Financial Performance and Banking Profitability: A Study of Banking Companies Listed on the Indonesia Stock Exchange

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This study examines to analyze the effect of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR) on profitability as measured by Return on Assets (ROA) in banking companies listed on the Indonesia Stock Exchange during the 2022–2025 period. This research uses a quantitative approach with secondary data obtained from annual financial reports. The sampling technique used purposive sampling, resulting in 35 banking companies with a total of 140 observations. The analytical methods employed include descriptive statistics, classical assumption tests, multiple linear regression analysis, hypothesis testing (t-test and F-test), and coefficient of determination (R^2) using SPSS. The CAR variable has a minimum value of -0.45 and a maximum value of 7.48 with a mean of 2.9843, and shows a standard deviation of 2.85325. The NPL variable has a minimum value of -12.38 and a maximum value of 10.94 with a mean of 0.4213 and shows a standard deviation of 7.66889. The BOPO variable has a minimum value of -4.34 and a maximum value of 10.33 with a mean of 3.5687, and shows a standard deviation of 3.89921. Meanwhile, LDR has a minimum value of -0.36 and a maximum value of 9.78 with a mean of 4.0120, and shows a standard deviation of 3.39202. The ROA variable has a minimum value of -3.15 and a maximum value of 2.67 with a mean of 0.2120 and shows a standard deviation of 1.12624.In conclusion, financial performance reflected by CAR, NPL, BOPO, and LDR plays an important role in improving banking profitability. This study is expected to provide insights for bank management, investors, and future researchers.

Keywords: CAR, NPL, BOPO, LDR, ROA, Profitability

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1. Introduction

The banking sector plays an important role in supporting the stability and growth of the national economy (Anggara et al., 2026). Banks function as financial intermediary institutions that collect funds from the public and redistribute them in the form of credit to parties in need (Latifah, 2023). Through this function, banking institutions not only contribute to maintaining the smooth operation of economic activities but also serve as one of the sectors that reflects financial conditions and public confidence in the economic system (Budiansyah, 2023). One of the main indicators used to assess banking financial performance is profitability (Amelia et al., 2025). Profitability reflects a company's ability to generate earnings from the resources it owns. In the banking sector, profitability is commonly measured using Return on Assets (ROA), as this ratio describes a bank's ability to manage its total assets to generate profit (Siregar & Lubis, 2023). The higher the ROA, the better the bank's ability to utilize its assets effectively to produce earnings. Conversely, a decline in ROA may indicate problems in asset management, operational efficiency, or the quality of financial intermediation (Andriansyah et al., 2024).

The data in Figure 1 indicate that banking performance in Indonesia experienced several changes during the 2023–2025 period. The decline in CAR and ROA suggests that capital adequacy and profitability require further attention. At the same time, the increase in BOPO and NPL in 2025 indicates challenges related to operational efficiency and credit risk management. These conditions provide an empirical basis for examining the relationship between financial performance ratios and banking profitability.

Banking profitability can be influenced by various financial ratios, including the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR). CAR indicates the level of a bank's capital adequacy in absorbing potential losses arising from its productive assets (Chen et al., 2024). The stronger the bank's capital position, the greater its ability to maintain operational stability and support business expansion (Al-Matari, 2023). NPL reflects the level of problem loans held by the bank. A high NPL can increase the risk of loss and reduce profits, as banks are required to allocate provisions for credit losses(Naja et al., 2023). BOPO is used to measure the level of operational efficiency, while LDR reflects the bank's ability to channel third-party funds into credit.

The phenomenon observed in banking companies listed on the Indonesia Stock Exchange shows that the relationship between financial ratios and profitability does not always align with theoretical expectations. Data from several banks indicate that an increase in CAR is not always followed by an increase in ROA. Similarly, a decline in BOPO or NPL does not always directly result in higher profitability. Under certain conditions, an increase in LDR may also fail to improve ROA if credit distribution is not supported by good credit quality. This condition indicates that banking profitability is influenced by a complex relationship among capital adequacy, credit quality, operational efficiency, and liquidity.

The 2022–2025 period is an interesting period to examine because the banking sector was in a phase of recovery and adjustment to post-pandemic economic dynamics, the development of digital financial services, and changes in customer behavior. Banks are required to maintain capital adequacy, control credit risk, improve operational efficiency, and optimize credit distribution in order to sustain sound profitability. Therefore, analyzing the factors that influence ROA is important to provide a clearer understanding of banking financial performance during this period. The problems faced by banking companies during this period can be observed from the inconsistency between changes in financial ratios and the level of profitability achieved. Theoretically, an increase in the Capital Adequacy Ratio (CAR) should indicate stronger bank capital, which is expected to support profit growth. However, in several banks, an increase in CAR was not always followed by an increase in ROA. This condition indicates that a large capital base

does not necessarily improve profitability if it is not accompanied by optimal management of productive assets. In addition, Non-Performing Loan (NPL) also remains an important issue because a high level of problem loans can increase provisioning expenses and reduce bank profits. Although some banks experienced a decline in NPL, their profitability still decreased, indicating that credit quality is not the only factor determining ROA.

Other problems can also be observed in the BOPO and LDR ratios. A decline in BOPO should reflect improved operational efficiency and contribute to higher profitability. However, the data show that a decline in BOPO in several banks has not been able to increase ROA. This indicates that operational cost efficiency does not fully contribute to profit improvement when operating income does not grow optimally. Meanwhile, an increase in the Loan to Deposit Ratio (LDR) indicates that banks are becoming more active in channeling third-party funds into credit. However, a higher LDR may also create liquidity risk if it is not managed carefully. This phenomenon shows that banking companies still face challenges in maintaining a balance among capital adequacy, credit risk control, operational efficiency, liquidity, and optimal profitability.

Several previous studies (Yoewono & Prabowo, 2024), (Tristanto et al., 2023), (Amelia & Gulo, 2021), (Abdurrahman et al., 2026) have examined the influence of CAR, NPL, BOPO, and LDR on ROA; however, the findings remain varied. Some studies found that CAR and LDR have a positive effect on ROA, while NPL and BOPO have a negative effect on ROA. However, other studies have reported different results, particularly under certain conditions where banks are still able to manage credit risk and operational costs productively. These differences indicate the existence of a research gap that needs to be re-examined using a more recent period and research object.

Based on the explanation above, this study was conducted to analyze the influence of Capital Adequacy Ratio, Non-Performing Loan, Operating Expenses to Operating Income, and Loan to Deposit Ratio on Return on Assets in banking companies listed on the Indonesia Stock Exchange during the 2022–2025 period. This study is expected to contribute to the development of financial management studies, particularly regarding the factors that influence banking profitability. In addition, the findings are expected to serve as a consideration for bank management, investors, and related parties in evaluating banking financial performance more comprehensively.

2. Method

This study employed a quantitative approach with a descriptive and explanatory research design to examine the effect of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR) on banking profitability as measured by Return on Assets (ROA). The research object consisted of banking companies listed on the Indonesia Stock Exchange during the 2022–2025 period. The data used in this study were secondary data obtained from annual financial statements published through the official website of the Indonesia Stock Exchange and the respective banking companies. The population of this study included all banking companies listed on the Indonesia Stock Exchange during the observation period. The sample was determined using purposive sampling based on several criteria, namely banking companies listed on the Indonesia Stock Exchange from 2022 to 2025, companies that generated profits during the observation period, and companies that had complete annual financial reports. Based on these criteria, 35 banking companies were selected as the research sample with four years of observation, resulting in 140 firm-year observations(Prastowo, 2016). The data were collected using the documentation method by reviewing annual reports and financial ratio data related to CAR, NPL, BOPO, LDR, and ROA. The collected data were analyzed using descriptive statistics, classical assumption tests, multiple linear regression analysis, partial hypothesis testing using the

t-test, simultaneous hypothesis testing using the F-test, and the coefficient of determination. The classical assumption tests included normality, multicollinearity, heteroscedasticity, and autocorrelation tests to ensure that the regression model met the requirements for valid and reliable estimation. Data processing was conducted using SPSS software.

3. Results and Discussion

Result

Descriptive statistics

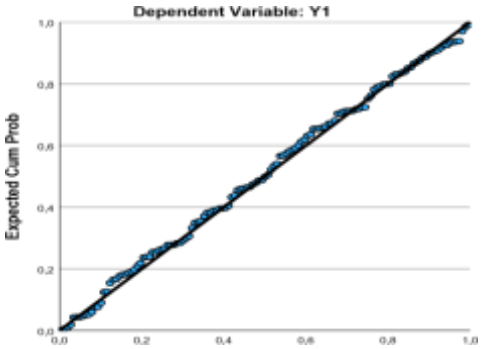
Descriptive statistics were used to present the number of observations (N), minimum values, maximum values, mean values, and standard deviations of each research variable. The results of the data processing are presented in Table 1:

	N	Minimum	Maximum	Mean	Std. Deviation
X1 (CAR)	135	-,45	7,48	2,9843	2,85325
X2 (NPL)	135	-12,38	10,94	,4213	7,66889
X3 (BOPO)	135	-4,34	10,33	3,5687	3,89921
X4 (LDR)	135	-,36	9,78	4,0120	3,39202
Y1 (ROA)	135	-3,15	2,67	,2120	1,12624
Valid N (listwise)	135				

Source: Data processed using SPSS, 2025

The Statistical Product and Service Solutions (SPSS) version 30 software was used to analyze the data in this study. Based on the Descriptive Statistics table, the CAR variable had a minimum value of -0.45 and a maximum value of 7.48, with a mean of 2.9843 and a standard deviation of 2.85325. The NPL variable had a minimum value of -12.38 and a maximum value of 10.94, with a mean of 0.4213 and a standard deviation of 7.66889. The BOPO variable had a minimum value of -4.34 and a maximum value of 10.33, with a mean of 3.5687 and a standard deviation of 3.89921. Meanwhile, the LDR variable had a minimum value of -0.36 and a maximum value of 9.78, with a mean of 4.0120 and a standard deviation of 3.39202. The ROA variable had a minimum value of -3.15 and a maximum value of 2.67, with a mean of 0.2120 and a standard deviation of 1.12624.

Normality Test Result



Source: Data processed using SPSS, 2025.

Figure above presents the Normal P–P Plot graph, in which the data points are distributed around the diagonal line and follow the direction of the line. This indicates that the residuals in the regression model are normally distributed. Therefore, it can be concluded that the normality assumption has been fulfilled.

Multicollinearity Test Result

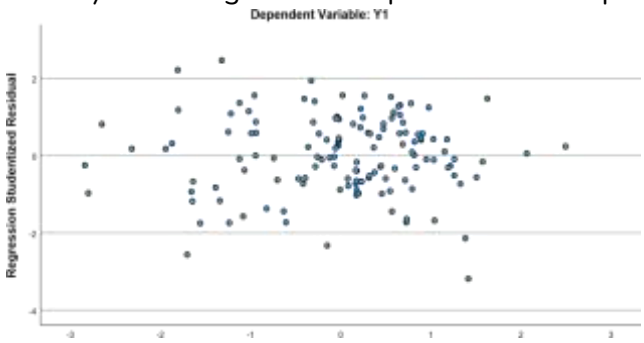
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIP
1	(Constant)	-1,178	,142		-8,271	<,001		
	X1	,066	,024	,167	2,762	,007	,990	1,010
	X2	,018	,009	,123	2,032	,044	,982	1,018
	X3	,155	,017	,536	8,857	<,001	,991	1,009
	X4	,158	,020	,475	7,816	<,001	,981	1,020

Source: Data processed using SPSS, 2025.

Based on Table above the tolerance values for all variables are greater than 0.10, and the VIF values for the four variables are less than 10. This indicates that there is no correlation, or multicollinearity, among the independent variables.

Heteroscedasticity Test

The results of the heteroscedasticity test using the scatterplot method are presented as follows:



Source: Data processed using SPSS, 2025.

Figure above shows that the data points in the regression model are randomly distributed and do not form a clear or wavelike pattern. Therefore, it can be concluded that there is no indication of heteroscedasticity.

Multiple Linear Regression Analysis

Multiple linear regression analysis is used to examine the effect of two or more independent variables on a dependent variable. The results of the analysis are presented as follows:

Variable	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Tolerance
Constant	-1,178	,142	-	-8,271	<,001	-
X1	,066	,024	,167	2,762	,007	,990
X2	,018	,009	,123	2,032	,044	,982
X3	,155	,017	,536	8,857	<,001	,991
X4	,158	,020	,475	7,816	<,001	,981

Source: Data processed using SPSS, 2025.

Based on Table 3.5 above, the regression equation can be formulated as follows:

ROA = -1.178 + 0.066 CAR + 0.018 NPL + 0.155 BOPO + 0.158 LDR

The regression equation can be interpreted as follows:

1. The constant value of -1.178 indicates that if CAR, NPL, BOPO, and LDR are equal to 0, ROA is estimated to be -1.178.

2. The CAR coefficient of 0.066 indicates that every one-unit increase in CAR will increase ROA by 0.066, assuming that the other variables remain constant.
3. The NPL coefficient of 0.018 indicates that every one-unit increase in NPL will increase ROA by 0.018, assuming that the other variables remain constant.
4. The BOPO coefficient of 0.155 indicates that every one-unit increase in BOPO will increase ROA by 0.155, assuming that the other variables remain constant.
5. The LDR coefficient of 0.158 indicates that every one-unit increase in LDR will increase ROA by 0.158, assuming that the other variables remain constant.

Overall, all independent variables in this regression equation have a positive effect on ROA based on their coefficient values.

Partial Hypothesis Test (t-Test)

Based on Table 3.6 above, the t and Sig. columns were used to determine whether each independent variable (X1, X2, X3, and X4) had a significant effect on the dependent variable.

Unstandardized Coefficients				Standardized Coefficients		
Model	B	Std. Error		Beta	t	Sig.
1	(Constant)	-1,178	,142		-8,271	<,001
	X1	,066	,024	,167	2,762	,007
	X2	,018	,009	,123	2,032	,044
	X3	,155	,017	,536	8,857	<,001
	X4	,158	,020	,475	7,816	<,001

The results of the test are as follows:

1. The X1 variable has a t-value of 2.762, which is greater than the t-table value of 1.978, and a significance value of 0.007, which is less than 0.05. Therefore, X1 has a significant effect on Y.
2. The X2 variable has a t-value of 2.032, which is greater than the t-table value of 1.978, and a significance value of 0.044, which is less than 0.05. Therefore, X2 has a significant effect on Y.
3. The X3 variable has a t-value of 8.857, which is greater than the t-table value of 1.978, and a significance value of less than 0.001, which is less than 0.05. Therefore, X3 has a highly significant effect on Y.
4. The X4 variable has a t-value of 7.816, which is greater than the t-table value of 1.978, and a significance value of less than 0.001, which is less than 0.05. Therefore, X4 has a highly significant effect on Y.

Simultaneous Hypothesis Test (F-Test)

Model	Sum of Squares		df	Mean Square	F	Sig.
1	Regression	89,817	4	22,454	36,419	<,001b
	Residual	80,152	130	,617		
	Total	169,968	134			

Based on Table above, the calculated F-value was 36.419 with a significance level of < 0.001. Meanwhile, the F-table value was 2.44 at df (1) = 4 and df (2) = 130 with a significance level of 0.05. Since the calculated F-value is greater than the F-table value (36.419 > 2.44) and the significance value is less than 0.05 (0.001 < 0.05), it can be concluded that CAR, NPL, BOPO, and LDR simultaneously have a significant effect on ROA.

Coefficient of Determination of the Hypothesis (R^2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,727[a]	,528	,514	,78521

Based on the results of the analysis, the R Square value was 0.528. This indicates that the independent variables, namely Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR), simultaneously explain the variation in the dependent variable, Return on Assets (ROA), by 52.8%. Meanwhile, the remaining 47.2% is influenced by other variables outside the research model. The Adjusted R Square value of 0.514 indicates that, after being adjusted for the number of independent variables in the model, the contribution of CAR, NPL, BOPO, and LDR to ROA is 51.4%. This value is considered more accurate because it takes into account the number of independent variables used in the study.

Discussion

The Effect of Capital Adequacy Ratio on Return on Assets

The results of the study show that the Capital Adequacy Ratio (CAR) has a positive and significant effect on Return on Assets (ROA). This is evidenced by the t-value of 2.762, which is greater than the t-table value of 1.978, and a significance value of 0.007, which is lower than 0.05. Therefore, the first hypothesis is accepted. This finding indicates that the higher the capital adequacy owned by a bank, the greater its ability to generate profit through the effective management of its assets. Theoretically, CAR is an indicator that reflects a bank's ability to provide sufficient capital to absorb potential losses arising from productive assets. Strong capital provides banks with greater capacity to expand business activities, increase credit distribution, and maintain operational stability. Banks with a sound CAR are also considered more capable of facing financial risks, thereby increasing the confidence of investors, customers, and other external stakeholders. Thus, adequate capital plays an important role in improving banking profitability.

In terms of implementation in banking companies, bank management needs to maintain capital adequacy at a healthy and productive level. Capital does not only function as a buffer against risk, but it should also be directed toward activities that generate income, such as quality credit expansion, development of digital banking services, and improvement of productive assets. If capital is not utilized optimally, an increase in CAR may not necessarily produce a maximum impact on ROA. This finding is consistent with previous studies explaining that CAR is related to banking profitability. Several prior studies, such as those conducted by(Mansur et al., 2023)(Yudaruddin, 2024)(Podder & Ghosh, 2025) positioned CAR as one of the key ratios in explaining changes in ROA in the banking sector. This strengthens the view that capital adequacy is a fundamental aspect in maintaining bank stability and profitability (Amin et al., 2026). The managerial implication of this finding is that banking management should manage capital more strategically. Banks should not merely maintain CAR to comply with regulatory requirements, but also ensure that the available capital is allocated to productive activities. Capital strengthening needs to be accompanied by effective asset management, selective credit distribution, and the development of income sources so that an increase in CAR can truly contribute to higher ROA.

The Effect of Non-Performing Loan on Return on Assets

The results of the study show that Non-Performing Loan (NPL) has a positive and significant effect on Return on Assets (ROA). This is indicated by the t-value of 2.032, which is greater than the t-table value of 1.978, and a significance value of 0.044, which is lower than 0.05. Therefore, the second hypothesis is accepted. This finding shows that changes in NPL significantly affect bank profitability, although the direction of the effect is positive. Theoretically, NPL generally has a negative effect on ROA because a higher

level of problem loans increases the risk of losses borne by banks. A high NPL may lead to an increase in loan loss provisions, reduce interest income, and put pressure on profit. However, the result of this study shows a positive effect, which may indicate that, during the research period, banks were still able to manage credit risk effectively. The increase in NPL may have been offset by income generated from other productive credit portfolios, allowing its effect on ROA to remain positive. In terms of implementation in banking companies, the management of problem loans remains an important concern. Although this study found a positive effect, banks should not ignore the risks associated with rising NPL. Banking companies need to strengthen creditworthiness assessment systems, debtor monitoring, restructuring of problem loans, and appropriate provisioning policies to prevent credit risk from becoming a larger burden in the following periods (Eryc et al., 2026).

Previous studies also show that NPL is an important factor affecting ROA. Studies conducted by (Hadistia, 2024)(Suryawan, 2023)(Handayani et al., 2023) indicate that credit quality is related to banking profitability. Although the direction of the effect of NPL may vary across studies, NPL remains an important indicator in assessing bank soundness and financial performance. The managerial implication of this finding is that bank management should place credit risk control as a strategic priority. Banks need to ensure that credit expansion is not only focused on volume but also on credit quality. Strengthening risk management systems, debtor selection, and credit supervision is essential to keep NPL under control and prevent it from disrupting long-term profitability.

The Effect of BOPO on Return on Assets

The results of the study show that Operating Expenses to Operating Income (BOPO) has a positive and significant effect on Return on Assets (ROA). This is evidenced by the t-value of 8.857, which is greater than the t-table value of 1.978, and a significance value of less than 0.001, which is lower than 0.05. Therefore, the third hypothesis is accepted. This result indicates that BOPO has a very strong effect on ROA compared to the other variables. Theoretically, BOPO is a ratio used to measure the operational efficiency of banks. A lower BOPO generally indicates that a bank is more efficient in managing operating expenses relative to operating income. However, this study shows a positive effect, which may suggest that the increase in BOPO during the research period was related to productive operational activities. An increase in operating expenses may occur due to the development of digital services, expansion of service networks, improvement of human resource quality, or technology investment, all of which may ultimately support an increase in bank income. In terms of implementation in banking companies, banks need to ensure that every operating expense incurred provides added value to income generation. An increase in costs is not always problematic if those costs are used for productive activities and are able to improve service quality, customer loyalty, and operating income. However, if the increase in BOPO is caused by inefficient spending, it may put pressure on profitability.

This finding is supported by previous studies stating that BOPO is one of the important ratios in explaining bank profitability (Sagala, 2025). Studies by (Dwitama & Hasanudin, 2024)(Widati et al., 2023)(Mega et al., 2024) positioned BOPO as a variable associated with ROA in banking companies. This indicates that operational efficiency is an important aspect in determining a bank's ability to generate profit (Azman et al., 2026). The managerial implication of this finding is that bank management needs to control operating expenses selectively. Banks should distinguish between productive costs and costs that do not directly contribute to income. Efficiency strategies can be implemented through digitalization of work processes, optimization of technology-based services, control of administrative expenses, and improvement of employee productivity. Therefore, BOPO can be managed more effectively to support the improvement of ROA.

The Effect of Loan to Deposit Ratio on Return on Assets

The results of the study show that Loan to Deposit Ratio (LDR) has a positive and significant effect on Return on Assets (ROA). This is evidenced by the t-value of 7.816, which is greater than the t-table value of 1.978, and a significance value of less than 0.001, which is lower than 0.05. Therefore, the fourth hypothesis is accepted. This finding indicates that the more optimal a bank is in channeling third-party funds into credit, the greater its potential to increase profitability. Theoretically, LDR is a ratio that reflects a bank's ability to perform its intermediary function. Banks that are able to effectively channel third-party funds into credit have the potential to generate higher interest income. This increase in interest income can subsequently improve profit and ROA (W. Sari et al., 2025). However, LDR must be maintained at a healthy level because an excessively high LDR may create liquidity risk, while a very low LDR indicates that collected funds have not been utilized optimally (Aulia et al., 2025). In terms of implementation in banking companies, banks need to optimize credit distribution while still applying the prudential principle. High credit distribution can increase income, but it must be supported by sound risk analysis to prevent the emergence of problem loans. Banks also need to channel credit to productive sectors with strong growth prospects so that third-party funds can contribute optimally to profitability.

This finding is consistent with previous studies showing that LDR is related to bank profitability (C. A. Sari et al., 2025). Studies by (Syafitri et al., 2023)(Antika et al., 2024)(Mandala et al., 2023) show that a bank's ability to distribute credit is one of the factors associated with ROA. This supports the view that the intermediary function of banks is an important aspect in improving financial performance (Vientiany et al., 2025). The managerial implication of this finding is that bank management needs to maintain a balance between credit distribution and liquidity availability. Banks must be able to increase productive credit without neglecting liquidity risk and default risk. Strategies that can be implemented include strengthening credit analysis, maintaining the quality of the credit portfolio, increasing diversification of financing sectors, and ensuring sufficient liquid funds to meet short-term obligations.

The Simultaneous Effect of CAR, NPL, BOPO, and LDR on Return on Assets

The results of the study show that CAR, NPL, BOPO, and LDR simultaneously have a significant effect on ROA. This is evidenced by the F-value of 36.419, which is greater than the F-table value of 2.44, and a significance value of less than 0.001, which is lower than 0.05. Therefore, the fifth hypothesis is accepted. This finding indicates that banking profitability is not only influenced by one financial aspect but is the result of the combined management of capital adequacy, credit risk, operational efficiency, and liquidity. Theoretically, ROA as a measure of profitability is influenced by various components of financial performance. CAR reflects capital strength, NPL indicates credit quality, BOPO reflects operational efficiency, and LDR represents the bank's intermediary function. These four ratios are interrelated in determining a bank's ability to generate profit. Banks with strong capital, controlled credit risk, productive operational costs, and optimal credit distribution tend to have greater opportunities to improve profitability (Loly et al., 2025).

In terms of implementation in banking companies, bank management needs to manage all financial ratios in an integrated manner (Nasib et al., 2024). An increase in CAR should be followed by the productive use of capital, NPL management should be supported by strict credit risk control, BOPO should be managed to ensure operational efficiency, and LDR should be maintained so that the intermediary function runs optimally without disrupting liquidity. Through balanced management, banks can improve ROA more sustainably. Previous studies by (Iqbal et al., 2023), (Beni et al., 2023)(Adhim & Mulyati, 2024)(Siagian et al., 2024) show that financial ratios such as CAR, NPL, BOPO, and LDR are important factors in explaining banking profitability. This finding reinforces the view that bank financial performance should be analyzed

comprehensively, rather than relying only on a single ratio. The managerial implication of this finding is that banking management needs to formulate integrated financial policies that combine capital strengthening, credit risk control, operational efficiency, and optimization of credit distribution. Investors can also use these four ratios as a basis for assessing bank soundness and profitability prospects. For regulators, this finding provides input that supervision of the banking sector should be conducted comprehensively to maintain both stability and profitability.

4. Conclusion

This study concludes that Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR) have a positive and significant effect on Return on Assets (ROA) in banking companies listed on the Indonesia Stock Exchange during the 2022–2025 period. Partially, CAR indicates that stronger capital adequacy can support the bank's ability to generate profit, while NPL shows that credit risk remains an important factor in determining profitability, even though its positive effect reflects the bank's ability to manage credit risk during the research period. BOPO also has a significant effect, indicating that operational expenses may contribute to profitability when they are directed toward productive activities, while LDR shows that optimal credit distribution can increase bank income and improve ROA. Simultaneously, the four financial ratios significantly explain banking profitability, suggesting that bank management needs to maintain balanced capital strength, credit quality, operational efficiency, and liquidity management to achieve sustainable financial performance.

5. Reference

Abdurrahman, A., Gustomo, A., & Prasetio, E. A. (2026). Enhancing banking performance through dynamic digital transformation capabilities and governance, risk management, and compliance: Insights from the Indonesian context. *The Electronic Journal Of Information Systems In Developing Countries*, *92*(3). https://doi.org//10.1002/isd2.12299Digital Object Identifier (DOI)

Adhim, C., & Mulyati, M. (2024). The Influence Of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Loan To Deposit Ratio (LDR), And Operational Costs To Operating Income (BOPO) On Return On Asset (ROA) In Banks Listed On The Indonesia Stock Exchange. *International Journal of Science, Technology & Management*, *5*(5). https://doi.org/10.46729/ijstm.v5i5.1122

Al-Matari, E. M. (2023). The determinants of bank profitability of GCC: The role of bank liquidity as moderating variable—Further analysis. *International Jorunal Finance and Economics*, *28*(2). https://doi.org/https://doi.org/10.1002/ijfe.2485Digital Object Identifier (DOI)

Amelia, R., & Gulo, N. (2021). PENGARUH DEBT TO ASSETS RATIO, DEBT TO EQUITY RATIO TERHADAP NET PROFIT MARGIN PADA PERUSAHAAN INDUSTRI MAKANAN DAN MINUMAN YANG TERDAFTAR DI BEI 2016 – 2019. *JMari*, *2*(2), 157–164.

Amelia, R., Hou, A., Fathoni, M., & Vientiany, D. (2025). Integrated Liquidity and Risk Management Strategy as a Driver of Bank Efficiency : A SEM-PLS Study on BRI. *Ournal of Finance Integration and Business Independence*, *2*, 36–45. https://doi.org/10.64276/jofibi.v1i2.44

Amin, M. R., Dewi, I. R., Wathani, M. Z., Anggraini, R., Nasib, Sulistyo, A., Salqaura, S. A., & Ulum, A. S. (2026). *Manajemen Pemasaran Bisnis Jasa*. PT Penamuda Media.

Andriansyah, R. M., Saputra, D. G., & Surya, R. K. (2024). Pengaruh Kinerja Keuangan Bank Dalam Kualitas Aset, dan Efesiensi Operasional Terhadap Profitabilitas. *RIGGS*, *4*(2). https://doi.org/10.31004/riggs.v4i2.651

Anggara, J., Khairani, R., & Nasib. (2026). Does Fintech Lending Drive Msme Growth? Evidence From Banking Mediation. *International Journal of Accounting, Management, Economics and Social Sciences*,

4(2), 701–710. https://doi.org/https://doi.org/10.61990/ijamesc.v4i2.757

Antika, E. L. K., Rahmi, P. P., & Sudaryo, Y. (2024). The Effect of Net Interest Margin (NIM), Operating Expenses, Operating Income (BOPO), Loan to Deposit Ratio (LDR), on Return on Assets (ROA) at PT Bank Mayapada Internasional Tbk for the Period of 2014-2023. *Syntax Idea*, *6*(7).

Aulia, N., Husna, N., Indriani, S., Sharing, L., Syariah, P., & License, I. (2025). Analisis Faktor Yang Mempengaruhi Pembiayaan Musyarakah Di Perbankan Syariah. *Applied Multidisciplinary Science*, *1*(2), 1–9.

Azman, N. S., Hassim, A. A., & Al-amrani, S. N. (2026). Shariah-Based Ethical Frameworks and Their Role in Shaping Islamic Finance in Asia : A Systematic Literature Review. *Journal of Finance Integration and Business Independence*, *2*(1), 1–26. https://doi.org/10.64276/jofibi.v2i1.87

Beni, S., Putra, W., & Bariyah, N. (2023). The Effect of Credit Circulation, Loan to Deposit Ratio (LDR), and Interest Rate on Return On Assets (ROA) Due to Non-Performing Loan (NPL) on Credit Unions in Indonesia. *International Journal of Multi Discipline Science (IJ-MDS)*, *6*(1), 60–72. https://doi.org/10.26737/ij-mds.v6i1.3797

Budiansyah, A. L. (2023). Faktor Yang Mempengaruhi Kinerja Keuangan Perbankan: LDR, CAR dan BOPO. *Journal Locus Penelitian Dan Pengabdian*, *2*(4). https://doi.org//10.58344/locus.v2i4.1004

Chen, I.-J., Tsai, H., Chen, Y.-S., Lin, W. C., & Li, T.-Y. (2024). Bank performance and liquidity management. *Review of Quantitative Finance and Accounting*, *64*. https://doi.org/Hsiangping Tsai, Yan-Shing Chen, Wei Chih Lin & Ting-Yu Li

Dwitama, A., & Hasanudin, H. (2024). The Influence Of Loan Growth, Loan To Assets, And Size On Return On Assets Through Non-Performing Loans In Banking Companies. *E-Jurnal Apresiasi Ekonomi*, *12*(3).

Eryc, Nasib, Fahrurrozi, M., Ikhsan, R. Z., & Parker, J. (2026). Strategic Business Forecasting and Market Trends Analysis Using Machine Learning Techniques. *Journal of Computer Science and Technology Application (CORISINTA)*, *3*(1), 11–20.

Hadistia, A. (2024). Pengaruh Capital Adequacy Ratio dan Return On Asset terhadap Non Performing Loan pada PT Bank Negara Indonesia Tbk Periode 2012 – 2021. *Aufklarung: Jurnal Pendidikan, Sosial Dan Humaniora*, *4*(1).

Handayani, N., Asyikin, J., Ernawati, S., & Boedi, S. (2023). Analisis pengaruh kinerja keuangan terhadap nilai perusahaan perbankan indonesia indonesian banking. *KINERJA:JurnalEkonomidanManajemen*, *20*(2), 233–242.

Iqbal, M., Indrayono, Y., & Herdiyana, H. (2023). Analysis Of The Effect Of Npl, Bopo And Ldr On Car With Roa As An Intervening Variable In Banking (Case Study: Conventional Commercial Banks on the Indonesia Stock Exchange (IDX) for the 2016-2021 Period). *Journal of Social Studies, Arts and Humanities*, *3*(1).

Latifah, A. M. (2023). *Pengaruh Likuiditas Dan Solvabilitas Terhadap Kinerja Keuangan Pada Bank Yang Terdaftar Di Bursa Efek Indonesia Periode 2021*. *1*(2).

Loly, Nabella, S. D., Alimin, E., Hassim, A. A., & Handayani, C. (2025). Assessing the Efficiency of Village Fund Expenditures in Infrastructure Projects : A Public Sector Financial. *Journal of Finance Integration and Business Independence*, *1*(2), 25–35. https://doi.org/10.64276/jofibi.v1i2.43

Mandala, V., Oktariyana, M. D., & Tanan, E. H. P. (2023). Pengaruh NPL dan BOPO Terhadap Return On Assets pada bank yang terdaftar di Bursa Efek Indonesia Tahun 2018-2022. *Jurnal Inovasi Akuntansi (JIA)*, *1*(2). https://doi.org/10.36733/jia.v1i2.7692

Mansur, A., Vanany, I., & Arvitrida, N. I. (2023). Improving Blood Bank Performance in A Decentralised Blood Supply Chain Using Discrete Event Simulation. *OPERATIONS AND SUPPLY CHAIN MANAGEMENT*, *16*(1).

Mega, C. C., Fitria, B. T., & Kumalasari, R. E. (2024). The Influence of Loan to Deposit Ratio (LDR) and

Operating Costs on Operating Income (BOPO) on Return on Assets (ROA) Study On One of The Banks in Bandung. *Majalah Bisnis & IPTEK*, *17*(2).

Naja, A. H., Indiastuti, R., Masyita, D., & Cupian, C. (2023). Is Islamic Banking Performance in Malaysia Truly Better than Indonesia? *Journal of Islamic Monetary Economics and Finance*., *9*(4). https://doi.org//10.21098/jimf.v9i4.1784

Nasib, Simanjuntak, O. D. P., Julitawaty, W., Effendi, I., & Lubis, A. (2024). *Membangun Citra Perguruan Tinggi & Minat Kuliah (Kajian Teoritis Dan Praktis)*. PT. Pena Persada Kerta Utama.

Podder, B., & Ghosh, J. (2025). Digital transformation: how it impacts bank performance for emerging economies. *International Journal of Emerging Markets*, *1*(21). https://doi.org/10.1108/IJOEM-05-2025-1108

Prastowo, A. (2016). *Metode Penelitian Kualitatif Dalam Perspektif Rancangan Penelitian*. Ar Ruzz Media.

Sagala, M. S. (2025). Peran Financial Technology (Fintech) terhadap Inklusi Keuangan Masyarakat Perdesaan. *Applied Multidisciplinary Science*, *1*(1), 12–21.

Sari, C. A., Rifky, M. H., Tumangger, S. H., & Vientiany, D. (2025). Strategi Penyusunan Anggaran Produksi untuk Mendukung Kinerja Perusahaan. *Applied Multidisciplinary Science* –, *1*(2), 40–49. https://doi.org/10.64276/ams.v1i2.53

Sari, W., Amelia, R., Handayani, C., & Hou, A. (2025). Service Quality as the Key to Customer Satisfaction : An Empirical Analysis of BTPN Syariah Bank Siantar Timur. *Journal of Business Integration and Competitive*, *1*(2), 1–10.

Siagian, S. H., Sihotang, R. B., & Rinendy, J. (2024). The Moderating Role BOPO of CAR, NPL, NIM and LDR on Banking Stock Returns on the Indonesian Stock Exchange. *International Journal of Business, Law, and Education*, *5*(1). https://doi.org//10.56442/ijble.v5i1.525

Siregar, B. G., & Lubis, A. (2023). Analisis Kinerja Keuangan PT Bank Mega Syariah. *Jurnal Penelitian Ekonomi Akuntansi (JENSI)*, *7*(1). https://doi.org/10.33059/jensi.v7i1.7795

Suryawan, T. (2023). The Influence of Return On Assets (ROA), Return On Equity (ROE), and Non-Performing Loans (NPL) on Profit Growth in Banking Companies from 2021 to 2023. *Daengku: Journal of Humanities and Social Sciences Innovation*, *4*(3). https://doi.org/10.35877/454RI.daengku2586

Syafitri, F., Ishak, G., & Samryn, L. M. (2023). The Effect of Current Ratio, Debt to Equity Ratio, BOPO, and GDP Growth on Return on Assets with Moderation of Firm Size in PT Pelabuhan Indonesia (Persero) Period 2018-2022. *Journal of Social Research*, *2*(9), 2972–2982. https://doi.org/10.55324/josr.v2i9.1349

Tristanto, T. A., Nugraha, N., Waspada, I., Mayasari, M., & Kurniati, P. S. (2023). SUSTAINABILITY PERFORMANCE IMPACT OF CORPORATE PERFORMANCE IN INDONESIA BANKING. *Journal of Eastern European and Central Asian Research*, *10*(4). https://doi.org/10.15549/jeecar.v10i4.1364

Vientiany, D., Oktavia, A. F., Aulia, N., & Indriani, S. (2025). Implementasi Penganggaran Berbasis Kinerja dalam Sektor Publik. *Applied Multidisciplinary Science*, *1*(2), 22–30. https://doi.org/10.64276/ams.v1i2.51

Widati, L. W., Himmawan, A., Nugroho, D., & Sudiyatno, B. (2023). Factors Influencing Non-Performing Loans: An Empirical Study on Commercial Banks in Indonesia. *Journal of Hunan University Natural Sciences*, *50*(2), 1–9. https://doi.org/10.55463/issn.1674-2974.50.2.10

Yoewono, H., & Prabowo, A. (2024). Enhancing Bank Performance: Integrating Enterprise Risk Management with Mobile Banking Applications. *Journal of Economics, Business, and Accountancy Ventura*, *27*(2). https://doi.org/10.14414/jebav.v27i2.4572

Yudaruddin, R. (2024). Financial technology and performance in Islamic and conventional banks Available to Purchase. *Journal of Islamic Accounting and Business Research*, *14*(1). https://doi.org/10.1108/JIABR-03-2022-0070