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Analysis of the Influence of NPL and DER on ROA at PT Artha Graha International Bank Tbk

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Abstract

This study aims to analyze the effect of Non-Performing Loans (NPL) and Debt to Equity Ratio (DER) on Return on Assets (ROA) at PT. Bank Artha Graha Internasional, Tbk. The research employs an associative approach using quantitative data from the bank's financial statements over a ten-year period from 2013 to 2022. The dataset includes total non-performing loans, total credit, total debt, total equity, net profit, and total assets. The research population spans 32 years, while the sample consists of 10 years selected through a purposive sampling technique. The study utilizes secondary data collected through documentation and literature review. Data analysis includes classical assumption tests, multiple linear regression analysis, correlation coefficients, determination tests, t-tests, and F-tests, conducted using SPSS version 24. These statistical methods are applied to examine the relationship between NPL, DER, and ROA and to determine the significance of their impact. The findings indicate that NPL and DER do not have a significant effect on ROA, either partially or simultaneously, at PT. Bank Artha Graha Internasional, Tbk. Although the relationship between these variables is of moderate strength, it suggests that other financial or external factors may play a more influential role in determining the bank's profitability. These results highlight the need for further research to explore additional determinants of financial performance in the banking sector, considering aspects such as operational efficiency, risk management, and macroeconomic conditions that may influence profitability.

1. Introduction

Business activities play a crucial role in driving economic growth. The banking sector is one of the key components of the economy that significantly influences economic development. According to Soviani (2022), a bank is a financial intermediary that has the right to collect savings, provide loans, and issue bonds. Latif et al. (2021) state that a bank's financial performance can be influenced by the rapid development and increasing complexity of the banking sector. Therefore, analyzing financial indicators is essential for evaluating a bank's financial performance.

Financial ratio analysis is one of the fastest methods to assess a bank's financial performance. It is a widely used tool for evaluating financial health. One of the key ratios used to measure banking financial performance is the profitability ratio. Profitability is a critical indicator in assessing a bank's financial performance. It measures a company's efficiency in generating profits using its assets (Nasution, 2019). Return on Assets (ROA) is a profitability ratio that calculates a company's profits based on the return on its assets. ROA serves as a measurement tool to evaluate how effectively invested capital generates profits in line with investor expectations (Kasmir, 2016).

Two financial ratios that can affect ROA are Non-Performing Loans (NPL) and the Debt-to-Equity Ratio (DER). According to Fietroh et al. (2022), NPL refers to loans overdue for more than 90 days, categorized as substandard, doubtful, or bad. A lower NPL indicates a lower credit risk borne by the bank. Firmansyah & Lesmana (2021) explain that DER is a ratio used to assess the proportion of debt relative to equity. A higher DER suggests that a bank relies more on external debt for funding. Sekarsari & Yuniningsih (2023) state that an increase in NPL and DER negatively impacts a bank's profitability, leading to a decline in ROA.

PT. Bank Artha Graha Internasional, Tbk operates in the general banking sector. The bank commenced its commercial activities as a non-bank financial institution in January 1975 before transitioning to a general banking service provider on February 24, 1993. The bank conducted its Initial Public Offering (IPO) on August 23, 1990.

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Table 1. Data on non-performing loans, total credit, total debt, total equity, net profit and total assets at PT. Bank Artha Graha Internasional, Tbk
2013-2022
(Data Presented in Millions of Rupiah)

Year	Non-Performing Loans	Total Credit	Total Debt	Total Equity	Net profit	Total assets
2013	301,873	15,352,474	18,588,821	2,608,691	222,805	21,197,512
2014	328,889	17,018,062	20,734,071	2,719,276	110,585	23,453,347
2015	404,569	17,112,628	22,353,479	2,765,770	71,294	25,119,249
2016	498,787	17,744,173	21,795,549	4,424,389	72,843	26,219,938
2017	1,127,430	18,067,674	23,219,096	4,507,912	68.101	27,727,008
2018	938.277	15,076,319	21,438,077	4,587,111	53,621	26,025,188
2019	784,499	13,459,487	20,995,806	4,536,235	-58,345	25,532,041
2020	569,394	11,982,582	26,967,430	3,559,535	21,371	30,526,965
2021	389,730	10,816,904	22,173,871	3,953,949	-168,063	26,127,820
2022	279,092	9,705,183	21,433,263	4,004,370	54,997	25,437,633

Source: Processed Secondary Data, 2024

Based on Table 1 above, the movement of non-performing loans (NPL) at PT. Bank Artha Graha Internasional, Tbk fluctuated over the years. An increase in NPL was observed in 2014, reaching IDR 328.8 billion, followed by a further rise in 2015 to IDR 404.569 billion and in 2016 to IDR 498.7 billion. The highest increase occurred in 2017, reaching IDR 1.127 trillion. This rise in non-performing loans was attributed to the economic slowdown affecting debtors, which negatively impacted the bank's credit portfolio and overall financial condition.

The total credit provided also fluctuated. A decline was observed in 2018, with total credit dropping to IDR 15.076 trillion, followed by another decrease in 2019 to IDR 13.459 trillion. The decline continued through 2020, 2021, and 2022, reaching its lowest point at IDR 9.705 trillion. The decrease in total credit was primarily due to increased competition from other banks, leading to a shift in customer preferences.

The total debt of PT. Bank Artha Graha Internasional, Tbk increased in 2014, reaching IDR 20.734 trillion, and rose again in 2015 to IDR 22.353 trillion. Although it declined in 2016, it surged again in 2017 to IDR 23.219 trillion, with the highest increase recorded in 2020 at IDR 26.967 trillion. The rise in total debt was due to an increase in loan funds sourced from customers and investors as third-party funds.

Total equity decreased in 2019 to IDR 4.536 trillion and further declined in 2020 to IDR 23.559 trillion. The decline was primarily due to banks allocating working capital toward the purchase of fixed assets each year.

The net profit of PT. Bank Artha Graha Internasional, Tbk showed a downward trend, declining in 2014 to IDR 110.5 billion and further in 2015 to IDR 71.2 billion. Although there was an increase in 2016, net profit declined again in 2017 to IDR 68.1 billion and in 2018 to IDR 53.6 billion. In 2019, the bank experienced a loss of -IDR 58.3 billion, followed by another significant decline in 2021, with a recorded loss of -IDR 168 billion, marking the highest net profit decline in the last ten years. The decrease in net profit was mainly due to the high level of non-performing loans, which reduced the bank's earnings from interest on credit.

Total assets also declined, dropping to IDR 26.025 trillion in 2018 and further decreasing to IDR 25.532 trillion in 2019. The downward trend continued in 2021 and 2022, with total assets reaching IDR 25.437 trillion. The decline in total assets was primarily due to reduced banking liquidity caused by long-term loan commitments.

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Based on the identified problems and the theories previously discussed, this study aims to analyze the influence of NPL and DER on ROA at PT. Bank Artha Graha Internasional, Tbk.

2. Literature Review

2.1 Non-Performing Loan (NPL)

According to Sekarsari & Yuniningsih (2023), **Non-Performing Loan (NPL) or bad credit** is an indicator used to assess a bank's functional capabilities. A high NPL value indicates that the bank's business management has failed, leading to issues such as decreased profitability (uncollectible receivables), solvency problems (lack of capital), and liquidity constraints (insufficient funds to meet third-party obligations). Therefore, the higher the NPL ratio, the greater the risks faced by the bank, which can ultimately affect customer trust and financial stability.

Based on **Bank Indonesia Regulation Number 23/2/PBI/2021**, the standard NPL for a healthy bank should be **less than 5%**. If a bank's NPL exceeds **5%**, it is classified as **unhealthy**, indicating difficulties in managing credit risk. Consequently, banks must ensure that their NPL levels remain within safe limits to maintain operational stability and enhance customer and investor confidence.

NPL is also a crucial indicator in assessing the effectiveness of a bank's credit risk management. A high NPL ratio often reflects weak credit policies or challenges in debt collection. To mitigate these risks, banks should implement strict creditworthiness assessments, enhance debtor monitoring, and offer credit restructuring programs for customers facing financial difficulties (Anggriani & Muniarty, 2023). The formula for calculating NPL is as follows:

$$\text{Non-Performing Loan} = \left(\frac{\text{Non-Performing Loans}}{\text{Total Loans}}\right) \times 100\%$$

(Source: Anggriani & Muniarty, 2023)

In banking operations, controlling NPL is critical because it directly impacts financial performance. Therefore, banks need a strong credit monitoring system, robust risk management strategies, and selective lending policies to minimize NPL growth.

2.2 Debt to Equity Ratio (DER)

Sekarsari & Yuniningsih (2023) state that the **Debt to Equity Ratio (DER)** is a financial ratio used to measure a company's ability to cover some or all of its debts, both long-term and short-term, using its own capital. This ratio reflects the level of reliance on debt in financing operations. The higher the DER, the greater the proportion of debt compared to equity, increasing the financial risk if not properly managed.

According to **Tandiarrang & Nurhayati (2022)**, a **DER below 90%** is considered good, while a ratio exceeding 90% is categorized as poor, indicating excessive reliance on debt. A high DER can lead to increased interest expenses and liquidity risks, ultimately reducing the company's ability to grow and generate stable profits.

In the banking sector, DER is a key indicator of financial leverage. Banks with high DER levels tend to have greater financial obligations, which can be risky if debt management strategies are inadequate. Conversely, banks with lower DER ratios rely more on equity financing, reflecting a more stable financial position (Kasmir, 2016).

The formula for calculating DER is:

$$\text{Debt to Equity Ratio} = \left(\frac{\text{Total Debt}}{\text{Total Equity}}\right) \times 100\%$$

(Source: Kasmir, 2016)

Effective management of DER is crucial for maintaining a balanced capital structure. Banks must ensure that debt levels remain within a reasonable range to sustain financial health and build investor confidence.

2.3 Return on Assets (ROA)

According to **Latif et al. (2021)**, **Return on Assets (ROA)** is a key profitability ratio designed to measure a bank's ability to utilize its total assets efficiently to generate profits. ROA is one of the most important indicators of financial performance, as it reflects how effectively a bank is managing its resources to maximize returns.

Bank Indonesia, in **Regulation No. 13/1/PBI/2011**, defines a **healthy ROA as greater than 1.5%**. The higher the ROA, the better the bank's ability to generate profit from its assets. A low ROA, on the other hand, indicates inefficiency in asset utilization, which could negatively impact financial stability and competitiveness in the banking industry. ROA is also a critical factor for investors and regulators in evaluating a bank's financial health. Banks with high ROA ratios demonstrate strong asset management and profitability potential, making them more attractive to shareholders and stakeholders. Conversely, banks with low ROA values need to reassess their operational strategies to enhance profitability and market competitiveness (Kasmir, 2016). The formula for calculating ROA is:

$$\text{Return on Assets} = \left(\frac{\text{Net Income}}{\text{Total Assets}}\right) \times 100\%$$

(Source: Kasmir, 2016)

Thus, ROA serves as a crucial financial metric for banks. To improve their ROA, banks must enhance operational efficiency, optimize asset utilization, and implement strategic financial management practices.

3. Research Methods

3.1 Types of Research

This study employs an associative research approach. According to Sugiyono (2016), associative research focuses on examining the relationship between two variables—one independent and one dependent. The primary objective of this study is to analyze the influence of NPL and DER on ROA at PT. Bank Artha Graha Internasional, Tbk.

3.2 Research Instruments

Data collection in research requires essential tools to extract the necessary information. In this study, a table listing key financial data serves as the primary research instrument. The table includes data on total non-performing loans (NPL), total credit, total debt, total equity, net profit, and total assets of PT. Bank Artha Graha Internasional, Tbk, spanning a period of 10 years from 2013 to 2022.

3.3 Population and Research Sample

Each study involves a defined population from which data is drawn. The population in this study consists of banking financial reports accessed directly from official sources without prior modification, ensuring data integrity and originality. The population comprises annual reports of PT. Bank Artha Graha Internasional, Tbk, since its official registration with the IDX in 1990, totaling 32 years of financial reports.

Sampling is a crucial aspect of this research, enabling data analysis based on selected financial reports. The sample consists of 10 years of financial reports from PT. Bank Artha Graha Internasional, Tbk, covering the period from 2013 to 2022. Given that the total population spans 32 years, while the study utilizes only a 10-year sample, a purposive sampling technique is applied. The selected sample meets specific criteria, ensuring that the data is continuous and representative of the latest financial years without omissions. This approach ensures that the findings accurately reflect the population and support comprehensive analysis.

3.4 Data Collection Techniques

Various techniques are employed in the data collection process to ensure the accuracy and relevance of research findings. This study relies on documentation methods and literature review. The documentation involves obtaining financial reports from the official website of the Indonesia Stock Exchange (www.idx.co.id) and the official website of PT. Bank Artha Graha Internasional, Tbk (https://www.arthagraha.com). The collected data includes balance sheets and banking profit-and-loss statements from 2013 to 2022.

3.5 Data Analysis Techniques

The study employs several data analysis techniques, including classical assumption testing, multiple linear regression analysis, multiple correlation coefficient analysis, determination tests, t-tests, and F-tests. The statistical analysis is conducted using SPSS version 2.4 to ensure precise and reliable results.

4. Results and Discussion

4. 1 Classical Assumption Test

Table 2. Results of the Classical Assumption Test

Testing	Test Results	Data Predicate
Data Normality	0.685	Normal
Multicollinearity Constraint Testing	Tolerance/VIF = 0.637/1.571	Does not show symptoms
Heteroscedasticity Testing	The plot points are spread above and below 0 on the Y-axis.	No testing issues found
Autocorrelation Constraint Testing	0.314	Data is valid
Conclusion	**No Obstacles**	

Data Source: Secondary data processed using SPSS v20 (2024).

Based on the data presented, the test results indicate that there are no significant obstacles in this study. The Asymp. Sig value is greater than 0.05, which shows that the data in this study is normally distributed and the regression model is suitable for use. Regarding collinearity statistics, the Tolerance value for NPL (X1) and DER (X2) is 0.637 (> 0.10), while the VIF value for NPL (X1) and DER (X2) is 1.571 (< 10.00). This confirms the absence of multicollinearity in the regression model.

From the scatterplot graph, it is evident that the plotted points are distributed above and below zero on the Y-axis, which suggests no heteroscedasticity issues in the regression model. Based on the Runs Test results, the Asymp. Sig. (2-tailed) value is 0.314 (> 0.05), indicating that there is no autocorrelation constraint in the research data.

4. 2 Multiple Linear Regression

Table 3. Multiple Linear Regression Test Results

Regression Model	Coefficient B	T-value	Significance
Constant Value	0.001	0.050	0.961
NPL	-0.075	-0.714	0.498
DER	0.001	0.523	0.617

Data Source: Secondary data processed using SPSS v20 (2024).

The multiple regression equation is as follows:

Y = 0.001 - 0.075X1 + 0.001X2 + e

- The constant value of 0.001 implies that if NPL and DER are considered zero, the ROA at PT. Bank Artha Graha Internasional, Tbk will remain at 0.001.
- The beta coefficient for NPL (-0.075) indicates that a one-unit increase in NPL (X1) results in a 0.075-unit decrease in ROA, assuming other factors remain constant.
- The beta coefficient for DER (0.001) means that a one-unit increase in DER (X2) results in a 0.001-unit increase in ROA, assuming other factors remain constant.

4. 3 Correlation and Determination Test

Table 4. Results of the Correlation Coefficient Test and Determination Test

R Value (Research Correlation)	**0.466**
R Square Value (Magnitude of Influence)	0.217

Data Source: Secondary data processed using SPSS v20 (2024).

The correlation coefficient of 0.466 indicates a moderate relationship between NPL and DER with ROA at PT. Bank Artha Graha

Internasional, Tbk. This falls within the range of 0.40 - 0.599, signifying a moderate correlation level.

The coefficient of determination (R Square) is 0.217, or 21.7%, meaning that NPL and DER collectively explain 21.7% of the variation in ROA. The remaining 78.3% is influenced by other factors not examined in this study.

4.4 t-Test

a. NPL's Effect on ROA at PT. Bank Artha Graha Internasional, Tbk

Table 3 above shows that the calculated t-value for NPL is -0.714, which is smaller than the critical t-table value of 2.364 (-0.714 < 2.364). Additionally, the significance value for NPL is 0.498, which is greater than 0.05 (0.498 > 0.05). This means that NPL does not have a significant effect on ROA, leading to the rejection of hypothesis H1. This finding aligns with the study conducted by Soviani (2022), which states that NPL did not significantly affect ROA at PT. Bank Nusantara Parahyangan, Tbk for the period 2008-2018.

b. DER's Effect on ROA at PT. Bank Artha Graha Internasional, Tbk

The significance value for DER is 0.617, which is greater than 0.05 (0.617 > 0.05). The calculated t-value for DER is 0.523, which is smaller than the t-table value of 2.364 (0.523 < 2.364). Therefore, DER does not significantly affect ROA, leading to the rejection of hypothesis H2. This result is consistent with Sutrisno's (2018) research, which found that DER does not significantly impact ROA in banks listed on the Indonesia Stock Exchange.

4.5 f-Test

Table 5. F-Test Results

F-Count	F-Table	Significance
0.970	4.07	0.425

Data Source: Secondary data processed using SPSS v20 (2024).

c. The Effect of NPL and DER on ROA at PT. Bank Artha Graha Internasional, Tbk

The test results show a significance value of 0.425 (0.425 > 0.05) and an F-count value of 0.970, which is smaller than the F-table value of 4.07 (0.970 < 4.07). These results indicate that NPL and DER do not significantly affect ROA, leading to the rejection of hypothesis H3.

4.6 Discussion

a. The Influence of NPL on Return on Assets (ROA)

NPL does not have a significant effect on ROA at PT. Bank Artha Graha Internasional, Tbk. The main reason for this result is that when non-performing loans (NPLs) are high, they do not significantly impact banking profits. According to Fietroh et al. (2022), poor credit quality in banks is primarily caused by an increasing NPL ratio, which can lead to financial losses. In other words, as the number of bad loans increases—reflected in a higher NPL ratio—the bank's income, as measured by ROA, tends to decline.

Previous research conducted by Putrianingsih & Yulianto (2016) and later supported by another study in 2022 stated that NPL did not have a significant effect on ROA at PT. Bank Nusantara Parahyangan, Tbk. for the period 2008-2018.

b. The Effect of DER on ROA

DER does not have a significant effect on ROA at PT. Bank Artha Graha Internasional, Tbk. This is because an increase in bank debt does not directly translate into significant changes in profitability but often fluctuates. When bank debt experiences instability, the bank can optimize its profits to maintain financial stability.

Sekarsari & Yuniningsih (2023) suggest that a bank's income and return on assets (ROA) are likely to increase if it can obtain savings from other sources and effectively allocate these funds for lending to the public. Proper management of debt funds by banks can positively impact profit growth.

Previous research conducted by Safitri & Suriana (2020) stated that DER has a significant influence on ROA. However, Sutrisno (2018) found that DER does not have a significant effect on ROA for banks listed on the Indonesia Stock Exchange.

5. Closing

5.1 Conclusion

Based on the results of data analysis and discussion that have been conducted, the conclusion in this study is that NPL and DER do not have a significant effect on ROA at PT. Bank Artha Graha Internasional, Tbk either partially or together with a moderate level of relationship.

5.2 Suggestion

Based on the conclusions presented above, the author suggests that further researchers consider other variables such as Net Profit Margin and Debt to Asset Ratio. The author suggests to PT. Bank Artha Graha Internasional, Tbk to improve its ability to manage its capital to finance debt so that it can encourage an increase in banking assets by attracting more customers.

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