventional banks that were listed on the IDX and continuously recorded positive net income during the course of the three-year observation period make up the research population. To guarantee representativeness, a probability-based sampling method—more especially, simple random sampling—was used. Slovin's method was used to calculate the sample size, which resulted in 31 banks and 93 observations overall. Analytical techniques included traditional assumption testing, inferential analysis, and descriptive statistical analysis. The dataset was then subjected to multiple linear regression analysis, which was operationalized using the following regression equation.

$$Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e.....(1)$$

Description:

- Y = Return on Asset (ROA)
- α = Constants
- b₁-b₅ = Regression coefficient
- X₁ = Non-Performing Loan (NPL)

- X₂ = Loan Deposit Ratio (LDR)
- X₃ = Capital Adequacy Ratio (CAR)
- X₄ = Net Interest Margin (NIM)
- X₅ = Operating Expenses to Operating Income (BOPO)

RESULT

Table 1. Descriptive Statistical Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
ROA	93	0,04	4,76	1,6600	1,21099
NPL	93	0,01	3,36	1,1114	0,81420
LDR	93	29,67	163,19	83,6032	26,37248
CAR	93	10,78	106,10	32,0204	17,25682
NIM	93	0,69	9,01	4,6972	1,42203
BOPO	93	23,09	99,40	75,8404	18,20417

Source: Data Processing, 2025

The descriptive statistical assessment indicates that Return on Asset (ROA) records 1.6600 as the mean, 1.21099 as the standard deviation, 0.04 as the minimum, and 4.76 as the maximum. The mean of an NPL is 1.1114, the standard deviation is 0.81420, the minimum is 0.01, and the maximum is 3.36. The LDR's standard deviation is 26.37248, its average is 83.6032, its lowest is 29.67, and its maximum is 163.19. The Capital Adequacy Ratio (CAR) ranges from a minimum of 10.78 to a maximum of 106.10, with a mean of 32.0204 and a standard deviation of 17.25682. The Net Interest Margin (NIM) ranges from a minimum of 0.69 to a maximum of 9.01, with a mean of 4.6972 and a standard deviation of 1.42203. From a mean of 75.8404 to a standard deviation of 99.40, the Operating Expense to Operating Income Ratio (BOPO) ranges from a minimum of 23.09 to a maximum of 18.20417. In aggregate, the mean figures surpass their corresponding standard deviations for all variables, denoting limited variability and implying that the distribution is relatively consistent, with the majority of data points concentrated in proximity to the mean.

Table 2. Multiple Linear Regression Test Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0,180	1,331		0,136	0,893
NPL	-0,413	0,121	-0,278	-3,403	0,001
LDR	1,556	0,688	0,177	2,262	0,026
CAR	0,006	0,469	0,001	0,012	0,991
NIM	0,205	0,079	0,240	2,602	0,011
BOPO	-0,026	0,006	-0,394	-4,325	0,000
Adj. R Square	0,570				
Sig. F	0,000				

Source: Data Processing, 2025

Drawing upon The multiple linear regression analysis's findings are shown in Table 2. The following is the expression for the regression equation utilized in this study:

$$Y = 0,180 - 0,413X_1 + 1,556X_2 + 0,006X_3 + 0,205X_4 - 0,026X_5$$

Determination Coefficient Test

R Square value show 0.570 or 57%, indicating that 57% of the variance in profitability is Influenced by the variance in NPL, LDR, CAR, NIM, and BOPO, whereas external factors not included in this study have an impact on the remaining 43%..

Model Feasibility Test (F-Test)

The significance level shown by Since the p-value is $0.000 < 0.05$, H_0 is disproved and H_1 is approved. Demonstrate how NPL, LDR, CAR, NIM, and BOPO all have a major simultaneous influence on the ROA of conventional banks listed on the Indonesia Stock Exchange between 2021 and 2023. Since the p-value is $0.000 < 0.05$, H_0 is disproved and H_1 is approved. Demonstrate how NPL, LDR, CAR, NIM, and BOPO all have a major simultaneous influence on the ROA of conventional banks listed on the Indonesia Stock Exchange between 2021 and 2023.

Hypothesis Test (T-Test)

NPL's regression coefficient is -0.413, meaning that, ceteris paribus, ROA will decrease by 0.413 units for every unit rise in NPL. The p-value of $0.001 < 0.05$, which shows the rejection of H_0 and the acceptance of H_1 , shows a negative and statistically significant association between NPL and ROA. LDR's regression coefficient is 1.556, which indicates that a one-unit rise in LDR will result in a 0.1556-unit increase in ROA, assuming that all other independent variables remain constant. A p-value of $0.026 < 0.05$ indicates that

H_0 is refused while H_2 is accepted, suggesting that there is a positive and statistically significant relationship between ROA and LDR. With all other factors held constant, a one-unit rise in CAR will result in a 0.006-unit increase in ROA, according to the regression coefficient for CAR, which is 0.006. With a p-value greater than 0.05 (0.991), H_0 is retained and H_3 is declined, suggesting the absence of a CAR and ROA have a positive and statistically significant relationship. The regression coefficient for NIM is 0.205, meaning that, if all other independent variables stay the same, a one-unit increase in NIM will increase ROA by 0.205 units. Because the p-value is less than 0.05, it is rejected H_0 and the acceptance of H_4 , confirming that NIM and ROA have a positive and statistically significant relationship. NIM and ROA. According to the regression coefficient for BOPO, which is -0.026, a one-unit rise in BOPO will cause a 0.026-unit drop in ROA when all other independent variables are held constant. A p-value of $0.000 < 0.05$ indicates that there is a statistically significant negative correlation between BOPO and ROA, leading to the rejection of the hypothesis of H_0 and the acceptance of H_5 .

Classical Assumption Tests

Table 3. Normality Test Results

	<i>Unstandardized Residual</i>
N	93
<i>Asymp. Sig. (2-tailed)</i>	0,200

Source: Data Processing, 2025

With an Asymp. Sig (2-tailed) value of 0.200, over the predetermined significance level of 0.05, the regression model used in this investigation meets the assumptions of normality in its distributional pattern.

Table 4. Multicollinearity Test Results

Variable	Tolerance	VIF
NPL	0,743	1,346
LDR	0,805	1,243
CAR	0,916	1,091
NIM	0,579	1,728
BOPO	0,595	1,680

Source: Data Processing, 2025

The results show that every the variable's tolerance value is greater than 0.10 and its VIF value is less than 10, indicating that multicollinearity is not present in the regression model.

Table 5. Results of Heteroscedasticity Test

Variable	Significance
NPL	0,280
LDR	0,726
CAR	0,052
NIM	0,787
BOPO	0,995

Source: Data Processing, 2025

Based on the test results showing significance values greater than 0.05 for all variables, the regression model is considered to meet the assumption of homoscedasticity.

Table 6. Autocorrelation Test Results

Runs Test	
	<i>Unstandardized Residual</i>
Z	0,522
<i>Asymp. Sig. (2-tailed)</i>	0,601

Source: Data Processing, 2025

The regression model is free of autocorrelation, according to the autocorrelation test using the Run Test result, which showed that the Asymp. Sig (2-tailed) value was $0.601 > 0.05$.

DISCUSSION

The Effect of Non-Performing Loans (NPL) on Return on Asset (ROA)

Analytical The results verify that non-performing loans (NPL) had a substantial and adverse effect on the return on assets (ROA) of conventional banks listed on the Indonesia Stock Exchange during the 2021–2023 observation period. The results indicate that a higher non-performing loan (NPL) percentage has a bigger effect on the bank's declining return on assets (ROA). Issued loans cause a decrease in the interest income that banks should entrance. Additionally, banks must set aside provisions for impairment losses or reserves for these problem loans, which increases operational costs and reduces net profit.

These research findings align with the study of Giri & Purbawangsa (2022), which shown that ROA is negatively impacted by NPL. Researchers Hidayat et al. (2022), Widyastuti & Aini (2021), Damanik & Manda (2021), Saleh & Winarso (2021), Mawarto (2020), Yulyanti et al. (2022), Pertiwi (2024), and Kinanti & Putra (2024) have also discovered that the NPL has a detrimental impact on ROA.

The Effect of Loan to Deposit Ratio (LDR) on Return on Asset (ROA)

Analytical results substantiate Thus, throughout the 2021–2023 observation period, The Return on Assets (ROA) of conventional banking institutions listed on the Indonesia Stock Exchange is positively and considerably impacted by the Loan Deposit Ratio (LDR). The study's findings indicate that the bank's return on assets (ROA) increases with a higher LDR ratio. A high LDR ratio indicates the bank's ability and motivation to address liquidity issues in order to raise income levels. The bank's profits may rise with a high LDR ratio. According to research by Anggreningsih & Negara (2021), Giri & Purbawangsa (2022), Supriyatna & Candradewi (2023), Sochib et al. (2023), Mufarodi & Meliza (2024), and Bagus & Taswan (2019), LDR significantly improves ROA, and a higher LDR can boost bank profitability. These findings are consistent with the findings of this study.

The Effect of Capital Adequacy Ratio (CAR) on Return on Asset (ROA)

Analytical results substantiate that the During the 2021–2023 observation period, the The Return on Assets (ROA) of conventional banking institutions listed on the Indonesia Stock Exchange is positively and considerably impacted by the Loan Deposit Ratio (LDR). The study's findings indicate that the bank's return on assets (ROA) increases with a higher LDR ratio. A high LDR ratio indicates the bank's ability and motivation to address liquidity issues in order to raise income levels. The bank's profits may rise with a high LDR ratio. and Mongdong, et al. (2024), that found the CAR does not significantly affect ROA, as banks tend to allocate most of their capital as reserves in case of loss risks, rather than using it for productive activities such as lending or investment, thus not influencing the bank's profitability.

The Effect of Net Interest Margin (NIM) on Return on Asset (ROA)

Analytical results substantiate that throughout the 2021–2023 observation period, the The Net Interest Margin (NIM) has a favorable and considerable influence on the Return on Assets (ROA) of conventional banking institutions listed on the Indonesia Stock Exchange. The results of the study indicate that a higher NIM ratio has a more substantial effect on the bank's Return on Asset (ROA). The bank's ability to efficiently handle third-party funds and distribute them through loans or other financial placements in a way that maximizes interest income after deducting interest costs is demonstrated by a high Net Interest Margin (NIM). The main source of income for banks is The difference between interest revenue and interest expenses is known as net interest income.

The results of this study are in line with earlier research by Bagus & Taswan (2019), which shown that NIM significantly and favorably affects ROA. The findings are also consistent with studies by Akbar & Nurdiansyah (2024), Supriyatna & Candradewi (2023), Rifansa & Pulungan (2022), and Putra & Rahyuda (2021) that discovered a considerable favorable impact of the NIM on ROA.

The Effect of Operating Expenses to Operating Income (BOPO) on Return on Asset (ROA)

Analytical The results verify that during the 2021–2023 observation period, the Operating Expenses to Operating Income (BOPO) had a substantial negative influence on the Return on Assets (ROA) of conventional banking institutions listed on the Indonesia Stock Exchange. The investigation's findings indicate that a bank's decline will be more significantly impacted by a higher BOPO ratio Return on Asset (ROA). Banks that incur higher operating expenses relative to their operating income tend to experience reduced operational efficiency, which negatively affects their profit levels. When expenditures such as interest payments, employee compensation, or marketing costs exceed the income generated from core activities like lending, the revenue becomes insufficient to offset the expenses, ultimately leading to a decline in profitability. The findings of this study are consistent with those of Putra & Rahyuda's (2021) investigation, which discovered that BOPO significantly and negatively affects ROA. The study's findings also align with those of studies by Artha & Sudirman (2023), Dewi & Badjra (2020), Adhim & Mulyati (2024), and Alaziz (2020), which discovered that the BOPO significantly and negatively affects ROA.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The investigation's empirical findings reveal that, among Return on assets (ROA) is negatively and statistically significantly impacted by non-performing loans (NPL), the operating expenses to operating income ratio (BOPO), and traditional banks that were listed on the Indonesia Stock Exchange between 2021 and 2023. On the other hand, the Loan to Deposit Ratio (LDR) and Net Interest Margin (NIM) have a positive and statistically significant impact on ROA within the same bank category and time period. However, during the 2021–2023 period, the Capital Adequacy Ratio (CAR) had no statistically significant effect on ROA in conventional banks that are listed on the Indonesia Stock Exchange. To lower non-performing loan ratios and operating expenses, banks require efficient operations and efficient credit risk management, thereby increasing profitability. Bank management is also expected to optimize credit distribution and maintain net interest income to enhance bank profitability. Additionally, banks are expected to optimize capital utilization not only as a passive reserve but also to drive increased bank profitability.

Recommendations

This study is constrained by its exclusive focus on conventional banks, thereby failing to furnish a holistic depiction of the overall banking landscape in Indonesia. Another notable limitation lies in the narrow scope of independent variables assessed and the comparatively abbreviated observation horizon, which may delimit the robustness and external validity of the research outcomes. Future researchers are encouraged to conduct research on other factors, both internal and external to the bank, as independent variables that influence bank profitability, or by expanding the sample size and extending the observation period to obtain more varied and comprehensive analytical results.

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