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THE EFFECT OF LOAN TO DEPOSIT RATIO, NET PROFIT MARGIN, COMPANY AGE, INFLATION RATE, AND BI INTEREST RATE ON RETURN ON ASSETS IN CONVENTIONAL BANKING COMPANIES LISTED ON THE INDONESIAN STOCK EXCHANGE FOR THE PERIOD 2020-2024

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ABSTRACT

This study aims to analyze the effect of the Loan to Deposit Ratio (LDR), Net Profit Margin (NPM), Company Age, Inflation Rate, and BI Interest Rate on Return on Assets (ROA) in conventional banking companies listed on the Indonesia Stock Exchange for the 2020–2024 period. This study uses secondary data obtained from annual financial reports and official macroeconomic data. The research sample consisted of 40 conventional banking companies selected using a purposive sampling method. Data analysis techniques were carried out using SmartPLS with a path analysis approach. The results showed that the variation of the independent variables used on the dependent variable in this study was declared feasible with the ability to explain the dependent variable, namely Return on Assets, by 64%. The results also showed that LDR had a negative and insignificant effect on ROA, NPM had a positive and significant effect on ROA, company age had a negative and significant effect on ROA, Inflation Rate had a negative and insignificant effect, and Interest Rate had a positive and insignificant effect on ROA.

Keywords: Loan to Deposit Ratio; Net Profit Margin; Company Age; Inflation; BI Interest Rate; Return on Assets

PENGARUH LOAN TO DEPOSIT RATIO, NET PROFIT MARGIN, *UMUR PERUSAHAAN, TINGKAT INFLASI DAN SUKU BUNGA BI TERHADAP* RETURN ON ASSET *PADA PERUSAHAAN PERBANKAN KONVENSIONAL YANG TERDAFTAR DI BURSA EFEK INDONESIA PERIODE 2020-2024*

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh Loan to Deposit Ratio (LDR), Net Profit Margin (NPM), Umur Perusahaan, Tingkat Inflasi, dan Suku Bunga BI terhadap Return on Asset (ROA) pada perusahaan perbankan konvensional yang terdaftar di Bursa Efek Indonesia periode 2020–2024. Penelitian ini menggunakan data sekunder yang diperoleh dari laporan keuangan tahunan serta data makroekonomi resmi. Sampel penelitian terdiri dari 40 perusahaan perbankan konvensional yang dipilih menggunakan metode purposive sampling. Teknik analisis data dilakukan menggunakan SmartPLS dengan pendekatan analisis jalur (path analysis). Hasil penelitian menunjukkan bahwa variasi dari variabel independen yang digunakan terhadap variabel dependen dalam penelitian ini dinyatakan layak dengan kemampuan menjelaskan variabel dependen yaitu Return on Asset sebesar 64%. Hasil penelitian juga menghasilkan bahwa LDR berpengaruh negatif dan tidak signifikan terhadap ROA, NPM berpengaruh positif dan signifikan terhadap ROA, umur perusahaan berpengaruh negatif dan signifikan terhadap ROA, Tingkat Inflasi berpengaruh negatif dan tidak signifikan dan Suku Bunga berpengaruh positif dan tidak signifikan terhadap ROA.

Kata Kunci: Loan to Deposit Ratio; Net Profit Margin; *Umur Perusahaan*; *Inflasi*; *Suku Bunga BI*; Return on Assets

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INTRODUCTION

The banking sector is one of the sectors that plays an important role in the Indonesian economy because it holds a vital economic function in collecting and distributing funds to the public. In addition to serving as an intermediary, banks also function as institutions that organize and provide financial services. Common services provided include lending services to entrepreneurs and the general public for business purposes, property purchases, investment, and daily needs. According to Law Number 10 of 1998, a bank is a business entity that collects funds from the public in the form of savings and distributes them to the public in the form of credit and/or other forms in order to improve the standard of living of the wider community (Ningsih, 2021).

There are two types of banks in Indonesia, namely conventional banks and Islamic banks. Conventional banks are banks that carry out business activities conventionally in providing services in payment traffic. Islamic banks are banks that conduct their business activities based on sharia principles in providing payment traffic services. In Indonesia, in recent years, the Indonesia Stock Exchange has recorded that the banking sector is one of the sectors with good and stable prospects, reflecting the dominance of banking stocks in market capitalization and sectoral indices in Indonesia (Riyantoko, 2020).

Based on the development data of the banking sector through the Primbank10 and Infobank15 indices, from 2020 to 2024 both indices increased each year. This growth indicates that banking companies are sensitive to changes in financial structure, reflecting the influence of companies' ability to distribute credit, manage costs, maintain operational efficiency, and respond to macroeconomic pressures. This makes profitability, particularly as measured by Return on Assets (ROA), a highly important indicator for assessing the overall performance of banking companies.

Return on Assets (ROA) is one of the financial ratios used to measure the extent to which a company efficiently uses its assets to generate profit (Markonah et al., 2020). ROA measures the company's net income return as a percentage of its total assets. ROA provides an overview of how effectively a company uses its assets to generate profits. The higher the ROA, the more efficient the company is in generating profit from its assets. However, it should be noted that ROA needs to be interpreted within the context of the industry and compared with similar companies because the level of profitability considered good may vary across industries (Firdianto & Sudiyatno, 2024).

Based on the graph data of conventional banking for the 2020–2024 period, it can be seen that bank profitability performance fluctuated. In 2020, ROA was recorded at 0.0017, then decreased in 2021 to -0.0018, indicating a decline in banks' ability to generate profit, possibly influenced by economic conditions and increased credit risk. Subsequently, from 2022 to 2024, ROA showed an upward trend, reaching 0.0074, 0.0122, and 0.0122, respectively, reflecting an improvement in financial performance and the effectiveness of asset management by the banking sector.

The greater the ROA, the better the financial performance, because the rate of return is higher. Based on previous studies, several factors influence ROA, including the Loan to Deposit Ratio (LDR), Net Profit Margin (NPM), company age, inflation rate, and BI interest rate.

Loan to Deposit Ratio (LDR) is the ratio between loans granted and third-party funds, including loans received, excluding subordinated loans (Edwar Yokeu Bernardin, 2016). The generally safe limit for a bank's LDR is around 81%–100%. Meanwhile, according to central bank regulations, the safe limit for a bank's LDR is 110%. LDR has a positive effect on changes in profit. If the LDR ratio shows a high value, changes in profit will also be high, and vice versa. This means that if this ratio shows a low value, the bank is in a condition of excess liquidity, which may cause the bank to lose opportunities to obtain greater profits (Dewi, 2018). Therefore, it can be stated that the higher the LDR, the greater the profit obtained by the bank.

The study by Larasti R and Syaipudin (2024) states that LDR has a positive and significant effect on ROA. Meanwhile, the study by Enough Bhaktiar and Cassa Nova (2024) states that LDR has a negative and significant effect on ROA.

Net Profit Margin (NPM) is a ratio that describes the amount of net profit obtained by a company from each sale made (Fitriyani, 2019a). A high NPM is often considered positive, but it must be balanced with business ethics considerations. In addition to serving as a general performance benchmark, NPM is now also important for comparisons between banks, monitoring profit growth, and assessing financial risk and health. Nevertheless, NPM should be used together with other ratios, such as ROA, for a comprehensive performance evaluation, especially considering the current complexity of the banking industry. Thus, it can be stated that the NPM ratio measures net profit after tax from sales. The greater the NPM, the more efficient the company is in managing costs related to its operational activities (Fitriyani, 2019). Therefore, the higher the NPM ratio, the higher the profitability value.

The findings of Nurwita and Mutia Burhan (2024) indicate that Net Profit Margin (NPM) has a positive and significant effect on Return on Assets (ROA). In contrast, Angeliani Purba and Fahrudin (2025) found that NPM has a negative and significant effect on ROA.

Company age is also one of the factors that investors should consider before investing their capital. According to Zuchrinata and Yunita (2019), the longer a company has been established, the more experience it has in dealing with business problems, which may lead to more stable profits. Older companies also tend to be

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more transparent in disclosing information. This condition occurs because of increasing demands from society and investors. Based on Stakeholder Theory, a longer company age attracts greater attention from various stakeholders, encouraging the company to disclose more information, including information related to human resource accounting.

The study conducted by Cahyani and Sulistyowati (2023) states that company age has a positive and significant effect on ROA. Meanwhile, Rahman and Sunarti (2017) found that company age has a negative and significant effect on ROA.

Inflation is a condition in which absolute prices increase significantly and continuously over a long period, followed by a decline in the real or intrinsic value of a country's currency (Nur et al., 2021). According to Aluko and Ajayi (2018), inflation has a positive relationship with banking sector efficiency, but a negative relationship with banking sector stability. Inflation may arise from various sources.

The research conducted by Prasetya and Thamrin (2021) shows that inflation has a negative and significant effect on ROA. Conversely, Djaelani et al. (2023) found that inflation has a positive and significant effect on ROA.

Interest rate refers to the rate paid to customers or borrowers above the amount that should be paid to the bank (Sholikhan & Santoso, 2024). Interest rates may influence a company's profitability because they are closely related to supply and demand conditions. According to Imaduddin and Nursito (2023), an increase in the BI interest rate causes deposit interest rates in conventional banks to rise, thereby attracting customers who expect higher returns on their funds.

The study conducted by Prasetya and Thamrin (2021) states that interest rates have a positive and significant effect on ROA. Meanwhile, Dwinanda and Tohirin (2021) found that interest rates have a negative but insignificant effect on ROA.

Based on the varied findings of previous studies and the existence of variables whose effects have not been widely examined, the author is interested in conducting a study entitled "The Effect of Loan to Deposit Ratio (LDR), Net Profit Margin (NPM), Company Age, Inflation Rate, and BI Interest Rate on Return on Assets (ROA) in Conventional Banking Companies Listed on the Indonesia Stock Exchange for the 2020–2024 Period."

LITERATURE REVIEW

Signaling Theory

Signaling Theory explains how parties with more information convey information to other parties with limited information. According to Spence (1973), a signal is information or an action provided by the sender to the receiver so that the receiver can assess the quality, condition, or prospects of the sender. In economics, signaling theory explains that private information can be conveyed through signals that can be observed by others, allowing the receiver to assess conditions that cannot be directly observed (André et al., 2022; Mann, 2023; Számadó et al., 2023). This theory is closely related to information asymmetry, which refers to a condition in which company management has more complete, timely, and in-depth information regarding the company's prospects, risks, and operations compared to external parties, such as investors, creditors, customers, and regulators (Yu & Xiao, 2022; Sánchez et al., 2011; Martins et al., 2016; Putra & Ratnadi, 2021).

In corporate practice, signals can be conveyed through both financial and non-financial information, such as financial statements, voluntary disclosures, corporate policies, corporate governance, intellectual capital, integrated reporting, and ESG or sustainability information (An et al., 2011; Sun et al., 2022; Sánchez et al., 2022; Omran & Ramdhony, 2015; Siddique et al., 2021; Nawawi et al., 2020; Bamahros et al., 2022). According to Számadó et al. (2023), the quality of a signal greatly determines the trust of the information receiver because a credible signal is relevant, reliable, and difficult to manipulate. The receiver will then interpret the signal before making a decision, so the signal helps the receiver assess conditions or qualities that cannot be directly observed (Mann, 2023). Therefore, Signaling Theory emphasizes the importance of delivering information that is clear, credible, verifiable, and consistent with the company's actual performance in order to reduce information asymmetry, increase trust, and assist external parties in assessing the company's condition and prospects (Lawati et al., 2023; Oktorina et al., 2021; Rosharlianti, 2022; Metwally & Aly, 2022; Leimar & McNamara, 2023).

Financial Statements

Financial statements are information that describes and is used to assess a company's performance, especially for companies whose shares are listed and traded on the stock exchange. The information contained in a company's financial statements can be used in financial statement analysis to evaluate company performance, which also reflects the company's fundamentals. Therefore, this information can provide a basis for investment decisions (Rafika, 2018).

Return on Assets

Return on Assets (ROA) is a ratio that measures a company's ability, in this context a bank, to generate net income from all assets owned.

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Loan to Deposit Ratio
The Loan to Deposit Ratio is an important ratio used to assess a bank's liquidity level in carrying out its intermediation function.

Net Profit Margin
Net Profit Margin is a profitability ratio used to measure a company's ability to generate net income from each sale made.

Company Age
Company age indicates the length of time a company has been established or the length of its operations, either since its IPO or since its establishment until the time of the study.

Inflation Rate
Inflation is a condition in which there is a significant and continuous increase in absolute prices over a long period, followed by a further decline in the real or intrinsic value of a country's currency (Nur et al., 2021).

BI Interest Rate
The Bank Indonesia benchmark interest rate, or BI Rate, is a monetary policy instrument that is very important for the banking sector because it affects the cost and income structure of conventional banks.

Hypothesis Formulation
The Effect of Loan to Deposit Ratio on ROA
According to Saunders and Cornett (2018), lending is the main activity of banks that generates income. Therefore, the more effectively a bank utilizes the funds collected through lending, the greater the profit that can be obtained by the bank. Return on Assets (ROA) measures how much profit a bank is able to generate from all assets it owns. When lending activities run well and generate high interest income, bank profits will increase. This increase in profit will then have an impact on the increase in ROA.

The studies by Pratami (2021), Faizah Shofiyah Larasati R and Usep Syaipudin (2024), and Latifa Himma and Atmanti (2025) state that LDR has a significant positive effect on ROA. Different findings are shown by Retnaning Sampurnaningsih et al. (2021), who state that LDR has a positive but insignificant effect on ROA. Meanwhile, Enough Bhaktiar and Cassa Nova (2024) state that LDR has a significant negative effect on ROA.
H1**:** LDR has a positive effect on ROA in conventional banking companies listed on the Indonesia Stock Exchange during 2020–2024.

The Effect of Net Profit Margin on ROA
The higher the NPM value, the better the company's performance in controlling costs and generating profit. This condition will ultimately affect the overall level of profitability, including Return on Assets (ROA), as an indicator of the effectiveness of asset management in generating profit.

The studies by Enough Bhaktiar and Cassa Nova (2024), Nurwita and Mutia Burhan (2024), and Retnaning Sampurnaningsih et al. (2021) state that NPM has a significant positive effect on ROA. Meanwhile, Angeliani Purba and Fahrudin (2025) state that NPM has a significant negative effect on ROA.
H2: NPM has a positive effect on ROA in banking sector companies listed on the Indonesia Stock Exchange during 2020–2024.

The Effect of Company Age on ROA
According to A. Hitt and Ireland (2019), companies that have operated for a longer period tend to have advantages in terms of experience, organizational learning, and resource management efficiency. Long experience helps companies reduce strategic errors, strengthen relationships with various parties, and improve operational effectiveness. This condition enables companies to generate better financial performance, including increased profit from the utilization of their assets. Therefore, the higher the company age, the greater the opportunity for the company to improve the effectiveness of asset utilization and encourage an increase in ROA.

The studies by Cahyani and Sulistyowati (2023) and Putri (2018) state that company age has a significant positive effect on ROA. Meanwhile, Rahman and Sunarti (2017) state that company age has a significant negative effect on ROA.
H3: Company age has a positive effect on ROA in banking sector companies listed on the Indonesia Stock Exchange during 2020–2024.

The Effect of Inflation Rate on ROA
In conventional banks, inflation is generally considered to suppress profitability due to rising costs and credit risk. Meanwhile, in Islamic banks, the effect of inflation may be more moderate or even insignificant due to contract-

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based and profit-sharing mechanisms. Therefore, in analyzing the effect of inflation on ROA, it is necessary to consider the characteristics of the banking system being studied.

The study by Djaelani et al. (2023) states that the inflation rate has a significant positive effect on ROA. Different findings are shown by Pratami (2021), who states that the inflation rate has a positive but insignificant effect on ROA. Meanwhile, Indah Sari and Wiyono (2021) and Dwinanda and Tohirin (2021) state that the inflation rate has a negative but insignificant effect on ROA. Furthermore, Prasetya and Thamrin (2021) and Latifa Himma and Atmanti (2025) state that the inflation rate has a significant negative effect on ROA.

H4: The inflation rate has a negative effect on ROA in banking sector companies listed on the Indonesia Stock Exchange during 2020–2024.

The Effect of BI Interest Rate on ROA

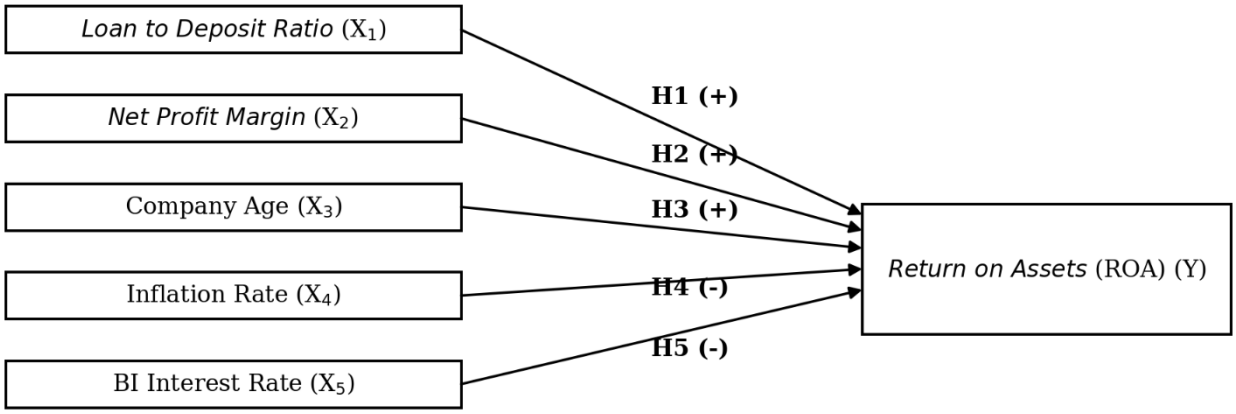
According to Brigham, Eugene F., and Houston (2021), an increase in interest rates can increase the cost of capital and interest expenses borne by financial institutions. When interest rates are at a high level, banks' cost of funds will increase, and the public becomes less interested in taking loans due to higher interest burdens. This causes banks' interest income to become less optimal and may suppress profitability. Therefore, the higher the interest rate, the lower the bank's ability to generate profit from its assets. This view indicates that interest rate stability is one of the important factors in supporting banks' profitability performance.

The studies by Prasetya and Thamrin (2021) and Latifa Himma and Atmanti (2025) state that the BI interest rate has a significant positive effect on ROA. Different findings are shown by Indah Sari and Wiyono (2021) and Dwinanda and Tohirin (2021), who state that the BI interest rate has a negative but insignificant effect on ROA. Meanwhile, Suharno (2021) states that the BI interest rate has a significant negative effect on ROA.

H5: The BI interest rate has a negative effect on ROA in banking sector companies listed on the Indonesia Stock Exchange during 2020–2024.

Conceptual Framework

Based on the theory and previous studies, the relationship between the Loan to Deposit Ratio, Net Profit Margin, company age, inflation rate, and BI interest rate on Return on Assets can be seen in Figure 1.



Source: Developed Research Journal, 2026

Figure 1. Conceptual Framework

RESEARCH METHOD

Research Location and Period

This research was conducted on companies classified as conventional banking companies listed on the Indonesia Stock Exchange (IDX). The research period began in August 2025 and ended in January 2026.

Population and Sample

Table 1. Sample Criteria

No.	Sample Selection Criteria	Number of Companies
1	Banking sub-sector companies listed on the IDX	47
2	Companies that conducted IPO after 2020	(4)
3	Companies that are not classified as conventional banks	(3)
	Total Sample	**40**
	Total observed data (40 companies × 5 years)	**200**

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The population in this study consists of conventional banking sector companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. Based on data obtained as of December 2025, the total population consisted of 47 companies. The sampling technique used in this study was purposive sampling. The criteria for sample selection are presented in Table 1.

Operational Definition of Research Variables
In this study, the independent and dependent variables used consist of the following:
Return on Assets (Y)
According to Pratama et al. (2020), ROA can be formulated as follows:
ROA = Total Net Income / Total Assets × 100%
Loan to Deposit Ratio (X1)
According to Van Greuning and Brajovic Bratanovic (2020), LDR can be formulated as follows:
LDR = Total Loans / Third-Party Funds × 100%
Net Profit Margin (X2)
According to Brigham, Eugene F., and Houston (2021), NPM can be formulated as follows:
NPM = Net Income / Net Sales × 100%
Company Age (X3)
According to Sartono (2020), company age can be formulated as follows:
Company Age = Research Year – IPO Year
Inflation Rate (X4)
According to Ujkani and Gara (2023), the inflation rate can be formulated as follows:
Inflation Rate = $(CPI_n - CPI_{n-1}) / CPI_{n-1}$
BI Interest Rate (X5)
The BI interest rate follows the benchmark interest rate applicable in the corresponding year.

Data Analysis Technique
Descriptive Statistics
Descriptive statistics are used to provide a comprehensive overview of the profile of the data collected in this study. This analysis aims to transform raw data into information that is easier to understand by presenting the minimum value, maximum value, mean, and standard deviation. Thus, the characteristics of each research variable can be objectively identified before further hypothesis testing is conducted.

Multicollinearity Test
The multicollinearity test is conducted to ensure that there is no excessively high correlation among latent variables or among indicators forming the same latent variable. The test is carried out by examining the Variance Inflation Factor (VIF) value. The model is considered free from multicollinearity if the VIF value is less than 10. If the VIF value exceeds 10, it indicates the presence of multicollinearity, meaning that the independent variables have a high correlation with one another.

Autocorrelation Test
The autocorrelation test is applied to verify that there is no correlation among residuals in the model, in order to ensure that the assumption of data independence is fulfilled. This test is measured using the Durbin-Watson test. The model is declared free from autocorrelation problems if the DW value falls within the range of **du < DW < 4 − du**. Conversely, if the DW value falls within the area of **DW < dl** or **DW > 4 − dl**, the model is indicated to have autocorrelation problems.

Path Analysis
Path analysis is used to determine the direction, magnitude, and significance of the influence among latent variables in the research model. This analysis is conducted by examining the path coefficient value.

Model Feasibility Test (F-Test)
The model feasibility test is used to determine whether the variation of the independent variables used in this study is feasible in explaining the dependent variable, namely Return on Assets, by 64%. The testing criterion is that if the significance value of F is less than 0.05, the model is declared fit or feasible for use in this study.

Coefficient of Determination (R^2)
The coefficient of determination is assessed by reviewing the Adjusted R-Square value to measure the extent to which the independent variables are able to explain the variability of the dependent variable. This value ranges from 0 to 1, where a result close to 1 represents the strong ability of the model to predict changes in the dependent

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variable. Conversely, a value close to 0 indicates the limited ability of the independent variables to explain the phenomenon being studied.

f-Square Test

The f-Square test is conducted to evaluate the relative contribution and significance of the specific effect of each independent variable on the coefficient of determination (R^2) of the dependent variable in the model. The strength of the variable effect is classified into four levels: an f^2 value of ≥ 0.35 indicates a large effect, $f^2 \geq 0.15$ represents a medium effect, and $f^2 \geq 0.02$ indicates a small effect. Meanwhile, an f^2 value of < 0.02 indicates that the variable has no effect on the model.

Hypothesis Testing (t-Test)

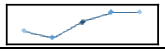
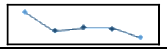
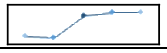
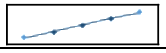
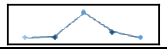
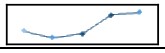
Hypothesis testing in this study is estimated through the bootstrapping procedure to evaluate the significance of the path coefficients among variables. This procedure aims to determine whether the independent variables have a statistically significant effect on the dependent variable. Significance assessment is carried out using a significance level threshold of $\alpha = 5\%$, where the hypothesis is accepted if the t-statistic value exceeds the t-table value or if the p-value is below 0.05. The use of these two parameters ensures that the observed relationships among variables in the model are not due to chance, but have strong statistical validity.

RESULTS AND DISCUSSION

Descriptive Analysis

The descriptive analysis of the research model can be seen in Table 2.

Table 2. Descriptive Analysis

Year	ROA	LDR	NPM	Company Age	Inflation Rate	BI Interest Rate
2020	0.0017424	478.67%	-4.11%	15.7	1.68%	4.25%
2021	-0.001808	367.35%	-5.80%	16.7	1.87%	3.52%
2022	0.007381	385.10%	9.15%	17.7	5.51%	4.00%
2023	0.0122215	381.57%	11.81%	18.7	2.61%	5.80%
2024	0.0121781	319.47%	11.56%	19.7	1.57%	6.10%
Average	0.0063431	3.8643142	0.0452259	17.7	0.02648	0.04734
Std. Dev.	0.0056086	0.5173084	0.0780974	1.4142	0.0147627	0.0102461
Max	0.0122215	4.7866752	0.1180627	19.7	0.0551	0.061
Min	-0.001808	3.1947344	-0.057975	15.7	0.0157	0.0352
Growth	598.95%	-33.26%	381.60%	25.48%	-6.55%	43.53%
Trend						

Source: Processed Data, 2026

Based on Table 2, company performance during the 2020–2024 period shows a generally improving trend. The average ROA was 0.00634, with the maximum value of 0.01222 recorded in 2023 and the minimum value of -0.001808 recorded in 2021. This indicates that profitability was under pressure in 2021 but experienced a significant recovery in the following period, as reflected in ROA growth of 598.95%.

The LDR variable had an average value of 3.86, with a declining trend of -33.26%. This decline indicates an improvement in liquidity management, although at the beginning of the period the LDR ratio was relatively very high. Meanwhile, NPM showed sharp fluctuations with an average value of 0.04522 and growth of 381.60%, indicating pressure on net income at the beginning of the period before significantly increasing during 2022–2024.

In terms of company characteristics, company age increased consistently, with an average of 17.7 years and growth of 25.48%, indicating that the companies were in a relatively stable growth phase. Macroeconomic factors also showed dynamic movement, where the average inflation rate was 2.65% and the average interest rate was 4.73%. The interest rate showed an increasing trend of 43.53% until 2024, which could potentially affect the cost of funds and the company's financial performance. Overall, the data indicate that after experiencing pressure in 2021, the companies were able to achieve a relatively strong performance recovery until 2024, although they remained influenced by fluctuations in macroeconomic conditions.

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Multicollinearity Test

Table 3. Multicollinearity Test Results

No.	Variable	VIF	Description
1	LDR	1.038	No multicollinearity
2	NPM	1.066	No multicollinearity
3	Company Age	1.039	No multicollinearity
4	Inflation Rate	1.115	No multicollinearity
5	BI Interest Rate	1.156	No multicollinearity

Source: Processed Data, 2026

Based on Table 3, all independent variables have VIF values of less than 10. These results indicate that there is no multicollinearity among the independent variables; therefore, the research model is appropriate for further analysis.

Autocorrelation Test

The test result obtained was 0.949. With a total sample size of 200 and five independent variables, this value is below 2, indicating a tendency toward positive autocorrelation. However, this study uses a variance-based Partial Least Squares Structural Equation Modeling approach, or PLS-SEM, so classical assumptions such as autocorrelation are not the main requirements in model evaluation. Therefore, the Durbin–Watson test result does not affect the validity of the structural model analyzed through bootstrapping.

Path Analysis

Table 4. Path Analysis

Variable	Original Sample (O)
LDR → ROA	-0.018
NPM → ROA	0.797
Company Age → ROA	-0.033
Inflation Rate → ROA	-0.017
BI Interest Rate → ROA	0.043

Source: Processed Data, 2026

Based on Table 4, the path analysis equation is obtained as follows:

$$Y = -0.018X1 + 0.797X2 - 0.033X3 - 0.017X4 + 0.043X5$$

Model Feasibility Test — F-Test

The F-test result shows an F-statistic value of 69.100 with a significance value of 0.000. Since the significance value is far below 0.05 (0.000 < 0.05), the research model is declared fit or feasible to be used.

Coefficient of Determination — R^2

Table 5. Coefficient of Determination Test Results

No.	Variable	R-Square	Adjusted R-Square
1	Return on Assets	0.640	0.631

Source: Processed Data, 2026

Based on Table 5, the Adjusted R-Square value is 0.631. This indicates that the ability of the independent variables to explain the dependent variable is 63.1%. The remaining 36.9% is influenced by other factors outside the research model.

F-Square Test

Based on Table 6, it can be seen that the LDR and inflation rate variables have no effect, NPM has a large effect, while company age and the BI interest rate have small effects.

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Table 6. F-Square Test Results

No.	Variable	F^2 Value	Description
1	LDR	0.001	No effect
2	NPM	1.657	Large effect
3	Company Age	0.003	Small effect
4	Inflation Rate	0.001	No effect
5	BI Interest Rate	0.004	Small effect

Source: Processed Data, 2026

Hypothesis Testing — t-Test

Table 7. Hypothesis Test Results

Variable	Hypothesis	Original Sample (O)	T Statistics (|O/STDEV|)	T Table	P Values	α	Decision
LDR → ROA	(+)	-0.018	1.446		0,148		H_0 accepted, H1 rejected
NPM → ROA	(+)	0,797	9.743		0.000		H_0 rejected, H2 accepted
Company Age → ROA	(+)	-0.033	1.971	1,96	0.049	0.05	H_0 accepted, H3 rejected
Inflation Rate → ROA	(-)	-0.017`	0,578		0,564		H_0 accepted, H4 rejected
BI Interest Rate → ROA	(-)	0.043	0,976		0,329		H_0 accepted, H5 rejected

Source: Processed Data, 2026

The Effect of Loan to Deposit Ratio on ROA
Based on Table 7, the Loan to Deposit Ratio variable has an original sample value of -0.018, indicating a negative relationship with ROA. The p-value of 0.148 is greater than alpha 0.05 (0.148 > 0.05), and the T-statistic value of 1.446 is lower than the T-table value of 1.96. Therefore, H_0 is accepted and H1 is rejected. This indicates that LDR does not have a significant effect on ROA.

The Effect of Net Profit Margin on ROA
Based on Table 7, the Net Profit Margin variable has an original sample value of 0.797, indicating a positive relationship with ROA. The p-value of 0.000 is less than alpha 0.05 (0.000 < 0.05), and the T-statistic value of 9.743 is greater than the T-table value of 1.96. Therefore, H_0 is rejected and H2 is accepted. This indicates that NPM has a positive and significant effect on ROA.

The Effect of Company Age on ROA
Based on Table 7, the company age variable has an original sample value of -0.033, indicating a negative relationship with ROA. The p-value of 0.049 is less than alpha 0.05 (0.049 < 0.05), and the T-statistic value of 1.971 is greater than the T-table value of 1.96. Therefore, H_0 is rejected and H3 is accepted. This indicates that company age has a significant effect on ROA.

The Effect of Inflation Rate on ROA
Based on Table 7, the inflation rate variable has an original sample value of -0.017, indicating a negative relationship with ROA. The p-value of 0.564 is greater than alpha 0.05 (0.564 > 0.05), and the T-statistic value of 0.578 is lower than the T-table value of 1.96. Therefore, H_0 is accepted and H4 is rejected. This indicates that the inflation rate does not have a significant effect on ROA.

The Effect of BI Interest Rate on ROA
Based on Table 7, the Bank Indonesia interest rate variable has an original sample value of 0.043, indicating a positive relationship with ROA. The p-value of 0.329 is greater than alpha 0.05 (0.329 > 0.05), and the T-statistic value of 0.976 is lower than the T-table value of 1.96. Therefore, H_0 is accepted and H5 is rejected. This indicates that the interest rate does not have a significant effect on ROA.

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Results and Discussion

The Effect of Loan to Deposit Ratio on Return on Assets

Based on the results of the study, it can be concluded that the Loan to Deposit Ratio variable has a negative and insignificant effect on Return on Assets. This means that although an increase in LDR tends to be followed by a decrease in ROA, the effect is not strong enough to explain actual changes in company profitability. Theoretically, an excessively high LDR can increase liquidity risk and the operational burden of banks, thereby potentially reducing the company's ability to generate profit. However, in this study, the effect of LDR on ROA is insignificant, indicating that company profitability is more strongly influenced by other factors outside the level of lending.

The results of this study are not in line with Pratami (2021), Faizah Shofiyah Larasati R and Usep Syaipudin (2024), and Latifa Himma and Atmanti (2025), who state that LDR has a significant positive effect on ROA. The findings also differ from Retnaning Sampurnaningsih et al. (2021), who state that LDR has a positive but insignificant effect on ROA, as well as Enough Bhaktiar and Cassa Nova (2024), who state that LDR has a significant negative effect on ROA.

The Effect of Net Profit Margin on Return on Assets

Based on the results of the study, it can be concluded that the Net Profit Margin variable has a positive and significant effect on Return on Assets. This means that the higher the company's ability to generate net income from its operational activities, the higher the company's overall profitability. Theoretically, an increase in NPM reflects operational efficiency and the company's ability to control costs, resulting in more optimal net income. This condition has a direct impact on increasing ROA because higher profit can increase the return generated from the company's assets.

The results of this study are in line with Enough Bhaktiar and Cassa Nova (2024), Nurwita and Mutia Burhan (2024), and Retnaning Sampurnaningsih et al. (2021), who state that NPM has a significant positive effect on ROA. However, the results are not in line with Angeliani Purba and Fahrudin (2025), who state that NPM has a significant negative effect on ROA.

The Effect of Company Age on Return on Assets

Based on the results of the study, it can be concluded that the company age variable has a negative and significant effect on Return on Assets. This means that the older the company, the more its profitability tends to decline, and this effect is statistically significant. Theoretically, older companies tend to have more complex organizational structures, higher operational costs, and potential declines in efficiency due to increasingly lengthy bureaucratic processes. In addition, long-established companies may face challenges in innovation and adaptation to technological changes and market conditions. These factors can reduce the company's ability to generate optimal profits. Therefore, although a company becomes more mature in terms of age, this does not always guarantee increased profitability.

The results of this study are in line with Rahman and Sunarti (2017), who state that company age has a significant negative effect on ROA. However, the results are not in line with Cahyani and Sulistyowati (2023) and Putri (2018), who state that company age has a significant positive effect on ROA.

The Effect of Inflation Rate on Return on Assets

Based on the results of the study, it can be concluded that the inflation rate variable has a negative and insignificant effect on Return on Assets. This means that an increase in inflation tends to reduce the company's ability to generate profit, but the effect is not strong enough to have a real impact on company profitability. Theoretically, high inflation can increase operational costs and reduce purchasing power, thereby potentially suppressing company profit performance. However, in this study, the companies were still able to maintain profitability stability despite fluctuations in inflation, so inflation was not yet a major factor determining changes in ROA.

This study is in line with Indah Sari and Wiyono (2021) and Dwinanda and Tohirin (2021), who state that the inflation rate has a negative but insignificant effect on ROA. However, the results are not in line with Djaelani et al. (2023), who state that the inflation rate has a significant positive effect on ROA; Pratami (2021), who states that the inflation rate has a positive but insignificant effect on ROA; and Prasetya and Thamrin (2021) and Latifa Himma and Atmanti (2025), who state that the inflation rate has a significant negative effect on ROA.

The Effect of BI Interest Rate on Return on Assets

Based on the results of the study, it can be concluded that the BI interest rate variable has a positive and insignificant effect on Return on Assets. This means that changes in interest rates tend to be followed by changes in ROA in the same direction, but the effect is not strong enough to have a real impact on company profitability. Theoretically, an increase in interest rates can increase borrowing costs, thereby potentially reducing company profit. However, in this study, companies were still able to maintain stable profitability performance despite increases in interest rates, so the interest rate variable was not yet a dominant factor affecting ROA.

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The results of this study are not in line with Prasetya and Thamrin (2021) and Latifa Himma and Atmanti (2025), who state that the BI interest rate has a significant positive effect on ROA. The results also differ from Indah Sari and Wiyono (2021) and Dwinanda and Tohirin (2021), who state that the BI interest rate has a negative but insignificant effect on ROA, as well as Suharno (2021), who states that the BI interest rate has a significant negative effect on ROA.

CONCLUSION

Based on the results of the data analysis and discussion described above, it can be concluded that: (1) LDR has a negative and insignificant effect on ROA. (2) NPM has a positive and significant effect on ROA. (3) Company age has a negative and significant effect on ROA. (4) The inflation rate has a negative and insignificant effect on ROA. (5) The BI interest rate has a positive and insignificant effect on ROA.

This study has been conducted in accordance with an appropriate scientific methodology. However, several limitations should be noted. First, the observation period in this study was limited to five years, namely 2020–2024, so the results may not fully reflect the long-term conditions of conventional banking companies. Second, the independent variables used in this study were limited to Loan to Deposit Ratio, Net Profit Margin, company age, inflation rate, and BI interest rate. Therefore, there may be other factors outside the research model that can influence ROA.

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