

THE EFFECT OF CAR, NPL, AND IT INVESTMENT ON ROA IN BANKING SECTOR COMPANIES LISTED ON THE IDX

Yuningsih¹, Indar Khaerunnisa^{2*}

*^{1,2}Accounting Study Program, Faculty of Economics and Business Universitas Binaniaga Indonesia
Bogor, Indonesia*

Author's email:

¹yunniishh@gmail.com; ²bundaabdadabsyar@gmail.com

***Corresponding author:**

bundaabdadabsyar@gmail.com

Abstract. *This study aims to provide empirical evidence regarding the effect of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), and IT Investment on Return On Assets (ROA) in banking companies listed on the Indonesia Stock Exchange during the 2016-2025 period. This study employed a quantitative method with a causal associative approach. Hypothesis testing was conducted using multiple linear regression analysis. The research sample was selected using purposive sampling, resulting in 10 banking companies with a total of 80 observation data analysis using SPSS software. The results indicate that Capital Adequacy Ratio (CAR) has a positive and significant effect on Return On Assets (ROA), while Non-Performing Loan (NPL) has no significant effect on ROA. Meanwhile, IT Investment has a positive and significant effect on Return On Assets (ROA). Simultaneously, CAR, NPL, and IT Investment were proven to have a significant effect on Return On Assets (ROA). These findings indicate that strength capital adequacy and effective technology investment play important roles in improving bank profitability, while the level of non performing loan has not yet had a significant impact on profitability of banking. R² value of 27.3% shows that CAR, NPL, and IT Investment can explain part of the variation in ROA, while the rest is influenced by other factors.*

Keywords: *Banking Sector; CAR; IT Investment; NPL; ROA.*

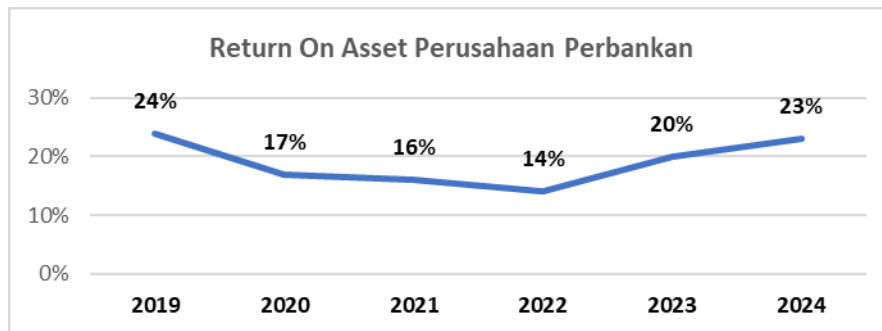
1. INTRODUCTION

Indonesia economic growth during the 2015-2024 period experienced fluctuations, with a contraction of 2.07% in 2020 due to the COVID-19 pandemic (BPS Indonesia, 2024). This situation impacted the banking sector as an intermediary institution responsible for mobilizing and channeling funds to the public. The economic slowdown led to a decline in credit demand and put pressure on bank profitability (Nasution et al., 2020).

Although the economy resumed growth during the 2022-2024 period, the banking sector still faces challenges in maintaining the stability of financial performance and profitability (BPS Indonesia, 2024). Therefore, a bank ability to perform its intermediary functions effectively is a critical factor in supporting banking performance and business sustainability (Kasir, 2020).

A banks performance is considered good if it can generate maximum profit. One commonly used measure to assess bank profitability is Return on Assets (ROA) (Pratiwi et al., 2024). This indicator illustrates how efficiently a bank utilizes its total assets to generate profits, thereby providing management and investors with an understanding of the bank's financial performance effectiveness (Zurriah & Prayogi, 2023).

Figure 1. Trends in the ROA of Banking Companies Listed on IDX from 2019-2024

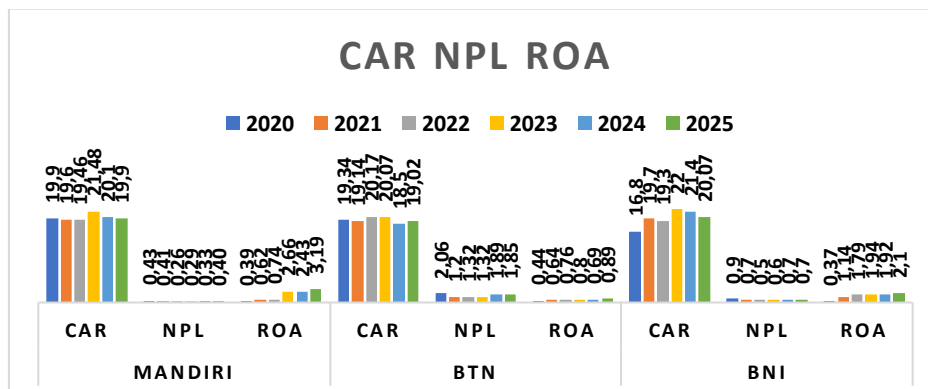


Source: (Rukin et al., 2025)

According to Rukin et al, (2025) the banking sector ROA fluctuated and trended downward from 2019 to 2024, dropping from 24% in 2019 to 14% in 2022, before rebounding to 23% in 2024. This phenomenon indicates a shift in bank ability to generate profitability, necessitating further research into the factors influencing it.

Factors affecting bank profitability include the Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL). The CAR is used to measure a bank's capital adequacy in managing operational risks. The higher the CAR, the stronger the bank's ability to absorb risk, thereby supporting increased profitability (Wahyuni & Ompusunggu, 2025). Meanwhile, NPL is used to assess the quality of a bank's assets and credit risk. A high NPL indicates a significant volume of non-performing loans, which can reduce a bank's profitability (Ayu & Bella, 2025).

Figure 2. Data on Banking Companies Listed on the IDX for the 2020-2025 Period



Source: www.idx.id (Processed by the researcher, 2026)

Based on the above, there appears to be a discrepancy between the trends in CAR, NPL, and ROA at Bank Mandiri, BTN, and BNI during the 2020-2025 period. At Bank Mandiri, the CAR decreased from 19.9% (2020) to 19.46% (2022), but the ROA increased from 0.39% (2020) to 0.74% (2022). Meanwhile, Bank Mandiri NPL rose from 0.26% (2023) to 0.40% (2024), but ROA continued to rise from 0.74% to 3.19%.

At BTN, the CAR also fell from 19.34% (2020) to 19.14% (2021), yet ROA increased from 0.44% to 0.64%. Meanwhile, BTN's NPL rose from 1.20% (2021) to 1.85% (2025), accompanied by an increase in ROA from 0.64% to 0.89%.

A similar trend occurred at BNI, where BNI CAR fluctuated from 16.8% (2020) to 20.64% (2024), then dropped to 20.07% (2025), but ROA continued to rise from 0.37% (2020) to 2.10% (2025). NPL increased from 0.50% (2022) to 0.70% (2024), while ROA also increased from 1.49% to 2.12%. This phenomenon indicates that changes in CAR and NPL do not always align with

changes in ROA, so the relationship between these variables needs to be further tested empirically.

In addition to CAR and NPL, bank profitability (ROA) is also influenced by IT investment. The advancement of digitalization is driving banks to increase their investment in information technology to develop digital services and strengthen cybersecurity (Anwar & Saiful, 2024). However, the high cost of investment and the risk of cyberattacks can undermine a bank's efficiency and profitability (Andriani, 2019).

This phenomenon is evident in the increasing allocation of technology investments at major banks, such as Mandiri and BSI. On the other hand, the 2023 LockBit ransomware attack on BSI resulted in the leakage of approximately 1.5 TB of customer and employee data onto the dark web (Burhan, 2023). Additionally, the system disruptions and skimming incidents experienced by Bank Mandiri in 2018 demonstrate that despite the continuous increase in technology investment, cybersecurity risks and system failures can still lead to operational losses that ultimately impact the bank's profitability (Ramadhani & Herawati, 2021).

2. LITERATURE REVIEW

2.1 Signalling Theory

According to Putra et al. (2022), the Signalling Theory developed by Michael Spence in 1973 explains the existence of information asymmetry between management and external parties. In this theory, companies convey information about their condition and prospects as signals to investors. This information can take the form of positive signals (good news) reflecting the company strong performance or negative signals (bad news) indicating a decline in performance, thereby influencing investment decisions (Ivanza & Sisdiyanto, 2025).

2.2 Capital Adequacy Ratio (CAR)

According to Slamet (2020), the CAR is the primary measure used to evaluate a bank's financial health and stability. This ratio reflects a bank's ability to absorb potential losses arising from its earning assets. The CAR serves not only as a measure of compliance with capital adequacy requirements set by financial authorities but also as a supervisory tool to ensure banks can operate in a sound and sustainable manner (Rahman et al., 2025).

2.3 Non Performing Loan (NPL)

According to Kasmir (2018), NPLs are non-performing loans that arise due to obstacles in their implementation, whether due to internal bank factors or the borrower inability to meet their obligations. According Dwiningtyas & Yoewono (2023) explain that non-performing loans occur when borrowers are unable to meet some or all of their payment obligations to the bank, their classification is based on quantitative and qualitative aspects. High NPL levels can increase the bank's risk of loss, reduce interest income, and lead to a decline in the bank's profits.

2.4 IT Investment

According to Indrajit (2016:37), investment in information technology is a strategic move undertaken by companies to enhance competitiveness, expand their customer base, and drive revenue growth. Information technology investment encompasses all costs incurred for the implementation and operation of information technology systems, including the development of digital services such as mobile banking, internet banking, and electronic payments, which can improve customer satisfaction, productivity, and operational efficiency, thereby supporting increased corporate profitability (Fauzi et al., 2024).

2.5 Return on Assets (ROA)

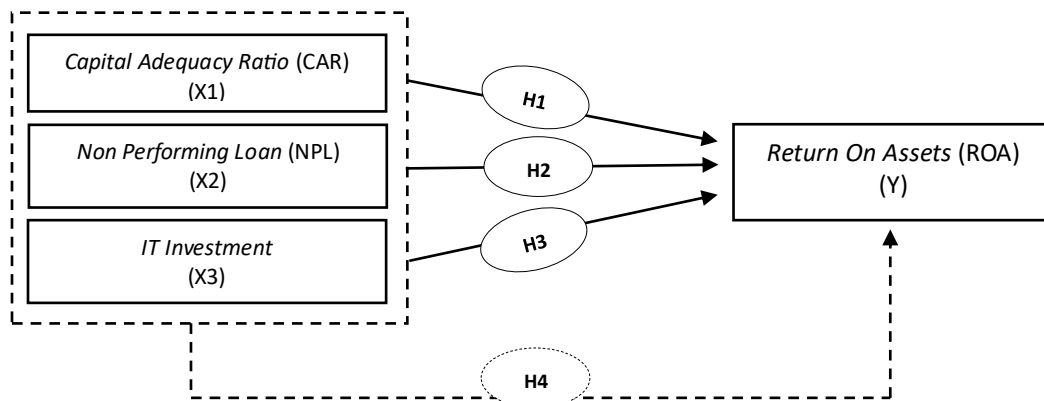
According to Kasmir (2018), Return on Assets (ROA) is a ratio used to measure a company ability to generate net income from all of its assets. In other words, ROA indicates how efficiently

assets are managed to generate profits. ROA is one of the key indicators in assessing a company financial performance and health (Hery, 2018). Additionally, ROA helps investors and other stakeholders compare a company performance. The higher a bank's ROA, the better its ability to manage its assets to generate profits Gunardi et al. (2023:24).

2.6 Theoretical Framework

This study aims to analyze the effects of CAR, NPL, and IT investment on ROA. These three variables are expected to influence ROA both partially and simultaneously in the banking sector listed on the Indonesia Stock Exchange (IDX).

Figure 3. Theoretical framework



Source: Processed by the researcher, 2026

3. RESEARCH METHODS

This study employs a quantitative approach with an associative research design that examines causal relationships. The objective of this study is to analyze the effects of the Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), and IT Investment on Return on Assets (ROA) for companies in the banking sector listed on the Indonesia Stock Exchange (IDX) during the study period.

Table 1. Operationalization of Variables

Variabel	Indikator	Measurement	Scale	Reference
Capital Adequacy Ratio	CAR	$\frac{\text{Modal}}{\text{ATMR}} \times 100 \%$	Ratio	Maharani et al. (2020)
Non-Performing Loan	NPL	$\frac{\text{Total Kredit Bermasalah}}{\text{Total kredit}} \times 100\%$	Ratio	Widyastuti & Aini (2021)
IT Investment	IT Investment	$F_A = FA_t - FA_{t-1}$	Ratio	Indahwati & Agustini (2024)
Return On Assets	ROA	$\frac{\text{Laba Bersih}}{\text{Rata - rata Total Aset}}$	Ratio	Harahap (2020)

Source: Processed by the researcher, 2026

This study uses secondary data obtained from companies' annual financial reports. The data were collected through documentation by accessing annual reports and audited financial statements available on the official website of the Indonesia Stock Exchange (www.idx.id) and the websites of the relevant companies. The analysis stage includes descriptive statistics to summarize the data characteristics, followed by classical assumption tests such as normality, multicollinearity, heteroscedasticity, and autocorrelation to ensure the validity of the regression model. Hypothesis testing was conducted using multiple linear regression analysis, supplemented by t-tests, F-tests, and the coefficient of determination (R^2) to examine the effects

**The Sixth International Conference on Innovation in Social Science
and Engineering Education (ICoISSEE-6)**

Bandung, Indonesia, July 25, 2026

of the independent variables CAR, NPL, and IT Investment on ROA. Additionally, this study utilized SPSS software for data processing, statistical calculations, and data analysis.

4. RESULT AND DISCUSSION

4.1 Results

4.1.1 Research Sample

The research subjects consist of banking companies listed on the Indonesia Stock Exchange (IDX) during the observation period of 2016-2025. The sample was determined using purposive sampling with specific inclusion criteria. Of the total population of 47 companies, 10 companies met the criteria and were selected as the research sample. Over the ten-year observation period, 100 data points should have been generated, however, after screening and removing outliers, 80 observations were deemed suitable for analysis. The sampling criteria for banking companies are presented in the following table:

Table 2. Population and Sampling Criteria

No	Criteria	Total
1.	Banking sector companies listed on the IDX during the 2016-2025 period	47
2.	Banking sector companies that did not publish complete annual reports and financial statements for the period 2016-2025	(6)
3.	A banking sector company that does not use the Rupiah in its annual financial statements	(0)
4.	A banking company that is not classified as one of the largest banks in Indonesia in terms of business scale and total assets	(31)
5.	Total of Companies Included in the Sample	10
6.	Total Data Sample (10 x 10 year of research)	100
7.	Outlier Data	(20)
Valid research sample		80

Source: www.idx.id (Source: Processed by the researcher, 2026)

4.1.2 Descriptive Statistics

Table 3. Descriptive Statistics Results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
X1_CAR	80	,1656	,3037	,216716	,0295047
X2_NPL	80	,0000	,2115	,039569	,0569213
X3_IT_Investment	80	-,4790	7,3960	,921220	1,3977778
Y_ROA	80	,0007	,0363	,014868	,0076323
Valid N (listwise)	80				

Source: (SPSS Output, processed by the researcher, 2026)

Based on the results of the descriptive analysis, the CAR variable has a mean of 0.2167 with a standard deviation of 0.0295, while ROA has a mean of 0.0148 with a standard deviation of 0.0076. The NPL variable has a mean of 0.0396 with a standard deviation of 0.0569, while IT Investment has a mean of 0.9212 with a standard deviation of 1.3978. In general, CAR and ROA exhibit a relatively homogeneous data distribution because their standard deviations are smaller than their mean values, whereas NPL and IT Investment have a more heterogeneous data distribution because their standard deviations are larger than their mean values.

4.1.3 Classical Assumption Test

a) Normality Test

Table 4. Normality Test Results
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		80
Normal Parameters ^{a,b}	Mean	.0E-7
	Std. Deviation	,00638345
Most Extreme Differences	Absolute	,064
	Positive	,044
	Negative	-,064
Kolmogorov-Smirnov Z		,577
Asymp. Sig. (2-tailed)		,894

Source: (SPSS Output, processed by the researcher, 2026)

Based on the results of the normality test (Kolmogorov-Smirnov test) in the table above, it is evident that the Asymp. Sig. (2-tailed) value of 0.894 is greater than > 0.05 . Therefore, it can be concluded that the research data are normally distributed, and thus the assumption of normality has been met.

b) Multicollinearity Test

Table 5. Multicollinearity Test Results
Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	X1_CAR	,995	1,005
	X2_NPL	,955	1,047
	X3_IT_Investment	,953	1,050

a. Dependent Variable: Y_ROA

Source: (SPSS Output, processed by the researcher, 2026)

Based on the results of the multicollinearity test in the table above, it can be seen that each variable has a tolerance value greater than > 0.10 and a VIF value less than < 10 . This indicates that there is no strong relationship among the independent variables and that there is no multicollinearity issue.

c) Heteroscedasticity Test (Park Test)

Table 6. Park Test Results
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-13,313	1,933		-6,888	,000
	X1_CAR	8,583	8,758	,111	,980	,330
	X2_NPL	5,479	4,632	,136	1,183	,241
	X3_IT_Investment	-,159	,189	-,097	-,844	,402

a. Dependent Variable: LnRES_2

Source: (SPSS Output, processed by the researcher, 2026)

Based on the results of the heteroscedasticity test (Park test) in the table above, it is evident that all independent variables have significance levels greater than > 0.05 . Therefore, it can be concluded that the regression model does not exhibit heteroscedasticity following Park test, and thus the assumption of homoscedasticity has been met.

d) Autocorrelation Test

Table 7. Autocorrelation Test Results

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,548 ^a	,300	,273	,0065082	1,746

a. Predictors: (Constant), X3_IT_Investment, X1_CAR, X2_NPL

b. Dependent Variable: Y_ROA

Source: (SPSS Output, processed by the researcher, 2026)

Based on the results of the autocorrelation test in the table above, the Durbin-Watson (DW) value is 1.746. Based on the Durbin-Watson table with a sample size (n) of 80 and the number of independent variables (k) of 3, the lower limit (dL) is 1.5600 and the upper limit (dU) is 1.7153. Since the DW value falls between dU and 4 - dU, namely $1.7153 < 1.746 < 2.2847$, it can be concluded that there is no autocorrelation in the regression model used.

4.1.4 Multiple Linear Regression Analysis

Table 8. Multiple Linear Regression Analysis Results

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,012	,005		-2,225	,029
	X1_CAR	,116	,025	,449	4,667	,000
	X2_NPL	,007	,013	,055	,555	,580
	X3_IT_Investment	,002	,001	,324	3,300	,001

a. Dependent Variable: Y_ROA

Source: (SPSS Output, processed by the researcher, 2026)

Based on the table above, the regression equation in this study is:

$$\text{ROA} = -0,012 + 0,116 \text{ CAR} + 0,007 \text{ NPL} + 0,002 \text{ IT Investment} + e$$

Based on the results of the regression equation above, it can be concluded that:

1. The constant (α) value of -0.012 indicates that if the independent variables CAR, NPL, and IT Investment are set to 0 or held constant, the ROA is -0.012.
2. The coefficient value for the CAR variable is 0.116, with a significance value of 0.000 (< 0.05), indicating that CAR has a positive and significant effect on ROA. This means that a 1% increase in CAR will increase ROA by 0.116, assuming all other variables remain constant.
3. The coefficient value for the NPL variable is 0.007 with a significance value of 0.580 (> 0.05), indicating that NPL does not have a significant effect on ROA. This means that a 1% increase in NPL is associated with a 0.007 increase ROA, assuming all other variables remain constant.
4. The coefficient value for the IT Investment variable is 0.002 with a significance value of 0.001 (< 0.05), indicating that IT Investment has a positive and significant effect on ROA. This means that a 1% increase in IT Investment will increase ROA by 0.002, assuming all other variables remain constant.

4.1.5 Hypothesis Test

- a) Coefficient of Determination (R^2 Test)

Table 9. Results of Coefficient of Determination (R^2 Test)

Model Summary^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,548 ^a	,300	,273	,0065082

a. Predictors: (Constant), X3_IT_Investment, X1_CAR, X2_NPL

b. Dependent Variable: Y_ROA

Source: (SPSS Output, processed by the researcher, 2026)

Based on the results of the coefficient of determination (R^2) test in the table above, an Adjusted R^2 value of 0.273 was obtained. This indicates that the variables CAR, NPL, and IT Investment account for 27.3% of the variation in ROA. Meanwhile, 72.7% of the variation is explained by other variables outside the scope of this study that were not examined. Consequently, there are still other variables that potentially influence the dependent variable but were not included in this study.

b) Partial Hypothesis Testing (T-Test)

Table 10. Partial Hypothesis Testing (T-Test) Results

Coefficients^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	-,012	,005		,029
	X1_CAR	,116	,025	,449	,000
	X2_NPL	,007	,013	,055	,580
	X3_IT_Investment	,002	,001	,324	,001

a. Dependent Variable: Y_ROA

Source: (SPSS Output, processed by the researcher, 2026)

Based on the t-test results presented in the table above, it can be concluded that:

1. Variable X1, CAR, has a regression coefficient (B) of 0.116 and a significance level of $0.000 < 0.05$. This indicates that the Capital Adequacy Ratio (CAR) has a positive and significant effect on Return on Assets (ROA) in the banking sector listed on the IDX, so H1 is accepted.
2. Variable X2, NPL, has a regression coefficient (B) of 0.007 and a significance level of $0.580 > 0.05$. This indicates that Non-Performing Loans (NPL) do not have a significant effect on Return on Assets (ROA) in the banking sector listed on the IDX, so H2 is rejected.
3. Variable X3, IT Investment, has a regression coefficient (B) of 0.002 and a significance level of $0.001 < 0.05$. This indicates that IT Investment has a positive and significant effect on Return on Assets (ROA) in the banking sector listed on the IDX, so H3 is accepted.

c) Simultaneous Hypothesis Testing (F-Test)

Table 11. Simultaneous Hypothesis Testing (F-Test) Results

ANOVA^a					
Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	,001	3	,000	,000 ^b
	Residual	,003	76	,000	
	Total	,005	79		

a. Dependent Variable: Y_ROA

b. Predictors: (Constant), X3_IT_Investment, X1_CAR, X2_NPL

Source: (SPSS Output, processed by the researcher, 2026)

**The Sixth International Conference on Innovation in Social Science
and Engineering Education (ICoISSEE-6)**

Bandung, Indonesia, July 25, 2026

Based on the results of the F-test in the table above, the calculated F-value is 10.882 with a significance level of $0.000 < 0.05$. This indicates that CAR, NPL, and IT Investment simultaneously have a significant effect on Return on Assets (ROA) in the banking sector listed on the IDX, therefore H4 is accepted.

4.2 Discussion

The results of the study indicate that the variables CAR, NPL, and IT Investment have differing effects on ROA in the banking sector listed on the Indonesia Stock Exchange (IDX) during the 2016-2025 period.

- a. First, CAR was found to have a positive and significant effect on ROA, the calculated T-value is 4,667 with a significance level of $0.000 < 0.05$, so Hypothesis (H1) is accepted. This finding aligns with the research by Ayu & Bella (2025), Wahyuni & Ompusunggu (2025) and Watung & Baramuli (2020), which indicates that the higher the CAR, the stronger the bank's capital capacity to bear risks and support optimal fund disbursement, thereby increasing profitability as measured by ROA. Based on signalling theory, a high CAR sends a positive signal regarding the bank's healthy and stable financial condition, thereby enhancing investor confidence and driving increased profitability.
- b. Second, NPLs do not have a significant effect on ROA, the calculated T-value is 0,555 with a significance level of $0.580 > 0.05$, so Hypothesis (H2) is rejected. These results align with the studies by Ayu & Bella (2025), Fauziyyah & Nurismalatri (2021), and Watung & Baramuli (2020), which indicate that changes in non-performing loan levels have not yet been able to significantly affect bank profitability. This situation may occur because banks are still able to manage credit risk through the implementation of risk management and the establishment of adequate loss reserves. In signalling theory, although high NPLs are a negative signal, their impact on ROA is not yet significantly evident because the risk can still be controlled by the bank.
- c. Third, IT investment was found to have a positive and significant effect on ROA, the calculated T-value is 3,300 with a significance level of $0.001 < 0.05$, so Hypothesis (H3) is accepted. This finding aligns with the research by Indahwati & Agustini (2024), Herlanlam & Usman (2025) and Gunawan & Serlyna (2018), which shows that information technology investment can improve operational efficiency, accelerate business processes, and enhance service quality, thereby making asset utilization more productive and increasing profitability. Based on signalling theory, technology investment sends a positive signal regarding the company's commitment to improving performance and competitiveness in the digital era.
- d. Fourth, CAR, NPL, and IT Investment simultaneously have a significant effect on ROA, the calculated F-value is 10.882 with a significance level of $0.000 < 0.05$, so Hypothesis (H4) is accepted. These results indicate that these three variables collectively influence banking profitability. In signalling theory, CAR, NPL, and IT Investment reflect information regarding a company's capital strength, credit quality, and technological capabilities. The combination of these three factors serves as a crucial signal for external parties in assessing a bank's performance and profitability prospects, as reflected through ROA.

CONCLUSION

Based on the results of a study on the effects of CAR, NPL, and IT Investment on ROA in the banking sector listed on the Indonesia Stock Exchange (IDX) for the period 2016-2025, it can be concluded that CAR and IT Investment have a positive and significant effect on ROA. These results indicate that strong capitalization and effective information technology investment play a role in improving banking profitability. Meanwhile, NPL does not have a significant effect on ROA. These results indicate that the level of non-performing loans has not had a significant impact on profitability. Simultaneously, CAR, NPL, and IT Investment have a significant effect on ROA,

**The Sixth International Conference on Innovation in Social Science
and Engineering Education (ICoISSEE-6)**

Bandung, Indonesia, July 25, 2026

indicating that capital adequacy, credit risk management, and technology investment collectively contribute to banking profitability. R^2 value of 27.3% shows that CAR, NPL, and IT Investment can explain part of the variation in ROA, while the rest is influenced by other factors.

REFERENCES

- Andriani, E. W. (2019). Peran Investasi Teknologi Dalam Meningkatkan Kinerja Keuangan Perbankan Yang Terdaftar Di Bursa Efek Indonesia (Bei) 2014-2017. *Jurnal Magister Akuntansi Trisakti*, 6(1), 27–44. <https://doi.org/10.25105/jmat.v6i1.5063>
- Anwar, C. S., & Saiful, S. (2024). Analisis Investasi Teknologi Informasi terhadap Kinerja Keuangan Perusahaan Sektor Kesehatan. *Journal of Management and Bussines (JOMB)*, 6(1), 49–56. <https://doi.org/10.31539/jomb.v6i1.8321>
- Ayu, D., & Bella, C. (2025). Pengaruh Capital Adequacy Ratio (CAR), Non Performing Loan (NPL), Loan to Deposit Ratio (LDR) dan Net Interest Margin (NIM) Terhadap Return on Asset (ROA). 1015–1032. <https://doi.org/10.37479/jeej.v7i3.29493>
- Ayuntin Nonik Pratiwi, Fitriara Ainur Rakhimah, Dwiki Andreansyah Nugraha, & Renny Oktafia. (2024). Analisis Return on Asset (Roa): Tinjauan Literatur Dan Implikasinya Dalam Pengukuran Kinerja Keuangan Perbankan. *Jurnal Ilmiah Ekonomi Dan Manajemen*, Vol.2, No.(6), 1–9. <https://doi.org/10.62710/j9vb3m51>
- Badan Pusat Statistik Indonesia. (2024). Pertumbuhan ekonomi Indonesia triwulan IV-2024. <https://www.bps.go.id/id/pressrelease/2025/02/05/2408/ekonomi-indonesia-tahun-2024-tumbuh-5-03-persen--c-to-c.html>
- Burhan, F. A. (2023, July 27). Rawan serangan siber, sektor perbankan perbesar capex untuk investasi IT. *Bisnis.com*. <https://finansial.bisnis.com/read/20230727/90/1678622/rawan-serangan-siber-sektor-perbankan-perbesar-capex-untuk-investasi-it>
- Dwiningtyas, C. I., & Yoewono, H. (2023). Pengaruh Faktor Fundamental Dan Makro Ekonomi Terhadap Profitabilitas Bank: Studi Empiris Pada Bank Umum Yang Terdaftar Di Bursa Efek Indonesia Tahun 2016–2020. *Ultimaccounting Jurnal Ilmu Akuntansi*, 15(1)(10), 1–19. <https://doi.org/10.31937/akuntansi.v15i1.2729>
- Fauzi, M. G., Muhamad, M., & Siti, M. (2024). Manajemen proyek sistem informasi. Penerbit Adab.
- Fauziyyah, H. S., & Nurismalatri. (2021). Pengaruh NPL dan BOPO terhadap ROA pada sektor bank BUMN periode 2015–2020. *Jurnal Arastirma*, 1(2), 173–180. <https://doi.org/10.32493/arastirma.v1i2.12356>
- Gunardi, A., Erik Syawal Alghifari, & Jaja Suteja. (2023). *Keputusan Investasi Dan Nilai Perusahaan Melalui Efek Moderasi Corporate Social Responsibility Dan Profitabilitas*. PT. Scopindo Media Pustaka.
- Gunawan, H., & Serlyna, S. (2018). Impact of Information Technology Investment To Financial Performance on Banking Sector. *Journal of Applied Managerial Accounting*, 2(1), 41–46. <https://doi.org/10.30871/jama.v2i1.700>
- Harahap, S. S. (2020). *Analisis kritis laporan keuangan*. PT. Raja Grafindo Persada.
- Herlanlam, Q. R., & Usman, O. (2025). Influence of Information Technology Investment on Indonesian Bank Profitability with Size Moderation. *International Student Conference on Business, Education, Economics, Accounting, and Management (ISC-BEAM)*, 3(1), 2096–2112. <https://doi.org/10.21009/isc-beam.013.156>
- Hery. (2018). *Analisis Laporan Keuangan : Integrated and Comprehensive Edition*. Cetakan Ketiga. Jakarta: Grasindo.
- Indahwati, I., & Agustini, N. K. Y. (2024). Pentingnya Management Capability Dalam IT Investment dan Marketing Performance Meningkatkan Profitability Perbankan Indonesia Tahun 2019-2022. *Wahana: Jurnal Ekonomi, Manajemen Dan Akuntansi*, 27(1), 121–135. <https://doi.org/10.35591/wahana.v27i1.923>
- Indrajit, R. E. (2016). *Analisa Cost-Benefit Investasi Teknologi Informasi*. Yogyakarta: Preinexus.
- Ivanza, A. R., & Sisdiyanto, E. (2025). Pengaruh penyajian laporan keuangan yang jelas terhadap pengambilan keputusan investasi: Pendekatan kuantitatif. *JICN: Jurnal Intelek dan Cendekiawan Nusantara*, 1, 10238–10246.
- Kasir. (2020). Pengaruh Car, Bopo Dan Ckpn Terhadap Roa Pada Perbankan Pemerintah tahun 2014 –2018. *Jurnal Indonesia Membangun*, 19(1), 1–15. <https://jurnal.inaba.ac.id/index.php/JIM/article/view/172>
- Kasmir. (2018). *Analisis Laporan Keuangan*. Jakarta: PT. Raja Grafindo Persada.
- Maharani, S. A., Slamet, A. R., & Rahman, F. (2020). Pengaruh CAR, NPL, LDR dan NIM Terhadap

**The Sixth International Conference on Innovation in Social Science
and Engineering Education (ICoISSEE-6)**

Bandung, Indonesia, July 25, 2026

- Profitabilitas Perbankan (Studi Kasus Pada Bank Umum yang Terdaftar di BEI Tahun 2017-2019). – *Jurnal Riset Manajemen*, 82–94.
- Nasution, D. A. D., Erlina, E., & Muda, I. (2020). Dampak Pandemi COVID-19 terhadap Perekonomian Indonesia. *Jurnal Benefita*, 5(2), 212. <https://doi.org/10.22216/jbe.v5i2.5313>
- Putra, K. H., Tangke, P., & Robert Jao. (2022). PENGARUH NILAI WAJAR TERHADAP NILAI PERUSAHAAN DENGAN KUALITAS LABA SEBAGAI VARIABEL MEDIASI. 4, 713–730.
- Rahman, N., Fasa, M. I., & Musthofa, U. H. (2025). The Influence of Green Banking and Capital Adequasy Ratio on the Profitability of Sharia Commercial Banks in Indonesia. *Ecoducation: Economics & Education Journal*, 7(April), 271–295. <https://doi.org/10.33503/ecoducation.v7i1.1427>
- Ramadhani, N. F., & Herawati, T. D. (2021). THE EFFECT OF INFORMATION TECHNOLOGY (IT) INVESTMENT ON THE FINANCIAL PERFORMANCE OF BANKING COMPANIES (A Case Study On Banking Companies Listed in Indonesia Stock Exchange. *Brawijaya University Reposirot*y.
- Rukin, F. M., Kurniawan, R., Prawitasari, D., & Farida, I. (2025). PENGARUH CURRENT RATIO , DEBT TO EQUITY RATIO , DAN TOTAL ASSET TURNOVER TERHADAP RETURN ON ASSET PADA PERUSAHAAN PERBANKAN DI BEI 219-2023. 5(1), 379–389.
- Slamet, R. (2020). *Banking Assets and Liability Manajement*. Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.
- Wahyuni, A., & Ompusunggu, H. (2025). Analisis faktor-faktor yang mempengaruhi profitabilitas bank perekonomian rakyat. *Jurnal Ekobistek*, 14(1), 24–33. <https://doi.org/10.35134/ekobistek.v14i1.871>
- Watung, R. W., & Baramuli, D. N. (2020). Pengaruh CAR, NPL, NIM, BOPO, dan LDR terhadap ROA pada bank umum di Indonesia. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 8(3), 1–10. <https://doi.org/10.35794/emba.v8i3.30085>
- Widyastuti, P. F., & Aini, N. (2021). Pengaruh CAR, NPL, LDR terhadap profitabilitas bank (ROA) tahun 2017–2019. *Jurnal Ilmiah Mahasiswa Akuntansi Universitas Pendidikan Ganesha*, 12(03), 1020–1027. <https://ejournal.undiksha.ac.id/index.php/S1ak/article/view/37828>
- Zurriah, R., & Prayogi, M. A. (2023). Pengaruh Likuiditas Terhadap Profitabilitas Dengan Ukuran Perusahaan Sebagai Variabel Moderasi. *Jurnal Ekonomi Bisnis, Manajemen Dan Akuntansi (JEBMA)*, 3(3), 899–910. <https://doi.org/10.47709/jebma.v3i3.3141>