Journal of Economics and Business Letters
E-ISSN 2686-6056
P-ISSN 2798-8651
DOI:10.55942/jebl.v5i1.388

Volume 5
Issue 1
February Edition 2025

The influence of debt to asset ratio, total asset turnover, and net profit margin on return on assets in the Banking Subsector listed on the Indonesia Stock Exchange (2019-2022)

Umi Hasanatun[1], Melisa Bella Saragi[1], Wenny Tailisha[1], Delysia Angelyn[1], Helman[1*], Mella Yunita[2]

[1]Universitas Prima Indonesia, Medan, North Sumatera, Indonesia
[2]Universitas Tjut Nyak Dhien, Medan, North Sumatera, Indonesia
e-mail: helman@unprimdn.ac.id

Received 28 December 2024
Revised 23 February 2025
Accepted 28 February 2025

ABSTRACT

This study investigates the impact of the debt-to-asset ratio (DAR), Total Asset Turnover (TATO), and Net Profit Margin (NPM) on the financial performance of banking companies listed on the Indonesia Stock Exchange (IDX) during the period 2019–2022. Return on Assets (ROA) is used as the dependent variable to measure profitability. Drawing on secondary data from 27 purposively selected banks over four years, this study employs multiple linear regression analysis supported by classical assumption tests to ensure model robustness. The results show that DAR has a significantly negative effect on ROA, indicating that excessive leverage can undermine asset-driven profitability. Conversely, both TATO and NPM exert significant positive effects on ROA, suggesting that efficient asset utilization and strong cost control are key drivers of financial performance in the banking sector. The findings also reveal that DAR, TATO, and NPM jointly explain 97% of the variation in ROA, highlighting the integrated influence of capital structure, operational efficiency, and profit-margin management. This study contributes to the literature by offering a post-pandemic assessment of profitability drivers in the Indonesian banking context and provides practical implications for bank managers, regulators, and investors aiming to optimize performance in an increasingly digitized and regulated environment.

Keywords: *Bank profitability; Return on Assets (ROA); Debt to Asset Ratio (DAR); Total Asset Turnover (TATO); Net Profit Margin (NPM); Indonesian banking sector.*

1. INTRODUCTION

The global financial system plays a pivotal role in the economic development of any nation (Ahmed et al., 2023; Hussain et al., 2023), with the banking sector serving as the backbone for capital intermediation and financial stability (Bilgin et al., 2021). In Indonesia, the banking industry has a strategic position in channeling funds, supporting monetary policy transmission, and fostering investment and consumption through credit distribution (Marhaeni et al., 2023). As such, understanding the financial performance of banks is essential not only for investors and regulators, but also for policymakers concerned with systemic risk and sustainable economic growth. A financial performance analysis typically involves evaluating various financial ratios that serve as benchmarks for operational efficiency, profitability, and risk management. Among the many available indicators, Return on Assets (ROA) is widely recognized as a core measure of profitability (Hussain et al., 2024), particularly in the banking sector, where asset deployment directly influences income generation. ROA provides insights into how effectively banks use their asset base to generate net income, which is especially critical in capital-intensive industries, such as banking, where asset composition and utilization determine long-term financial viability (Azam, 2015).

ROA is calculated by dividing net income after tax by total assets (Meiryani, Fahlevi, et al., 2023), indicating the profit margin per unit of assets. A high ROA reflects efficient asset management and effective cost control, whereas a declining ROA may signal operational inefficiency or excessive leverage. Given its relevance, regulators, investors, and bank managers often use ROA as a barometer of overall financial health. However, ROA does not operate in isolation; it is influenced by several other financial metrics, such as the debt-to-asset ratio (DAR), Total Asset Turnover (TATO), and Net Profit Margin (NPM) (Berk & DeMarzo, 2014). DAR evaluates a bank's financial structure by comparing total debt to total assets. A high DAR may imply increased financial risk owing to excessive reliance on debt financing, which can depress ROA through higher interest obligations. Conversely, a lower DAR suggests a more conservative capital structure, which may support stronger asset-driven profitability. TATO, on the other hand, measures how effectively a bank utilizes its total assets to generate revenue. A higher TATO indicates that the bank is efficiently converting its assets into income, which theoretically leads to an increase in ROA. Finally, NPM represents the efficiency with which a bank converts revenue into net income after all expenses, including taxes. A higher NPM denotes better cost management and greater profitability per unit of revenue, which, in turn, boosts ROA (Nasution, 2019).

Although these three variables DAR, TATO, and NPM are often discussed in financial literature, their combined effect on ROA in the Indonesian banking sector, especially in the post-pandemic context, remains underexplored (Fitriyani, 2019; Nasution, 2019; Santoso et al., 2024). This study analyzes the financial performance of selected banks listed on the Indonesia Stock Exchange (IDX) from 2019 to 2022. This period is especially significant, as it captures the pre-pandemic, pandemic, and post-pandemic recovery phases, thereby offering a comprehensive view of financial resilience and strategic shifts within the banking industry. To provide an empirical basis for this study, data were collected from the audited financial statements of three major Indonesian banks: PT Bank Mandiri Tbk, PT Bank Negara Indonesia (BNI) Tbk, and PT Bank Central Asia (BCA) Tbk. These banks were chosen because of their systemic importance, consistent presence in the IDX, and comprehensive data availability during the study period. Table 1 summarizes the key financial indicators for these institutions, illustrating the trends in total assets, liabilities, revenue, net profit, and ROA from 2019 to 2022.

Table 1. Summary of Financial Data for Selected Banks (2019–2022) in Billion Rupiah

Company	Year	Total Assets	Total Liabilities	Total Revenue	Net Profit	ROA
PT Bank Mandiri Tbk	2019	1,318,246	1,025,749	91,525	27,482	2.08%
	2020	1,429,334	1,151,267	87,321	17,119	1.20%
	2021	1,725,611	1,326,592	97,749	28,028	1.62%
	2022	1,992,544	1,554,096	112,382	41,17	2.07%
PT Bank BNI Tbk	2019	845,605	688,489	58,532	15,384	1.82%

Company	Year	Total Assets	Total Liabilities	Total Revenue	Net Profit	ROA
	2020	891,337	746,235	56,172	3,28	0.37%
	2021	964,837	843,356	50,025	10,898	1.13%
	2022	1,029,836	896,278	54,658	18,312	1.78%
PT Bank BCA Tbk	2019	918,989	744,846	63,837	28,565	3.11%
	2020	1,075,570	890,856	65,403	31,018	2.88%
	2021	1,228,345	1,019,773	65,626	31,422	2.56%
	2022	1,314,732	1,087,109	72,241	40,735	3.10%

Source: IDX (2023)

The data revealed several noteworthy findings. For instance, PT Bank Mandiri experienced an increase in total assets from IDR 1.32 quadrillion in 2019 to IDR 1.99 quadrillion in 2022. Despite this growth, ROA declined sharply in 2020 before recovering in subsequent years. This volatility underscores the importance of examining the underlying financial ratios that influence the ROA. Similarly, PT Bank BNI's ROA dipped dramatically in 2020 amid revenue declines and recovered modestly thereafter. In contrast, PT Bank BCA maintained relatively stable performance, reflecting superior asset management and profit consistency. These observations raise pertinent questions about the interaction of DAR, TATO, and NPM with ROA during periods of economic turbulence and recovery. This study is motivated by the need to dissect these relationships in the Indonesian banking context, particularly given the structural transformations and regulatory adjustments that have occurred between 2019 and 2022.

Although numerous studies have examined the determinants of financial performance in various sectors, several gaps persist in the literature. First, prior research often focuses on non-banking sectors, such as manufacturing or real estate, with less emphasis on banks, despite their critical role in the economy (Bilgin et al., 2021; Marhaeni et al., 2023). Second, many studies limit their scope to a single financial ratio, ignoring the potential interplay between multiple indicators (Husnah et al., 2023). Third, most of the existing literature does not capture the post-COVID-19 financial landscape, which introduced unprecedented operational disruptions and compelled banks to rethink their business models (Fahlevi, Moeljadi, et al., 2023). Furthermore, most previous studies have applied these ratios in developed market contexts or with broader sectoral aggregations, leading to limited insights into the Indonesian banking sector.

Several studies have investigated the determinants of financial performance using various financial ratios across different industrial sectors listed on the Indonesia Stock Exchange (IDX). One such study by Santoso et al. (2024) examined the influence of the Current Ratio, Debt to Equity Ratio, and TATO on Return on Assets (ROA) within property and real estate companies. The findings reveal that TATO, as an independent variable, has a simultaneous effect on ROA, underscoring the importance of asset efficiency in enhancing profitability in capital-intensive sectors. Meanwhile, Nasution (2019) explored the effect of the DAR and TATO on ROA among food and beverage sub-sector companies between 2013 and 2017. The results indicate that DAR significantly influences ROA, emphasizing the critical role of capital structure in financial performance in consumption-driven industries. In a separate study, Fitriyani (2019) analyzed the effect of the NPM and Operational Cost to Operating Income Ratio (BOPO) on ROA in transportation firms listed on the IDX from 2013 to 2015. Her findings demonstrate that NPM has a significant simultaneous impact on ROA, highlighting the importance of profit margin efficiency in service-based sectors, where operational costs play a pivotal role.

The novelty of this study lies in its integrated approach to examining three key financial ratios DAR, TATO, and NPM simultaneously as determinants of ROA within the Indonesian banking industry. This study contributes to the literature by focusing on the banking sector, which is underrepresented in empirical ROA modeling in the Indonesian context. Covering a critical period, including the COVID-19 pandemic, offers insights into financial resilience and adaptation strategies. We employ a multidimensional analytical framework that combines capital structure, asset utilization, and profit margin perspectives to explain changes in ROA. We utilize a time-series cross-sectional dataset (2019–2022), which captures both

macroeconomic volatility and regulatory changes affecting financial performance. This study also provides practical value by informing bank managers, regulators, and investors of the key financial levers that influence profitability. By identifying which financial metrics have the most significant impact on ROA, the findings can support strategic decision making related to asset management, debt restructuring, and cost optimization (see Figure 1).

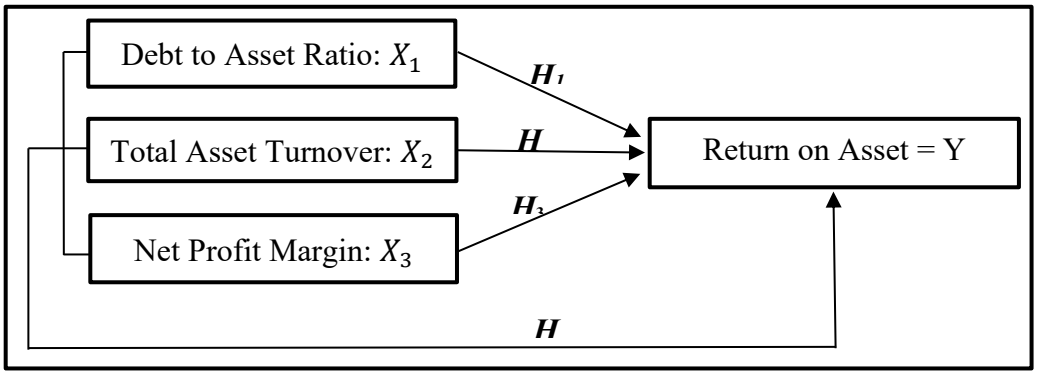

Figure 1. Conceptual Framework

Source: Data Processing (2024)

This research is designed to achieve several interrelated objectives to empirically assess the impact of the DAR on ROA in banking companies listed on the Indonesia Stock Exchange from 2019 to 2022. To examine how efficiently banks utilize their total assets by analyzing the relationship between TATO and ROA. To evaluate the role of NPM in shaping bank profitability through its direct influence on ROA. To analyze the simultaneous effects of DAR, TATO, and NPM on ROA, we identify the most significant drivers of financial performance. To provide empirical evidence on the financial dynamics of Indonesian banks during a turbulent economic period, this study offers implications for corporate governance, risk management, and policy regulation. By addressing these aims, this study seeks to bridge the gap between the theoretical financial ratio analysis and its practical application in the post-pandemic banking environment. The findings are expected to enrich the discourse on banking performance in emerging markets and offer guidance for strategic financial planning and regulatory oversight.

2. METHODOLOGY

This study adopts a quantitative approach designed to assess the influence of key financial ratios DAR, TATO, and NPM on Indonesian banking companies' financial performance as measured by ROA. This research draws on secondary data derived from the audited financial reports of selected banking companies listed on the Indonesia Stock Exchange (IDX), covering the period from 2019 to 2022. This study was initiated in December 2023 and is currently ongoing.

2.1. Data Collection

The digital domain was the primary setting for the data acquisition. All financial statements were retrieved from the official IDX website (https://www.idx.co.id/id) and official websites of individual banks (Meiryani, Huang, et al., 2023). The choice of this setting ensures data reliability and access to standardized reports that comply with the regulatory disclosure requirements (Yusuf et al., 2024). Given that the banking sector in Indonesia is heavily regulated and highly transparent, the quality and accessibility of secondary data are sufficient for conducting a robust quantitative analysis. In terms of research design, this study applied a correlational and explanatory approach (Ardini et al., 2024). Quantitative methods were chosen for their ability to identify relationships between measurable variables and test hypotheses through statistical procedures (Ahmad et al., 2023; Fahlevi, Ahmad, et al., 2023). This approach is well-

suited for financial performance analysis, where standardized financial ratios allow for replicability, objectivity, and comparison across firms and time periods (Jain et al., 2024).

2.2. Population and Sample

The population in this study comprises all 47 banks listed in the banking subsector of the IDX during the study period. However, not all firms meet the inclusion criteria in the final sample. A purposive sampling strategy was applied to refine the population to a suitable and analytically manageable group. The sample inclusion criteria focused on banks that (1) were listed on the IDX throughout the 2019–2022 period, (2) published complete and official financial reports each year during the observation period, and (3) reported positive net profits across all four years. Banks that failed to meet any of these criteria were excluded. Based on these considerations, the sample selection process was as follows: Of the initial 47 companies in the population, one bank was excluded for incomplete financial reportin, and 19 were excludedbecauseetheyoreportedg negative net profits in one or more years. This resulted in a final sample of 27 eligible companies. Within a four-year study period (2019–2022), the resulting dataset comprised 108 observations (27 companies × 4 years). The data collection method employed in this study was document analysis, whereby quantitative data were extracted from publicly available financial statements (Fahlevi et al., 2019). These documents include audited and verified annual financial reports, thus ensuring the validity of the secondary data used in this analysis.

2.3. Measurements

To structure the analysis, the variables were operationalized as follows. The independent variables in this study are DAR, TATO, and NPM, while ROA serves as the dependent variable (Berk & DeMarzo, 2014). Each variable was defined and measured in accordance with prior academic literature and standard financial analysis practices. The DAR is defined as the proportion of a company's total liabilities to its total assets. This reflects the degree to which a company is leveraged and how much of its assets are financed through debt. A higher DAR suggests a greater reliance on debt, which could affect profitability and risk. The ratio was calculated as follows:

$$\text{DAR} = \left(\frac{\text{Total Liabilities}}{\text{Total Assets}}\right) \times 100\%$$

The TATO ratio measures how effectively a company uses its total assets to generate revenue. This indicates operational efficiency, with higher values reflecting better utilization of the asset base. TATO was calculated using the following formula:

$$\text{TATO} = \left(\frac{\text{Total Revenue}}{\text{Total Assets}}\right) \times 100\%$$

The NPM represents the percentage of net profit generated from total revenue after accounting for all expenses, taxes, and other deductions. This ratio indicates a company's ability to control costs and maintain profitability. The formula is:

$$\text{NPM} = \left(\frac{\text{Net Profit After Tax}}{\text{Total Revenue}}\right) \times 100\%$$

Finally, ROA functions as the dependent variable, representing the bank's ability to generate profit from its total asset base. ROA is a critical measure of overall financial performance in the banking industry, where asset management is crucial to profitability. ROA is calculated as:

$$\text{ROA} = \left(\frac{\text{Net Profit}}{\text{Total Assets}}\right) \times 100\%$$

All variables in this study were measured using ratio scales that were suitable for statistical comparison and regression analysis.

2.4. Data Analysis

To ensure the validity of the regression model used in this study, a series of classical assumption tests was conducted (Lind et al., 2018). These include the normality, multicollinearity, autocorrelation, and heteroscedasticity tests. A normality test was applied to determine whether the data distribution for each variable followed a normal distribution. A normal distribution of residuals is critical for making valid inferences in a regression analysis. This test was conducted using the Kolmogorov-Smirnov and Shapiro-Wilk tests supplemented by histogram and P-P plot assessments. According to Ghozali (2018), a regression model produces reliable results only if the residuals are distributed normally. A multicollinearity test was performed to assess whether high correlations existed between independent variables. When two or more independent variables are highly correlated, they may distort the results of the regression model and inflate standard errors. The Variance Inflation Factor (VIF) and tolerance values were examined, with VIF values below 10 and tolerance values above 0.1, indicating the absence of multicollinearity (Abbott, 2016). An autocorrelation test was conducted to detect any serial correlation between residuals from one observation period to the next, which is particularly relevant in time-series or panel data analyses. The Durbin-Watson statistic was employed for this test. Autocorrelation may violate regression assumptions and lead to biased standard errors (Burns & Burns, 2008).

The heteroscedasticity test was used to check for unequal variances in the residuals across observations (Saunders et al., 2009; Sekaran & Bougie, 2016). The presence of heteroscedasticity indicates that the model's error terms do not have constant variance, undermining the validity of the regression coefficients. The Glejser test and scatterplot of residuals against predicted values were used to address this problem. A good regression model should demonstrate homoscedasticity or a uniform variance across residuals. Following the diagnostic tests, data were analyzed using multiple linear regression to evaluate the influence of the independent variables (DAR, TATO, and NPM) on the dependent variable (ROA). The general form of the regression model used in this study is expressed as

$$Y = a + \beta 1X1 + \beta 2X2 + \beta 3X3 + e$$

The analysis was performed using SPSS software, which facilitated the robust computation of regression coefficients, standard errors, significance levels, and model diagnostics. The coefficient of determination (R^2) was analyzed to evaluate the strength of the model. This statistic measures the proportion of variation in the dependent variable explained by independent variables. An R^2 value close to 1 indicates that the regression model explains most of the variance in ROA, whereas a value closer to 0 indicates limited explanatory power. As suggested by Ghozali (2018), a higher R^2 enhances confidence in the model's predictive capability.

To test the hypotheses, simultaneous (F-test) and partial (t-test) significance tests were conducted. The F-test evaluates whether all independent variables collectively influence ROA. A p-value less than 0.05 or an F-statistic exceeding the critical value indicates that the model is statistically significant. A t-test was employed to assess the individual effects of each independent variable on the dependent variable. A variable is considered significant if its p-value is less than 0.05, suggesting that it has a distinct impact on ROA. These methodological steps, from data collection to statistical testing, were intended to ensure the rigor, validity, and reliability of the findings. By adhering to robust quantitative research standards, this study aims to provide meaningful insights into the financial dynamics of Indonesia's banking sector, particularly in the context of evolving macroeconomic conditions and post-pandemic recovery.

3. RESULT AND DISCUSSION

3.1. Descriptive Statistics

Descriptive statistics provide a preliminary understanding of the distribution and characteristics of research data. This analysis offers insights into the central tendency (mean), data dispersion (standard deviation), and range (minimum and maximum values) for each of the key variables under investigation: DAR, TATO, NPM, and ROA. The statistical data presented in Table 2 are derived from 108 observational samples representing 27 banking companies across four consecutive years (2019–2022).

Table 2. Descriptive Statistics of Research Variables (N = 108)

Variable	Minimum	Maximum	Mean	Standard Deviation
Debt to Asset Ratio (DAR)	0.6027	0.9189	0.814130	0.0682454
Total Asset Turnover (TATO)	0.0303	0.1135	0.068688	0.0148876
Net Profit Margin (NPM)	0.0090	0.5639	0.176304	0.1252647
Return on Assets (ROA)	0.0006	0.0325	0.012027	0.0083845

Source: Processed using SPSS (2024)

The DAR has a minimum value of 0.6027 and a maximum of 0.9189. The mean DAR was 0.814130 with a standard deviation of 0.0682454. These results indicate that on average, the sampled banks finance approximately 81.4% of their total assets through debt. The relatively high DAR values reflect a common characteristic of the banking industry that operates with significant leverage. A moderate standard deviation implies limited variability in the capital structure across the sampled banks. The TATO exhibits a minimum value of 0.0303 and a maximum of 0.1135, with a mean of 0.068688 and a standard deviation of 0.0148876. These figures suggest that, on average, banks generate approximately 6.87% of revenue from each unit of total assets. The narrow range and relatively small standard deviation indicate consistency in asset utilization efficiency across banks, although the absolute values are comparatively low because of the asset-heavy nature of banking operations.

For the NPM, the observed minimum was 0.0090, and the maximum was 0.5639. The average NPM was 0.176304 with a standard deviation of 0.1252647. This suggests that banks, on average, retain approximately 17.63% of their revenue as net income after accounting for all expenses. The wide range and higher standard deviation point to substantial variation in profitability levels, potentially reflecting differences in cost control, revenue generation capabilities, and operational scale among banks. Finally, the ROA reveals a minimum value of 0.0006 and a maximum of 0.0325. The mean ROA is 0.012027, with a standard deviation of 0.0083845. This indicates that the average bank earns a return of approximately 1.20% on its total asset base. While this may appear modest, it is consistent with industry norms given the capital-intensive structure of the banking sector. The relatively low ROA values and dispersion highlight the importance of optimizing asset utilization and maintaining financial discipline.

3.2. Classical Assumption Test

The classical assumption test is an essential prerequisite for regression analysis, particularly when multiple linear regression models are used. These assumptions ensured that the statistical results derived from the model were valid, reliable, and free from bias. The key classical assumptions were normality, multicollinearity, autocorrelation, and heteroscedasticity. Each of these must be verified to proceed confidently with an inferential analysis. In this section, we begin with the normality test.

3.2.1. Normality Test

A normality test was conducted to determine if the residuals from the regression model were normally distributed. Residual normality is important because one of the underlying assumptions of the classical linear regression model is that errors (residuals) should follow a normal distribution. A non-normal distribution of residuals can bias the test statistics and affect the accuracy of parameter estimates. Several techniques can be used to assess normality, including histogram analysis, the Normal Q-Q (P-P) plot, and statistical tests such as the Kolmogorov–Smirnov test. In this study, all three methods were applied to ensure a comprehensive evaluation.

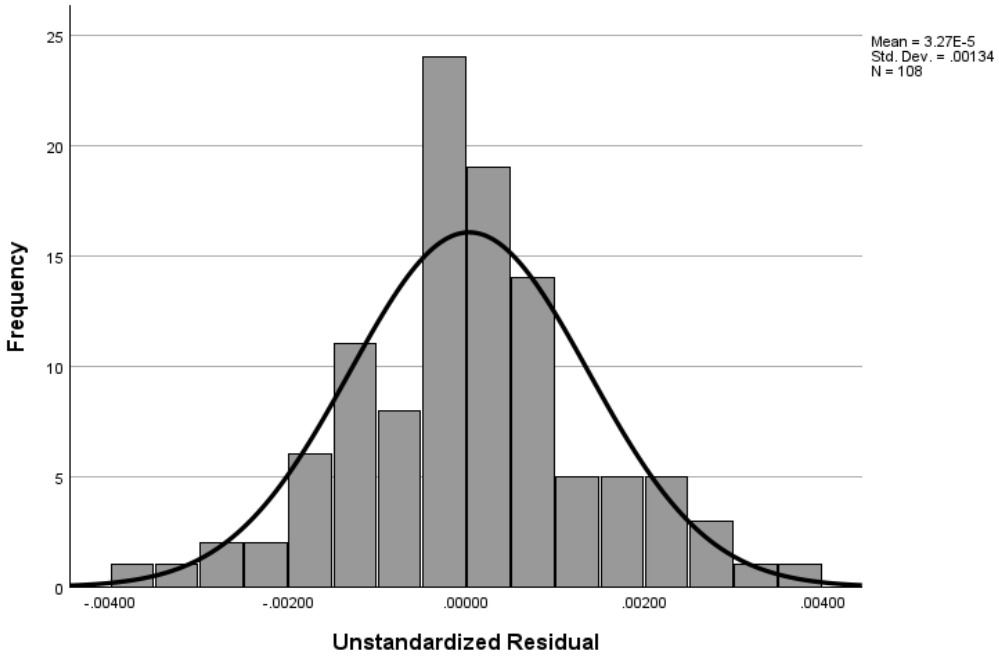

Figure 2. Histogram Analysis

Source: Processed using SPSS (2024)

As illustrated in Figure 2, the histogram of the unstandardized residuals demonstrates a bell-shaped curve that approximates a normal distribution. The curve is symmetrical and centered around the mean (approximately 0), with no extreme skewness or kurtosis. This visual representation suggests that the residuals were normally distributed. Further confirmation of normality is provided by the Q-Q plot shown in Figure 3, and the observed values of the standardized residuals are plotted against the expected values from a normal distribution. The closer these points lie to the diagonal reference line, the stronger the evidence of normality. As shown in the figure, most of the data points cluster closely around the line, supporting the assumption that the residuals follow a normal distribution.

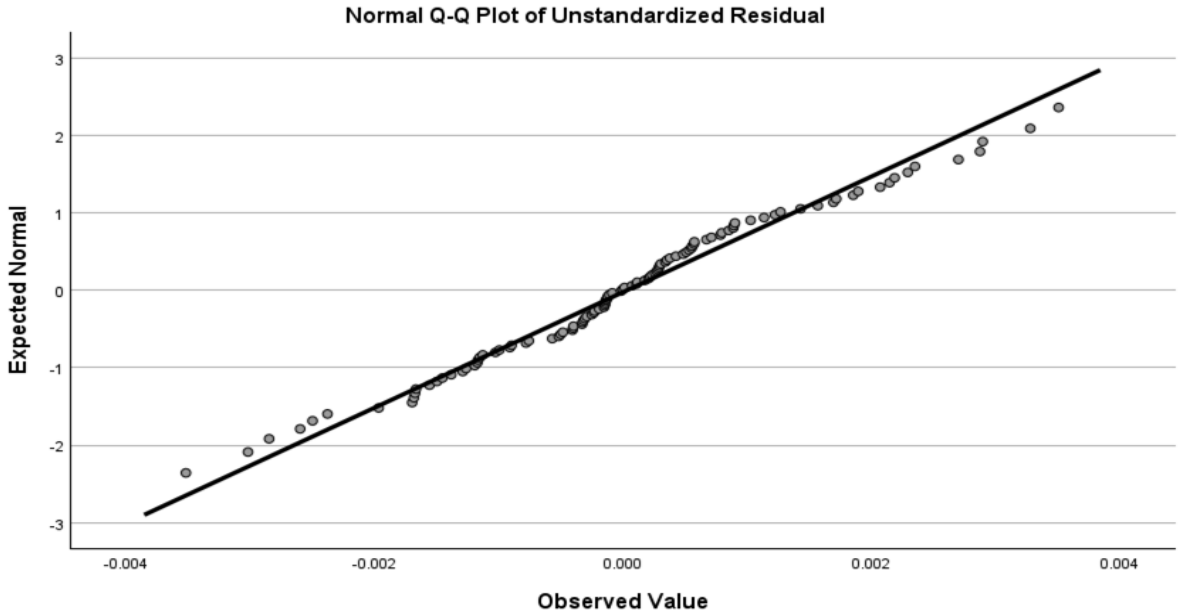

Figure 3. Q-Q plot

Source: Processed using SPSS (2024)

To complement the graphical methods, the Kolmogorov–Smirnov test was conducted as a formal statistical test for normality. This test compares the distribution of the residuals against a standard normal distribution. The null hypothesis (H_0) assumes that residuals are normally distributed. If the significance value (Asymp. Sig. 2-tailed) is greater than 0.05, then H_0 is accepted, indicating a normal distribution. The results of the Kolmogorov–Smirnov test are summarized in Table 3.

Table 3. Kolmogorov–Smirnov

Statistic	Residual Value
N	108
Mean	0.0000327
Standard Deviation	0.00134
Kolmogorov–Smirnov Z	0.558
Asymp. Sig. (2-tailed)	0.600

Source: Processed using SPSS (2024)

As shown in Table 3, the significance value obtained was 0.600, which was well above the threshold of 0.05. Thus, the null hypothesis cannot be rejected and it can be concluded that the residuals are normally distributed. The small standard deviation and near-zero mean further supports the symmetry and centrality of the distribution. Taken together, the histogram, Q-Q plot, and Kolmogorov–Smirnov test results confirm that the assumption of normality has been satisfied. This affirms the suitability of the regression model for further analysis and ensures that hypothesis testing conducted in subsequent stages yields valid and reliable results.

3.2.2. Multicollinearity Test

A multicollinearity test was conducted to identify whether a high degree of correlation existed among the independent variables in the regression model. Multicollinearity occurs when two or more independent variables are highly linearly related, which can inflate standard errors, distort the estimation of regression coefficients, and weaken the statistical significance of the predictors. This poses a serious challenge in multiple regression analysis, because it makes it difficult to determine the individual effect of each predictor on the dependent variable. In this study, a multicollinearity test was performed by examining the Tolerance and Variance Inflation Factor (VIF) values for each independent variable: DAR, TATO, and NPM. Tolerance represents the percentage of variance in a predictor variable that is not explained by the other predictors. It is calculated as $1 – R^2$ from the regression of one independent variable to all other variables. VIF, on the other hand, is the reciprocal of tolerance and reflects the extent to which the variance of a regression coefficient is inflated due to multicollinearity. According to established thresholds (Ghozali, 2018), multicollinearity is not a concern if Tolerance > 0.10, and VIF < 10. The results of multicollinearity diagnostics are presented in Table 4.

Table 4. Multicollinearity Test Results

Independent Variable	Tolerance	Variance Inflation Factor (VIF)
Debt to Asset Ratio (DAR)	0.628	1.592
Total Asset Turnover (TATO)	0.727	1.376
Net Profit Margin (NPM)	0.593	1.685

Source: Processed using SPSS (2024)

As shown in Table 3.3, the tolerance values for all three independent variables are well above the minimum threshold of 0.10, ranging from 0.593 to 0.727. Similarly, the VIF values for each variable were below the critical value of 10, with the highest value being 1.685. These values indicate that the three

predictorsDAR, TATO, and NPMdo not exhibit problematic levels of multicollinearity. The absence of multicollinearity in this model suggests that the independent variables are sufficiently distinct and do not overlap excessively in terms of the information they contribute to explaining the variation in the dependent variable (ROA). This strengthens the reliability of the regression analysis, ensuring that the estimated coefficients accurately reflect the influence of each financial ratio on ROA without being inflated or distorted by inter-variable correlations. Thus, based on both the tolerance and VIF criteria, it can be confidently concluded that multicollinearity is not present in the model and that all independent variables may be retained for further analysis in the multiple linear regression framework.

3.2.3. Autocorrelation Test

The autocorrelation test aims to detect the presence of a systematic relationship between residuals over time. In the context of regression analysis, particularly when using time-series or panel data, autocorrelation (also known as serial correlation) refers to the correlation of the error terms in one observation with those in another. When residuals are autocorrelated, they violate the assumption of independence of errors, which can lead to biased standard errors, misleading significance tests, and inefficient estimates of regression coefficients. One way to test for autocorrelation in residuals is through the Runs Test, which is a non-parametric method that analyzes the sequence of residual signs (positive or negative) and determines whether the sequence is random. This method is especially appropriate when assumptions about distributional normality are not strictly met and when Durbin-Watson is not applicable because of non-time-series structures. The test calculates a Z-statistic and the associated Asymptotic Significance (2-tailed) value. The decision rule is as follows: If the significance value is > 0.05, the residuals are randomly distributed (no autocorrelation). If the significance value was ≤ 0.05, then there was evidence of autocorrelation in the residuals. Table 5 presents the results of the autocorrelation test using the run-test method.

Table 5. Autocorrelation Test (Runs Test Method)

Statistic	Value
Test Value (Median)	-0.00001
Cases < Test Value	54
Cases ≥ Test Value	54
Total Cases	108
Number of Runs	41
Z-statistic	-2.707
Asymp. Sig. (2-tailed)	0.070

Source: Processed using SPSS (2024)

Based on the data presented in Table 5, the Asymp. Sig. (2-tailed) was 0.070, which exceeded the standard significance threshold of 0.05. Therefore, the null hypothesis of the Runs Test, which states that the residuals occur in random order, cannot be rejected. This indicates that there is no statistically significant autocorrelation in the regression residuals. The test value (median) was approximately zero and the cases were evenly split above and below the median (54 each), further confirming the absence of a systematic pattern. The Z-statistic, while slightly negative, did not exceed the critical values for rejection at the 5% significance level. The residuals in this regression model do not demonstrate autocorrelation. This supports the assumption of independent errors, validating the model's appropriateness for inferential analysis and reinforcing the reliability of its statistical estimations.

3.2.4. Heteroscedasticity Test

The heteroscedasticity test is a crucial diagnostic method in multiple linear regression to determine whether the residuals exhibit constant variance across all levels of independent variables. A violation of the homoscedasticity assumption, known as heteroscedasticity, occurs when the variance of the residuals

differs across observations. If left unchecked, heteroscedasticity can lead to inefficient estimates and biased standard errors, affecting the validity of the significance testing and confidence intervals. To detect heteroscedasticity, this study employs two approaches: visual inspection using a scatterplot of standardized residuals against predicted values and statistical testing through Spearman's rank-order correlation (Spearman's rho) between the independent variables and the residuals.

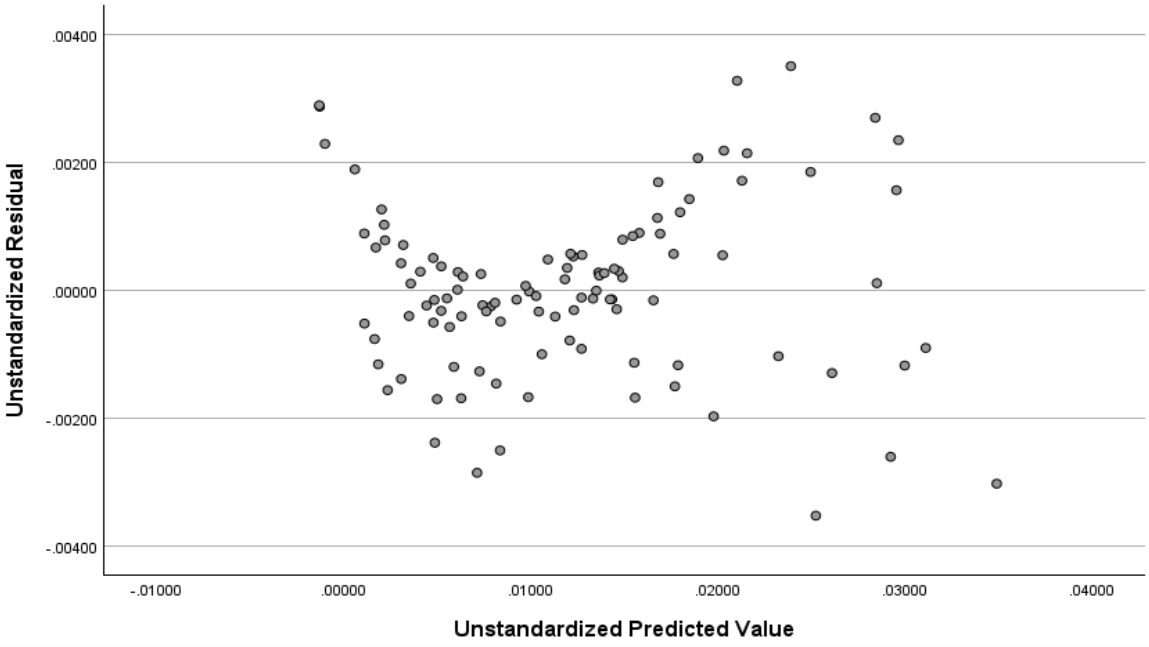

Figure 4. Visual Inspection via Scatterplot

Source: Processed using SPSS (2024)

Figure 4 shows a scatterplot of the unstandardized residuals plotted against the unstandardized predicted values. The purpose of this visualization is to identify any systematic pattern, such as funnel shape, clustering, or curvature, which would indicate heteroscedasticity. The scatterplot reveals that the residuals are randomly dispersed across the range of predicted values (Lind et al., 2018) with no apparent pattern or systematic clustering. The data points are not concentrated around a particular range, nor do they form a fan shape or curve. This distribution suggests that the variance of the residuals remained relatively constant throughout, which is indicative of homoscedasticity. Hence, based on the scatterplot, there was no evidence of heteroscedasticity in the regression model.

To complement the visual method, this study also applied a statistical test using Spearman's rho. This non-parametric test evaluates the correlation between each independent variable (DAR, TATO, and NPM) and residuals of the regression model. The guiding assumption is that in the absence of heteroscedasticity, there should be no significant correlation between any of the independent variables and residuals. The decision rule is as follows: if the significance value (p-value) is > 0.05, then no heteroscedasticity is detected. Heteroscedasticity may be present if the significance value is ≤ 0.05. Table 6 presents the results of the Spearman's correlation test.

Table 6. Spearman Rho Test for Heteroscedasticity

Variable	Correlation with Residual	Sig. (2-tailed)
Debt to Asset Ratio (DAR)	0.060	0.540
Total Asset Turnover (TATO)	0.049	0.616
Net Profit Margin (NPM)	0.130	0.179

Source: Processed using SPSS (2024)

From Table 6, it is evident that none of the independent variables exhibited a statistically significant correlation with the residuals. Specifically, DAR has a significance value of 0.540, TATO of 0.616, and NPM of 0.179, all of which are greater than the 0.05 threshold (Abbott, 2016; Burns & Burns, 2008). This confirms that the residuals are not systematically associated with the predictors, reinforcing the conclusion that heteroscedasticity is absent. Both the scatterplot analysis and Spearman's rho test results supported the assumption of homoscedasticity. The residuals exhibit constant variance and are randomly distributed across all levels of the independent variables. Therefore, the regression model satisfied the heteroscedasticity assumption, further validating the robustness of the model for inference and prediction.

3.3. Regression Model Interpretation

The core analytical model used in this study is a multiple linear regression designed to examine how three financial ratios DAR, TATO, and NPM influence ROA among banking companies listed on the IDX during the period 2019–2022. The regression equation derived from SPSS analysis is as follows:

$$ROA = -0.004 - 0.005(DAR) + 0.135(TATO) + 0.064(NPM) + e$$

This equation indicates that, when all independent variables are assumed to be zero, the expected ROA is -0.004, which acts as the intercept of the model. The negative coefficient for DAR implies that a one-unit increase in the debt-to-asset ratio is associated with a 0.005 unit decrease in ROA. By contrast, both TATO and NPM have positive coefficients, suggesting that improved asset turnover and profit margins lead to higher ROA, with each unit increase in TATO and NPM contributing 0.135 and 0.064 units to ROA, respectively. The model summary showed a coefficient of determination (R^2) of 0.970, with an adjusted R^2 of 0.969. This means that 97% of the variability in ROA can be explained collectively by the variations in DAR, TATO, and NPM. Only 3% of the variation is attributed to factors outside the model, such as macroeconomic conditions, managerial quality, or operational risk, which were not considered in this study. Simultaneous testing was performed using an F-test, as shown in the ANOVA table. The calculated F-value was 1106.231, which was significantly higher than the F-table value of 2.692 at $\alpha = 0.05$. At a significance level of <0.001, this result indicates that DAR, TATO, and NPM jointly have a statistically significant influence on ROA, supporting the overall validity of the regression model. The partial effects of each variable were evaluated using a t-test. DAR yielded a negative t-value of -2.504 with a significance of 0.014, indicating a significant negative partial influence on ROA. TATO recorded a t-value of 13.905, and NPM had an exceptionally high t-value of 54.939, both with significance levels below 0.001. These results confirm that both TATO and NPM have strong positive and statistically significant effects on ROA. The complete results of the regression, including coefficients, significance levels, and statistical diagnostics, are presented in the following integrated Table 7.

Table 7. Regression Analysis Summary for ROA Model

Variable	Coefficient (B)	Std. Error	Standardized Coefficient (Beta)	t-Statistic	Sig. (p-value)
Constant	-0.004	0.002	–	-2.066	0.041
Debt to Asset Ratio (DAR)	-0.005	0.002	-0.044	-2.504	0.014
Total Asset Turnover (TATO)	0.135	0.010	0.240	13.905	<0.001
Net Profit Margin (NPM)	0.064	0.001	0.956	54.939	<0.001
Model Fit Statistics					
R^2 (Model)	0.970				
Adjusted R^2	0.969				
F-value	1.106.231				
Sig. (F)	< 0.001				

Source: Processed using SPSS (2024)

The analysis confirms that each of the three predictors, DAR, TATO, and NPM, has a statistically significant effect on ROA, both individually and simultaneously. The negative relationship between DAR and ROA aligns with financial theory, suggesting that excessive debt may erode profitability because of higher interest obligations and risk exposure. Conversely, both TATO and NPM exhibit positive influences on ROA, indicating that banks that manage assets more efficiently and sustain higher net margins are likely to enhance profitability. The model demonstrated strong explanatory power with a very high R^2 value of 0.970. The results are robust, as confirmed by both F- and t-statistics, and significant at the 5% level or better. This reinforces the relevance of these financial ratios as key performance drivers in the Indonesian banking sector and offers practical insights for financial managers and stakeholders seeking to optimize profitability.

3.4. Discussion

3.4.1. The Effect of Debt to Asset Ratio (DAR) on Return on Assets (ROA)

The results of partial hypothesis testing show that the t-statistic for DAR is -2.504, which exceeds the critical t-table value of 1.982 but in the negative direction. The significance level was set at 0.014, which was less than 0.05. These results confirm that DAR has a significant negative effect on ROA in banking subsector companies listed on the Indonesia Stock Exchange (IDX) during the 2019–2022 period. This aligns with the findings of Nasution (2019), who concluded that a higher debt ratio adversely affects asset-based profitability. This negative relationship is particularly relevant in the context of Indonesia's recent financial stability landscape. In the post-pandemic recovery period, Indonesian banks have been grappling with rising loan restructuring volumes and an increase in non-performing loans (NPLs), especially MSME lending. A higher DAR indicates a greater reliance on debt financing, which may seem typical in banking. However, during economic slowdowns, such as in early 2023, when the global interest rate hikes pressured capital flows and corporate repayment capacity, overleveraged banks faced shrinking profit margins. Moreover, Bank Indonesia's macroprudential policies, such as the Macroprudential Liquidity Buffer (PLM) and countercyclical capital buffers, aim to contain excessive leverage and promote healthy risk-taking. Thus, when DAR rises without being matched by strong revenue growth or asset productivity, it reflects balance sheet risk and inefficiency, leading to a decrease in ROA. These findings suggest that prudent debt management and improved capital adequacy remain critical for maintaining sustainable profitability in the banking sector.

3.4.2. The Effect of Total Asset Turnover (TATO) on Return on Assets (ROA)

The TATO variable shows a strong positive influence on ROA, as evidenced by a t-statistic of 13.905 (significantly greater than the t-table value of 1.982) and p-value < 0.001. These results support the acceptance of H2 and confirm that TATO significantly contributes to ROA among banking companies on the IDX. The findings reinforce the earlier work by Santoso et al. (2024), emphasizing that higher asset turnover leads to better financial performance. TATO reflects how effectively banks use their total assets to generate income. In recent years, the Indonesian banking industry has witnessed significant digitization, ranging from mobile banking expansion, automation of back-office processes, and the emergence of fully digital banks, such as Bank Jago and Bank Neo Commerce. These technological developments have enabled more efficient asset utilization and lower-cost structures. In addition, financial inclusion efforts by OJK and Bank Indonesia have helped expand outreach to unbanked populations, increasing the revenue generation capacity from the existing asset base. A higher TATO implies that banks successfully monetize their assets, including their loan portfolios, digital platforms, and investment instruments. Consequently, improving TATO not only enhances short-term profitability, but also signals long-term operational agility. These results suggest that banks investing in digital transformation and optimizing asset use, particularly in retail and micro lending, are more likely to boost ROA amid intensifying industry competition.

3.4.3. The Effect of Net Profit Margin (NPM) on Return on Assets (ROA)

The analysis reveals that NPM has a strong and statistically significant positive impact on ROA, with a t-value of 54.939 and a significance level of less than 0.001. This confirms the acceptance of hypothesis H3 and is consistent with Fitriyani (2019), who also showed that higher NPM leads to increased ROA. NPM represents the efficiency of a bank in converting its total revenue into net profit after covering all operating costs including interest expenses, provisioning, and taxes. In the Indonesian banking context, especially after the COVID-19 period, banks faced compressed margins due to lower lending rates and high operational costs. However, banks that have managed to streamline their operations, reduce overheads, and shift to fee-based income models (e.g., through wealth management services or digital payments) have posted better NPMs. For example, major players such as BCA and BRI have focused on digital ecosystem integration and cross-selling strategies, resulting in stable NPM levels, even in the face of external shocks. Moreover, in early 2024, OJK emphasized profitability metrics as key indicators in its "Roadmap for Sustainable Banking," highlighting that improved NPMs directly correlate with financial health and investor confidence. High NPM values also indicate that banks effectively manage their cost-to-income ratios, which is particularly important amid the recent volatility in global financial markets. When banks control expenses and maximize profit margins, ROA increases naturally, confirming the pivotal role of margin management in enhancing firm-level performance.

3.4.4. The Simultaneous Effect of DAR, TATO, and NPM on ROA

Based on the results of the F-test, the calculated F-value was 1106.231, which was significantly greater than the critical F-table value of 2.692 at the 5% significance level. Furthermore, the significance value obtained was < 0.001, indicating a highly significant model. These results confirm that Hypothesis H4 is accepted, meaning that the DAR, TATO, and NPM simultaneously have a significant effect on ROA among banking subsector companies listed on the IDX during the period 2019–2022. This finding implies that the model constructed using these three financial ratios is statistically robust and explains a substantial proportion of the variance in ROA collectively. This is also evidenced by the R^2 value of 0.970, suggesting that 97% of the variation in ROA is explained by the changes in DAR, TATO, and NPM. From a practical standpoint, this simultaneous influence reflects the integrated nature of financial performance management in the banking sector (Belkhir, 2009; Marhaeni et al., 2023). In recent years, Indonesian banks have faced increasing complexity owing to digital disruption, changing regulatory requirements, and shifts in consumer behavior. For instance, the rapid growth of digital banking has forced traditional banks to re-evaluate how efficiently they use their assets (TATO), manage costs and revenue streams (NPM), and control funding structures (DAR).

Additionally, macroeconomic factors, such as Bank Indonesia's accommodative monetary policy, controlled inflation (projected below 3% in 2024), and the strengthening of the rupiah, have provided a more stable environment for banking operations. However, this stability requires stronger financial governance. The simultaneous influence of the three ratios shows that improving profitability (ROA) is not the result of an isolated financial indicator but rather the outcome of strategic synergy among efficient asset utilization, prudent debt management, and profit margin optimization. Therefore, the acceptance of H4 emphasizes that Indonesian banks should take a comprehensive approach to financial strategy, aligning funding structures, operational efficiency, and revenue enhancement in a unified framework. Banks that succeed in managing these three dimensions simultaneously are more likely to sustain profitability, withstand macroeconomic volatility, and meet the evolving regulatory standards set by the Financial Services Authority (OJK) and Bank Indonesia.

3.5. Practical Implications

The results of this study have several practical implications for bank managers, regulators, and investors in Indonesia. First, managing leverage levels (DAR) is crucial for ensuring that profitability does not erode during external shocks. Second, banks should continue to invest in digital transformation and efficient asset allocation to boost the TATO. Finally, profitability strategies should not rely solely on interest income but should also improve cost efficiency and diversify income sources to strengthen NPM.

In light of current economic developments, including a stronger rupiah, easing inflation (projected below 3% by mid-2024), and optimistic credit growth targets from Bank Indonesia, the findings of this study support a strategic rebalancing toward sustainable, efficient, and innovation-driven banking models.

4. CONCLUSIONS

The findings reveal that DAR has a significant negative impact on ROA. This indicates that excessive reliance on debt financing tends to suppress profitability, especially in times of economic uncertainty or when interest costs rise, as observed during Indonesia's post-pandemic recovery period. Conversely, both TATO and NPM have strong positive and statistically significant effects on ROA. These results imply that efficient utilization of assets and sound cost management strategies contribute directly to profit maximization in the banking sector. Moreover, the results of the simultaneous test (F-test) confirm that DAR, TATO, and NPM jointly and significantly influence ROA with a remarkably high coefficient of determination. This suggests that the financial structure, revenue efficiency, and profitability margin, when managed in synergy, offer a comprehensive explanation for the variations in ROA among Indonesian banks. These insights are particularly relevant in the current era, marked by digital transformation, evolving regulatory frameworks, and increasing competition from fintech and digital-only banks. Thus, this study provides practical guidance to bank managers and policymakers by emphasizing the importance of balanced debt usage, asset productivity, and profit margin optimization. As the financial sector in Indonesia continues to undergo structural changes, including shifts in digital banking, sustainability mandates, and macroprudential oversight, these findings offer timely input for strategic decision-making, risk management, and performance evaluation.

This study had several limitations that warrant consideration. First, the scope of the examined variables was relatively narrow. The study focused on the DAR, TATO, and NPM three key financial indicators other influential variables such as Capital Adequacy Ratio (CAR), Operational Efficiency Ratio (BOPO), Loan to Deposit Ratio (LDR), and macroeconomic indicators such as interest rates, exchange rates, and inflation were excluded. These additional factors may have significant explanatory power in determining the ROA and enrich the model's robustness. The second limitation is the sample size and selection strategy. By purposively selecting 27 banks that consistently reported positive profits over the 2019–2022 period, this study may have excluded smaller, regional, or sharia-compliant banks that could offer different insights, thus potentially limiting the generalizability of the findings across the broader Indonesian banking landscape. Additionally, the temporal scope of the research is confined to four years, capturing the pre-pandemic, pandemic, and early post-pandemic periods. While this timeline is valuable for examining crisis response and recovery, it may not fully reflect the recent and ongoing structural changes in 2023 and beyond, including ESG-driven regulatory reforms, the expansion of digital banking ecosystems, and the influence of global geopolitical risks. Lastly, reliance on publicly available audited financial statements presents its own constraints. Although these reports are standardized and credible, they do not always capture real-time strategic initiatives, qualitative risk assessments, or operational shifts that may affect ROA. Consequently, some performance dynamics, particularly those driven by internal policies or digital innovation, may be underrepresented.

Future research should expand the current study by incorporating a broader range of financial and macroeconomic variables to better capture the complexity of bank performance. This may include inflation rates, BI policy rate trends, and exchange rate volatility, all of which have increasingly shaped profitability metrics in the post-pandemic era. There is also a growing need to explore digital transformation indicators such as transaction volumes via digital platforms, investments in financial technology, and customer adoption rates, as these factors increasingly define competitive advantage in banking. Comparative studies between conventional and Islamic banks in Indonesia are also valuable, especially given the expanding footprint of sharia-compliant institutions and their unique financial structures. In addition, the inclusion of environmental, social, and governance (ESG) metrics reflects the emerging sustainability orientation of the Indonesian financial system under OJK's regulatory roadmap. Methodologically, future studies may adopt advanced econometric techniques, such as panel vector

autoregression (PVAR), dynamic GMM estimators, or even machine learning algorithms, to improve predictive accuracy and explore causal relationships. Finally, longitudinal studies extending beyond 2022 would help capture the effects of evolving macroeconomic conditions, such as rising interest rates, capital market volatility, and global inflation, on bank performance. These enhancements would significantly deepen our understanding of how Indonesian banks can navigate uncertainty while maintaining resilience and profitability.

REFERENCES

Abbott, M. L. (2016). *Using statistics in the social and health sciences with SPSS and excel*. John Wiley & Sons.

Ahmad, M., Kuldasheva, Z., Nasriddinov, F., Balbaa, M. E., & Fahlevi, M. (2023). Is achieving environmental sustainability dependent on information communication technology and globalization? Evidence from selected OECD countries. *Environmental Technology and Innovation*, *31*. Scopus. https://doi.org/10.1016/j.eti.2023.103178

Ahmed, S., Mushtaq, M., Fahlevi, M., Aljuaid, M., & Saniuk, S. (2023). Decomposed and composed effects of economic freedom on economic growth in south Asia. *Heliyon*, *9*(2). Scopus. https://doi.org/10.1016/j.heliyon.2023.e13478

Ardini, L., Fahlevi, M., Dandi, M., Dahlan, O. P., & Dahlan, S. P. (2024). Digital Financial Literacy and Its Impact on Financial Skills and Financial Goals in Indonesia's Digital Payment Ecosystem. *Economic Studies*, *33*(7), 181–200.

Azam, A. (2015). Continuance intention model for mobile banking. *International Journal of Electronic Finance*, *8*(2–4), 169–188. https://doi.org/10.1504/IJEF.2015.070534

Belkhir, M. (2009). Board of directors' size and performance in the banking industry. *International Journal of Managerial Finance*.

Berk, J. B., & DeMarzo, P. M. (2014). *Corporate Finance: The Core* (Global Edi). Pearson Education.

Bilgin, M. H., Danisman, G. O., Demir, E., & Tarazi, A. (2021). Economic uncertainty and bank stability: Conventional vs. Islamic banking. *Journal of Financial Stability*, *56*, 100911. https://doi.org/10.1016/j.jfs.2021.100911

Burns, R. P., & Burns, R. (2008). *Business research methods and statistics using SPSS*. Sage.

Fahlevi, M., Ahmad, M., Balbaa, M. E., Wu, T., & Aljuaid, M. (2023). The efficiency of petroleum and government health services to benefit life expectancy during the inefficiencies of hydroelectricity consumption. *Environmental and Sustainability Indicators*, *19*, 100289. https://doi.org/10.1016/j.indic.2023.100289

Fahlevi, M., Moeljadi, M., Aisjah, S., & Djazuli, A. (2023). Assessing the Sustainability of Firm Value: The Impact of Board Composition, Firm Size, and Earnings Manipulation in the LQ45 Index. *E3S Web of Conferences*, *426*, 02042. https://doi.org/10.1051/e3sconf/202342602042

Fahlevi, M., Saparudin, M., Maemunah, S., Irma, D., & Ekhsan, M. (2019). Cybercrime Business Digital in Indonesia. In Hadiyanto, Warsito B., & Maryono E. (Eds.), *E3S Web Conf.* (Vol. 125). EDP Sciences; Scopus. https://doi.org/10.1051/e3sconf/201912521001

Fitriyani, H. A. (2019). The influence of net profit margin (NPM) and operating expenses to operating income (BOPO) on return on assets (ROA) in transportation companies listed on the Indonesia Stock Exchange in 2013–2015. *JURNAL BISNIS & AKUNTANSI UNSURYA*, *4*(2), Article 2. https://doi.org/10.35968/jbau.v4i2.336

Ghozali, I. (2018). Aplikasi Analisis Multivariate dengan Program IBM SPSS 25. *(Edisi 9). Semarang: Badan Penerbit Universitas Diponegoro*.

Husnah, H., Aryati, A., Ramlawati, R., & Fahlevi, M. (2023). The relationship between corporate governance and firm performance: An empirical analysis of Indonesian companies. *Journal of Economics and Business Letters*, *3*(3), Article 3. https://doi.org/10.55942/jebl.v3i3.224

Hussain, S., Ali, R., Abdul Latiff, A. R., Fahlevi, M., Aljuaid, M., & Saniuk, S. (2024). Moderating effects of net export and exchange rate on profitability of firms: A two-step system generalized method

of moments approach. *Cogent Economics & Finance*, *12*(1), 2302638. https://doi.org/10.1080/23322039.2024.2302638

Hussain, S., Ali, R., Emam, W., Tashkandy, Y., Mishra, P., Fahlevi, M., & Matuka, A. (2023). Economic Policy Uncertainty and Firm Value: Impact of Investment Sentiments in Energy and Petroleum. *Sustainability*, *15*(12), Article 12. https://doi.org/10.3390/su15129656

Jain, A. K., Dsouza, S., Kayani, U., Nawaz, F., Fahlevi, M., & Aziz, A. L. (2024). Nexus of firm specific variables and capital structure decisions: An evidence from Asia Pacific region amid covid-19 crisis times. *Cogent Social Sciences*. https://doi.org/10.1080/23311886.2024.2413619

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2018). *Statistical Techniques in Business & Economics* (17th ed., p. 897). McGraw Hill Education.

Marhaeni, A. a. I. N., Jermsittiparsert, K., Sudarmo, Indrawati, L. R., Prasetyo, A., Fuada, N., Rachmadhani, A., Raharjo, T. W., Wahyudianto, H., Harwijayanti, B. P., Sitorus, J., Fahlevi, M., & Aljuaid, M. (2023). Adoption of the Green Economy through Branchless Rural Credit Banks during the COVID-19 Pandemic in Indonesia. *Sustainability*, *15*(3), Article 3. https://doi.org/10.3390/su15032723

Meiryani, Fahlevi, M., Rivalldo, K., Ariefianto, M. D., Winoto, A., Wahyuningtias, D., & Syamil, A. (2023). Corporate governance and return on assets in mining industry companies: The developing market study. *Corporate Governance and Organizational Behavior Review*, *7*(4), 94. https://doi.org/10.22495/cgobrv7i4p8

Meiryani, Huang, S.-M., Lindawati, A. S. L., Purnomo, A., Fahlevi, M., & Salim, G. (2023). Corporate Energy Management Disclosure: Empirical Evidence from Indonesia Stock Exchange. *International Journal of Energy Economics and Policy*, *13*(2), 516–525. Scopus. https://doi.org/10.32479/ijeep.14059

Nasution, R. S. (2019). *The influence of debt to asset ratio and total asset turnover on return on assets in food and beverage sub-sector companies listed on the Indonesia Stock Exchange in 2013–2017* [Thesis, UMSU]. https://repository.umsu.ac.id/handle/123456789/6556

Santoso, T. A., Andriansyah, Y., & Bastanifar, I. (2024). The effect of corporate social responsibility, activity ratio, and capital structure on profitability of companies listed in the Jakarta Islamic Index. *Journal of Islamic Economics Lariba*, *10*(2), Article 2. https://doi.org/10.20885/jielariba.vol10.iss2.art30

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th ed.). Prentice Hall.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.

Yusuf, M., Dasawaty, E. S., Esra, M. A., Apriwenni, P., Meiden, C., & Fahlevi, M. (2024). Integrated reporting, corporate governance, and financial sustainability in Islamic banking. *Uncertain Supply Chain Management*, *12*(1), 273–290. Scopus. https://doi.org/10.5267/j.uscm.2023.9.022