
Bank Financial Performance with Bank Size as Moderation

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Abstrak:

This study is motivated by the importance of banking financial performance as an indicator of the success of the intermediation function and the stability of the financial sector, particularly in the context of the Indonesian banking industry, which faces dynamic competition, risk management challenges, and increasing efficiency demands. This research aims to analyze the effect of the Loan-to-Deposit Ratio, Asset-to-Equity Ratio, Total Deposits-to-Total Assets Ratio, Capital Adequacy Ratio, and Asset Growth Ratio on Return on Assets, as well as to examine the role of Bank Size as a moderating variable in these relationships. This study employs a quantitative approach. The data used are secondary data obtained from the financial statements of banks listed on the Indonesia Stock Exchange and publications issued by the Financial Services Authority during the research period, which were then analyzed using panel data regression and moderated regression analysis. The results show that, partially, the Loan-to-Deposit Ratio, Asset-to-Equity Ratio, Total Deposits-to-Total Assets Ratio, Capital Adequacy Ratio, and Asset Growth Ratio do not have a significant effect on Return on Assets. In addition, Bank Size has not been proven to significantly moderate the relationship between all independent variables and Return on Assets. Nevertheless, the research model simultaneously indicates that the variables examined are related to bank profitability. The conclusion of this study emphasizes that banking profitability is not solely determined by internal financial ratios and bank size but is also influenced by other factors outside the research model.

Keywords: loan to deposit ratio, asset to equity ratio, total deposit to total asset ratio, capital adequacy ratio, asset growth ratio.

INTRODUCTION

The stability and performance of the banking sector play a crucial role in maintaining global economic balance, particularly following the COVID-19 pandemic, which caused uncertainty and disruption to the financial system. Banks face various challenges, such as interest rate volatility, increased credit risk, and pressure on profitability. In this context, bank performance is generally measured through financial ratios such as the Loan-to-Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and Total Deposits to Total Assets (TD/TA), which reflect operational efficiency and risk management capabilities.

Globally, the implementation of regulations such as Basel III emphasizes the importance of capital adequacy and risk management in maintaining bank resilience. However, the relationship between financial ratios and profitability is not always linear. Excess capital can actually reduce profit efficiency; therefore, banks must balance stability and profitability optimization in their financial management.

Differences in banking performance are also evident regionally, influenced by governance, organizational structure, and bank size. Larger banks tend to be more resilient to economic pressures due to their risk diversification and operational efficiency. Therefore, bank size is an important variable that can strengthen or weaken the relationship between financial ratios and bank performance, as emphasized in Bank Financial Performance with Bank Size as Moderation (Zahid & Ramij, 2025).

The development of financial technology (fintech) and digitalization has significantly transformed the structure of the banking industry. In the initial stages, digitalization can suppress profitability due to high technology investment costs. However, in the long term,

digitalization can improve operational efficiency and expand service reach. This requires banks to adapt their asset and liquidity management strategies to remain competitive in the digital era.

In Indonesia, the banking sector plays a strategic role as a pillar of national economic stability, with steadily increasing asset growth. However, bank profitability, as measured by Return on Assets (ROA), has fluctuated in recent years due to the impact of the pandemic, policy changes, and macroeconomic dynamics. This situation highlights the importance of effective financial management in maintaining bank stability and performance.

Furthermore, increasing digitalization and the emergence of digital banks and fintech firms have intensified competition in the Indonesian banking industry. These changes have affected financial intermediation patterns and bank asset structures, necessitating a reassessment of traditional financial ratios such as LDR, CAR, and TD/TA in explaining profitability in the era of digital transformation.

Theoretically, this research is based on financial intermediation theory, capital structure theory (trade-off theory), and asset growth theory, which explain that efficient fund allocation, capital adequacy, and asset expansion play important roles in determining bank profitability. However, various previous studies have shown inconsistent results, necessitating more contextual empirical analysis tailored to the characteristics of Indonesian banking.

The novelty of this research lies in the integrated model it proposes. Rather than testing liquidity, capital, funding structure, and growth separately, the study combines LDR, Asset Efficiency Ratio (AER), TD/TA, CAR, and Asset Growth Ratio (AGR) within one framework and positions Bank Size as a moderating variable. This is important because large banks may benefit from better diversification, lower funding costs, wider digital reach, and stronger market confidence; however, they may also face bureaucracy, inefficiency, or diminishing marginal returns to scale. Testing moderation allows the study to move beyond a direct-effect model and examine whether the impact of each financial ratio depends on the scale of the bank.

Based on this reasoning, the purpose of the research is to analyze the effect of LDR, AER, TD/TA, CAR, and AGR on ROA and to test whether Bank Size moderates these relationships in Indonesian listed banks. The objective is not only to determine whether each ratio has a direct influence on profitability but also to clarify whether larger banks translate liquidity, capital, and growth conditions into profitability differently from smaller banks. In this way, the study contributes to a more nuanced explanation of bank financial performance under Indonesian market conditions.

The expected contribution of the research is threefold. From a theoretical perspective, it enriches the literature on financial intermediation, capital structure, and bank performance determinants by testing a moderation-based model in an emerging market banking context. From a practical perspective, it can help bank managers evaluate whether profitability should be improved through liquidity optimization, funding restructuring, capital management, or growth discipline rather than relying solely on scale. From a policy perspective, it provides evidence that can assist regulators in understanding whether strong assets and capital buffers are sufficient indicators of sound performance. Ultimately, this study aims to provide a more comprehensive foundation for improving profitability while preserving banking stability in Indonesia's increasingly competitive and digitalized financial system.

RESEARCH METHOD

This study used an explanatory quantitative design to analyze the causal relationship between financial ratios and bank profitability in Indonesia. The data used are secondary data in the form of annual financial reports of banks listed on the Indonesia Stock Exchange (IDX) for the 2020–2024 period. A panel data approach was chosen to capture the dynamics of the relationship between variables over time. The dependent variable in this study is Return on Assets (ROA), while the independent variables include the Loan to Deposit Ratio (LDR), Asset

to Equity Ratio (AER), Total Deposit to Total Asset (TD/TA), Capital Adequacy Ratio (CAR), and Asset Growth Ratio (AGR). Bank Size is used as a moderating variable measured by total assets. The study population is all banks listed on the IDX, using a purposive sampling technique based on certain criteria such as the availability of complete financial reports and the absence of delisting during the study period. Based on these criteria, a sample of 30 banks was obtained. Data were collected through documentation methods and have undergone verification and adjustment processes such as winsorizing to address outliers, thereby improving data quality and consistency. Data analysis was conducted using panel data regression with a Moderated Regression Analysis (MRA) approach to test the direct effects and interactions between variables. Prior to the analysis, descriptive statistical tests and classical assumption tests were conducted, including normality, multicollinearity, heteroscedasticity, and autocorrelation, to ensure model validity. Furthermore, the best model was selected using the Hausman test and robustness test to ensure consistency of the results. Hypothesis testing was conducted using the F-test to examine simultaneous effects, the t-test for partial effects, and the coefficient of determination (R^2) to measure the model's ability to explain variations in profitability. The analysis also included interpretation of regression coefficients and testing for moderating effects to assess the role of bank size in strengthening or weakening the relationship between financial ratios and ROA. With this approach, the research is expected to produce valid, reliable, and relevant empirical findings in explaining banking profitability performance.

RESULTS AND DISCUSSION

The analysis in this study is banking companies listed on the Indonesia Stock Exchange and consistently published financial reports during the observation period of the study, namely 2020 to 2024. Based on the sample selection process using a purposive sampling method according to the research criteria, 30 banks were obtained as research samples with a total of 150 panel data observations (30 banks $\times$ 5 years). The banks included in the research sample include various categories of commercial banks, including state *-owned banks*, national private banks, and banks with international ownership structures. The diversity of bank characteristics in this research sample allows for a more comprehensive analysis of the dynamics of banking financial performance in Indonesia, particularly in understanding how liquidity ratios, capital structure, asset growth, and bank size can affect the level of profitability. In the context of the banking industry, profitability as measured by ROA is often used as a primary indicator to assess the efficiency of bank management in managing productive assets to generate profits, making this ratio one of the important measures in evaluating bank performance (Tahu et al., 2023). The distribution of research observations by year can be seen in the following table.

Table 1. List of research observations

Year	Number of Observations	Percentage
2020	30	20%
2021	30	20%
2022	30	20%
2023	30	20%
2024	30	20%
Total	150	100%

Source: Processed by the author (2026)

The even distribution of data each year indicates that this study uses a balanced panel data structure, so each bank has the same number of observations throughout the study period. The use of panel data offers methodological advantages because it allows for a more comprehensive analysis of inter-firm variations and changes in financial performance over

time. The panel data approach also allows the study to capture the dynamics of the relationship between financial ratios and bank profitability more accurately than cross-sectional or time-series approaches alone. Previous research has shown that panel data analysis in the banking sector is highly relevant for identifying factors influencing bank profitability because it can simultaneously combine the time dimension and company characteristics (Rohman et al., 2022)

In addition to the distribution of observations by year, the characteristics of the research data can also be seen through descriptive statistics of each research variable. The variables analyzed in this study include the Loan to Deposit Ratio (LDR), Asset to Equity Ratio (AER), Total Deposit to Total Asset Ratio (TD/TA), Capital Adequacy Ratio (CAR), Asset Growth Ratio (AGR), bank size, and Return on Assets (ROA) as the dependent variable. Descriptive statistics are used to provide an initial overview of the trend in research variable values, the level of data variation, and the range of minimum and maximum values found in the research sample. Presenting descriptive statistics is an important stage in quantitative research because it can help researchers understand the basic characteristics of the data before conducting inferential analysis such as panel regression and moderation tests. In banking sector research, descriptive statistical analysis is often used to identify general patterns of bank financial performance and potential variations between banks that may affect the results of hypothesis testing (Raja & Saragih, 2023).

The subjects of this study consisted of banking companies that met the sample selection criteria (purposive sampling), namely banks listed on the Indonesia Stock Exchange and having complete financial reports during the study period. Using a purposive sampling technique, this study obtained a number of banking companies as research samples with an observation period spanning several years, resulting in a number of panel data observations. This approach allows researchers to observe changes in bank financial performance over time and compare characteristics between banks within a single analytical model. Research in the banking sector using panel data from banks listed on the Indonesia Stock Exchange is often conducted because it can provide a more comprehensive empirical picture of the dynamics of bank financial performance over a given period (Attatur & Gymyastiar, 2024).

The characteristics of the research data were then analyzed using descriptive statistics to provide an initial overview of the data distribution of each research variable. Descriptive statistics include maximum and minimum values, measures of central tendency such as the mean and median, and measures of variability such as standard deviation. Descriptive statistical analysis is an important stage in quantitative research because it can help researchers understand the general pattern of the data before testing hypotheses through regression models. In banking research, descriptive statistics are often used to identify variations in financial performance between banks and to observe trends in financial ratio values within a research period (Nasim et al., 2025). The following are descriptive statistics for the research variables used in this study.

Table 2. Descriptive Statistics of Research Variables

Variable	Maximum	Minimum	Mean	Median	Std. Dev.	Obs.
ROA	5.8500	-14.7500	0.8560	0.9600	2.6452	150
LDR	373.6100	0.7600	90.6776	83.7100	42.1057	150
AER	31.1398	1.3289	6.4753	6.1216	4.0758	150
TD/TA	0.8485	0.1619	0.6546	0.6832	0.1454	150
CAR	169.9200	0.2400	34.0969	25.5000	25.0471	150
AGR	5.6482	0.2117	1.1401	1.0740	0.4834	150

Source: Processed by the author (2026)

Table 2 shows that the Return on Assets (ROA) variable has a minimum value of -14.75 and a maximum value of 5.85, with an average of 0.856. This indicates significant variation in

profitability levels between banks during the study period. The ROA standard deviation of 2.645 indicates a wide spread of data from the average value, indicating that the profitability performance of banks in the study sample is not homogeneous.

The Loan to Deposit Ratio (LDR) variable has an average value of 90.68, with a minimum value of 0.76 and a maximum of 373.61. This value indicates differences in liquidity levels between banks in managing third-party funds for credit distribution. Meanwhile, the Asset to Equity Ratio (AER) variable has an average value of 6.48 with a standard deviation of 4.08, indicating a fairly diverse range of bank funding structures.

The Total Deposit to Total Asset Ratio (TD/TA) variable has an average of 0.65, indicating that most of the bank assets in the research sample are supported by third-party funds. The Capital Adequacy Ratio (CAR) variable has an average of 34.10 with a maximum value of 169.92, indicating that some banks have a very high level of capital adequacy compared to other banks. Meanwhile, the Asset Growth Ratio (AGR) variable has an average of 1.14 with a standard deviation of 0.48, indicating that the growth of bank assets in the research sample is relatively stable.

The company size variable (Bank Size), measured using total assets, showed a minimum value of 2,179,873 and a maximum value of 2,427,223,262, with an average of 292,007,639. This indicates a significant difference in the scale of operations between banks in the research sample. This difference in bank size is an important factor in banking research because larger banks generally have greater resources, wider access to funding, and better risk diversification capabilities than smaller banks (Ogundele & Nzama, 2025) .

Overall, the descriptive statistics results indicate that the research data exhibits significant variation across banks in each analyzed variable. This variation indicates differences in financial performance characteristics across the banks studied. Therefore, this descriptive statistical analysis serves as an important foundation for understanding the initial data conditions before conducting further testing through regression analysis and hypothesis testing in the following sections.

Description of Research Object

The description of the research object in this study covers all variables used to explain the financial performance of banks in Indonesia. The research object focuses on the relationship between several bank financial ratios and Return on Assets (ROA) as a proxy for financial performance, and Bank Size as a moderating variable. Therefore, the research object relates not only to banking companies as the unit of analysis, but also to quantitative characteristics reflected in financial ratios that represent aspects of liquidity, funding structure, capital adequacy, asset growth, and bank size. In banking research, a good description of the research object is important because each financial variable represents a different economic function in bank operations. Therefore, understanding the definition, indicators, and data distribution will help readers understand the empirical context of the research more fully (Attatur & Gymyastiar, 2024) . Therefore, in this section, each variable is explained in terms of its concept, measurement proxy, and descriptive statistical description to provide a strong foundation before entering into the analysis of the research results.

Operationally, this study uses one dependent variable, namely ROA, five independent variables, namely Loan to Deposit Ratio (LDR), Asset to Equity Ratio (AER), Total Deposit to Total Asset Ratio (TD/TA), Capital Adequacy Ratio (CAR), and Asset Growth Ratio (AGR), and one moderating variable, namely Bank Size . These variables were chosen because each represents an important dimension in the analysis of banking performance. LDR reflects the ability of intermediation and liquidity management, AER represents a leverage- based funding structure , TD/TA indicates a bank's dependence on third-party funds to support its assets, CAR describes the level of capital adequacy in absorbing risk, AGR indicates the expansion of bank

assets, while Bank Size describes the scale of bank operations which is generally measured through total assets (Pradhan et al., 2024) . Meanwhile, ROA was chosen as a financial performance indicator because this ratio shows the bank's ability to generate profits from total assets managed, so in the context of the banking industry, ROA is considered more representative for assessing the efficiency of productive asset management compared to several other profitability measures.

Table 3. Description of Research Objects and Variable Indicators

Description of Research Objects and Variables	Variable Types	Dimensions/Aspects	Indicator/Proxy	Meaning of Measurement
Return on Assets (ROA)	Dependent	Profitability	Net profit to total assets	Measuring the bank's ability to generate profits from assets under management
Loan to Deposit Ratio (LDR)	Independent	Liquidity / Intermediation	Total credit to total third party funds	Describes the bank's ability to channel funds into credit
Asset to Equity Ratio (AER)	Independent	Funding structure / Leverage	Total assets to total equity	Measuring the level of dependence of assets on equity
Total Deposit to Total Asset Ratio (TD/TA)	Independent	Funding structure	Total deposits to total assets	Shows the proportion of asset funding that comes from third party funds
Capital Adequacy Ratio (CAR)	Independent	Capital adequacy	Capital to risk-weighted assets	Measuring the bank's ability to absorb risk through capital
Asset Growth Ratio (AGR)	Independent	Company growth	Annual total asset growth	Describes the expansion of bank assets from period to period
Bank Size (SIZE)	Moderation	Company scale	Total assets	Shows the scale of bank operations

Source: Processed by the author (2026)

Based on the descriptive statistics of the research variables, it can be understood that the object of this research essentially consists of several main dimensions of banking performance. The first dimension is profitability, which in this study is represented by ROA as the end result of managing all bank resources. The second dimension is liquidity and intermediation, represented by LDR, because banks essentially function to channel funds collected from the public to the productive sector in the form of credit. The third dimension is funding structure and leverage, indicated by AER and TD/TA, because banks rely heavily on a combination of equity and third-party funds to finance their assets. The fourth dimension is capital resilience, depicted by CAR, while the fifth dimension is business expansion, indicated by AGR. Finally, Bank Size is used as a moderating variable because bank size in company theory and banking research is often associated with differences in funding capacity, operational efficiency, risk tolerance, and diversification capabilities (Mukoffi et al., 2024) . Thus, the description of this research object shows that the model used does not only focus on one financial dimension, but includes several fundamental aspects that are conceptually relevant to explaining bank performance.

To provide a more concrete empirical picture of the research object, each variable is then presented in the form of descriptive statistics. These statistics include minimum, maximum, mean, median, range, and standard deviation values. This presentation is important because it allows readers to see the variation in data between banks and between periods, and to assess whether the research object has a sufficient distribution of characteristics for further analysis. In corporate finance research, particularly in the banking sector, descriptive statistics are often used to demonstrate that the research variables have sufficient diversity to be tested in a panel model (Jevennie & Estralita, 2025) . The descriptive statistics results in this study also confirm that the research object has wide variation in terms of profitability, liquidity, capital structure, and asset size, making the model used realistic in capturing differences in conditions between banks.

Based on descriptive Table 4.4, the research objects exhibit quite diverse characteristics. The ROA variable has a significant negative minimum value of -14.75, indicating that during the observation period, some banks experienced profitability pressures or even relatively high losses. On the other hand, the maximum value of 5.85 indicates that some banks also experienced significantly better profitability levels. The average ROA value of 0.8560 indicates that, in general, the profitability of banks in the sample tends to be relatively low. The LDR variable shows a very wide range, from 0.76 to 373.61, indicating significant differences in intermediation strategies and liquidity management between banks. The AER variable also shows quite high variation, indicating that the leverage structure among banks in the sample is not uniform. The TD/TA variable has an average of 0.6546, indicating that, in general, bank asset funding is still dominated by third-party funds. Meanwhile, the CAR variable had an average of 34.0969 with a maximum of 169.92, indicating that some banks had significantly higher capitalization levels than others. The AGR variable showed variable asset growth, but was relatively more stable compared to other ratios. The Bank Size variable was the most contrasting indicator because it showed the vast differences in operational scale between banks, ranging from relatively small total assets to banks with very large assets. Therefore, these descriptive statistics confirm that the research objects indeed consist of banks with heterogeneous characteristics, making them worthy of further analysis in panel data regression models and moderation tests.

Overall, the description of the research object shows that each variable used in this study has a clear conceptual basis, operational indicators, and a sufficiently diverse data distribution for further analysis. The presentation in tabular and narrative form confirms that the research object has been systematically explained, both in terms of its concept and empirical data. Thus, this section serves as an important bridge to the presentation of data processing results and analysis of relationships between variables in the following subchapters, because readers first obtain a complete picture of what is actually being studied, how the variables are measured, and the general data patterns of each variable in the research sample.

Assumption Test Results

The subjects of this study were banking companies listed on the Indonesia Stock Exchange (IDX) and met the purposive sampling criteria according to the research design. The selection of banking companies as research subjects was based on the consideration that the banking sector has a very important intermediary function in the financial system, so changes in bank financial performance will have a direct impact on the effectiveness of fund distribution, financial sector stability, and market confidence (Attatur & Gymyastiar, 2024) . In this study, the data used was balanced panel data consisting of 30 banks over a five-year observation period, namely the 2020–2024 period, resulting in a total of 150 observations analyzed. The characteristics of the research subjects in the company context were not explained through personal attributes such as gender or age, but through corporate attributes relevant to financial research, such as company size , profitability, liquidity, capital structure, funding structure, and

asset growth. This approach is in accordance with quantitative research practices in the banking sector, where descriptive statistics are used to describe the general condition of the research subjects before inferential testing is carried out (Mukoffi et al., 2024) . Thus, the description of the research subjects in this thesis not only serves as an initial description of the object being studied, but also serves as a basis for understanding the diversity of bank characteristics in the sample, which will subsequently influence the relationship patterns between independent variables, moderating variables, and dependent variables in the research model.

To provide a more systematic overview of the research subjects, the characteristics of the banking companies in the sample are presented through descriptive statistics of the research variables, including minimum, maximum, mean, median, range, and standard deviation values. This presentation is relevant because descriptive statistics allow researchers to assess the general position of the data while also observing the level of dispersion and heterogeneity between banks (Pertiwi & Muslih, 2023) . In this study, the mode measure is not presented separately because the data, in the form of financial ratios and total assets, are continuous, so identically repeated values are very limited and less representative as a measure of central tendency. Therefore, the focus of the research subject description is emphasized on the mean, median, minimum, maximum, range, and standard deviation, which are methodologically more informative for company financial data. Furthermore, the Bank Size variable receives special attention because company size in banking research is often used to differentiate the scale of operations, funding capacity, and resilience of banks to financial stress (Pradhan et al., 2024) . Therefore, the description of the research subjects through descriptive statistics not only explains the data numerically, but also confirms that the research sample consists of banks with varying characteristics, both in terms of asset size, profit-generating ability, and funding and capital structure.

Based on the Descriptive Statistics of the Research Variables, the research subjects showed a fairly high level of heterogeneity. The ROA variable as a proxy for profitability had a minimum value of -14.75 and a maximum of 5.85 with a mean of 0.8560, indicating that some banks experienced significant profitability pressures, while others were still able to record relatively good profits. The LDR variable had a very wide range, from 0.76 to 373.61, indicating a quite striking difference in liquidity and intermediation strategies among the banks in the sample. The AER variable also showed a diversity of funding structures, while the TD/TA showed that the average proportion of third-party funds to total assets was at 0.6546, indicating that third-party funds remained the dominant source of funding for banks. For CAR, the average value was 34.0969 with a maximum of 169.92, indicating that some banks had a very high level of capital adequacy compared to other banks. Meanwhile, the AGR showed that asset growth among banks was relatively varied, although on average it was still in the moderate range. The Bank Size variable shows the largest difference, as the minimum total assets value is only around 2.18 million, while the maximum value reaches over 2.4 billion, confirming that the research subjects consist of banks with very diverse business scales. Thus, the description of the research subjects shows that the sample used is indeed realistically representing the diversity of bank characteristics in the Indonesian capital market, making it suitable as a basis for further analysis in the classical assumption testing stage and panel regression models.

Classical Assumption Test

Classical assumption tests were conducted to ensure that the empirical model used in this study meets the basic requirements of regression analysis and can produce estimates that are feasible for interpretation. In panel data research, classical assumption testing is not always identical to ordinary linear regression, because the panel data structure has its own characteristics, particularly the simultaneous presence of cross-section and time series dimensions. Therefore, several adjustments were made in interpreting the classical assumption

results. Based on the EViews output, this study tested for normality, multicollinearity, heteroscedasticity, and autocorrelation. These classical assumption tests are important so that the coefficient estimates can be read more convincingly and avoid biased interpretations caused by statistical issues in the model. In panel data-based banking studies, testing assumptions such as multicollinearity and heteroscedasticity remains crucial because they are directly related to the stability of model parameters and the validity of hypothesis testing (Enam et al., 2025) . Therefore, before proceeding to the main analysis, the following classical assumption test results are used to confirm that the research model has been tested systematically and adequately.

Normality Test

Based on the output of this study, no formal normality test was performed because the data used were panel data. In the practice of panel data analysis, the assumption of residual normality is not always a primary requirement as in classical linear regression, especially when the number of observations is relatively sufficient and the focus of the analysis is on the consistency of the coefficients and the validity of the panel model. Furthermore, banking financial data often has an asymmetric distribution due to differences in company size, asset scale, and variations in financial ratios between banks, so that normality testing on panel data is not always the primary basis for determining model feasibility. Thus, the omission of a normality test in this study is still methodologically acceptable because the model used is panel regression, not pure cross-sectional regression.

Multicollinearity Test

A multicollinearity test was conducted to determine whether there was excessive correlation between independent variables. Based on the results, all correlation coefficients between independent variables were below the general limit of 0.85, thus the model was declared free from serious multicollinearity problems. The highest correlation was seen between CAR and TD/TA at -0.679891, while other correlations, such as LDR and TD/TA at -0.678458 and LDR and CAR at 0.547324, were also still at a tolerable level. These results indicate that each independent variable still represents different information and does not substitute each other excessively in the model. Thus, this research model meets the assumption of being free from multicollinearity, so that the resulting regression coefficients can still be used to explain the influence of each variable on bank profitability.

Table 4. Summary of Multicollinearity Test

Variable Pairs	Correlation Coefficient
LDR – AER	-0.3387
LDR – CAR	0.5473
LDR – TD/TA	-0.6785
LDR – AGR	0.0645
AER – CAR	-0.4895
AER – TD/TA	0.1634
AER – AGR	0.1280
CAR – TD/TA	-0.6799
CAR – AGR	0.4068
TD/TA – AGR	-0.3563

Source: Processed by the author (2026)

Heteroscedasticity Test

The heteroscedasticity test was conducted to determine whether the residual variance of the model was constant. The Prob(F-statistic) value was 0.977157, which is greater than 0.05.

Furthermore, the probability of each variable was all above the 5 percent significance level. Therefore, this research model is declared free from heteroscedasticity, so that the resulting residuals do not show any symptoms of variance inequality that could interfere with estimation accuracy. These results indicate that the model is quite stable in terms of error distribution, so that the interpretation of the regression results can be done with a better level of confidence, with the conclusion that there is no heteroscedasticity.

Table 5. Summary of Heteroscedasticity Test

Indicator	Mark
F-statistic	0.332834
Prob(F-statistic)	0.977157

Source: Processed by the author (2026)

Autocorrelation Test

In this study, indications of autocorrelation are observed through the Durbin-Watson Statistic value in the main regression model, specifically the Random Effects Model. Based on the output of the REM regression test, the Durbin-Watson Statistic value is 1.966868, or very close to 2. Thus, it can be concluded that the research model does not exhibit serious autocorrelation symptoms. This value indicates that the model residuals do not exhibit a strong serial correlation pattern from one period to the next. Thus, the main regression model can be considered to meet the basic assumption regarding residual independence in the context of panel data.

Overall, the results of the classical assumption test indicate that this research model is suitable for use in panel data regression analysis. A normality test was not performed due to the characteristics of panel data, while tests for multicollinearity, heteroscedasticity, and autocorrelation yielded adequate results. Therefore, the model can be further developed into a more in-depth panel model selection and main regression estimation.

Overall, the assumption test results indicate that this research model is in adequate condition for use in panel data regression analysis. A normality test was not performed because the research data is panel-based and does not require a normal distribution as a primary requirement for the model. The multicollinearity test showed that all correlations between independent variables were below the critical limit, thus there were no multicollinearity problems. The heteroscedasticity test showed an F-statistic probability value well above 0.05, thus the model was free from heteroscedasticity. Meanwhile, the autocorrelation test, read through the Durbin-Watson value in the main REM model, showed a number very close to 2, thus there was no serious autocorrelation. Thus, this research model can be declared statistically feasible to proceed to the panel data regression analysis stage, hypothesis testing, and discussion of the research results.

Hypothesis Test Results

The panel data regression analysis in this study was conducted through several stages: estimating the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), followed by selecting the best model using the Chow Test and Hausman Test. This stage is crucial because panel data allows for differences in individual characteristics between banks, requiring researchers to determine whether these differences should be treated as fixed effects or random effects. In banking research, selecting the right panel model is crucial for interpreting the results, as banks vary in size, strategy, and risk characteristics (Attatur & Gymyastiar, 2024). Therefore, the EViews output in this study is not only interpreted in terms of regression coefficients but also in terms of the accuracy of model selection to ensure that the hypothesis testing results are truly based on the most appropriate model.

Panel Regression Model Selection

The first stage is the Chow Test to choose between the Common Effect Model and the Fixed Effect Model. Based on the Chow Test output, the Cross-section F value is 4.362516 with a probability of 0.0000, and the Cross-section Chi-square value is 115.562709 with a probability of 0.0000. Since both probability values are smaller than 0.05, it can be concluded that the Fixed Effect Model is better than the Common Effect Model. After that, to determine whether the best model is the Fixed Effect Model or the Random Effect Model, a Hausman Test was conducted. The Hausman Test results show a Chi-Square Statistic value of 1.556319 with a probability of 0.999545, which is much greater than 0.05. Thus, the final decision shows that the Random Effect Model (REM) is the most appropriate model to use in this study.

Table 6. Results of Panel Regression Model Selection

Model Testing	Statistics	Probability	Decision
Chow Test (Cross-section F)	4.3625	0.0000	FEM is better than CEM
Chow Test (Chi-square)	115.5627	0.0000	FEM is better than CEM
Hausman Test (Chi-square)	1.5563	0.9995	REM is better than FEM

Source: Processed by the author (2026)

Random Effect Model Estimation Results

Based on the results of the model selection, this study uses the Random Effect Model as the main model to test the influence of independent and moderating variables on ROA. The output on the REM sheet shows that the model has an F-statistic of 1.873068 with a Prob(F-statistic) of 0.047906. This probability value is smaller than 0.05, so it can be said that the variables in the model simultaneously influence ROA. In terms of the model's explanatory power, the Adjusted R-squared value of 0.060552 indicates that approximately 6.06% of the variation in ROA can be explained by the variables LDR, AER, TD/TA, CAR, AGR, SIZE, and all interaction variables with Bank *Size*, while the remainder is explained by other factors outside the research model. This value is relatively low, but remains realistic in banking research because bank profitability is generally influenced by many other factors such as credit quality, operational efficiency, revenue structure, and macroeconomic factors (Afriyani et al., 2025).

Table 7. Summary of Random Effect Model Output

Indicator	Mark
R-squared	0.1299
Adjusted R-squared	0.0606
F-statistic	1.8731
Prob(F-statistic)	0.0479
Durbin-Watson Stat	1.9669

Source: Processed by the author (2026)

Narrative Explanation of EViews Output

Based on the regression coefficients in the REM model, the LDR variable has a coefficient of 0.014495 with a probability of 0.084707, which means the direction of the influence is positive but not significant at the 5 percent level. The AER variable has a coefficient of -0.111782 with a probability of 0.370618, thus indicating a negative direction and is not significant. The TD/TA variable has a coefficient of 6.589956 with a probability of 0.055679, thus indicating a positive direction and is very close to the 5 percent significance limit, but is still strictly categorized as insignificant. The CAR variable has a coefficient of 0.012813 with a probability of 0.506040, while the AGR variable has a coefficient of 0.506978 with a

probability of 0.363147; both are positive but not significant. Meanwhile, the SIZE variable as the main moderating variable also does not show a significant influence, with a probability of 0.459539. For all interaction variables, namely LDR_SIZE, AER_SIZE, TDTA_SIZE, CAR_SIZE, and AGR_SIZE, all probabilities are also above 0.05, which means that Bank Size is not proven to moderate the relationship between the independent variables and ROA in this research model.

Table 8. Summary of REM Regression Coefficients

Variables	Coefficient	Probability	Information
LDR	0.0145	0.0847	Positive, not significant
AER	-0.1118	0.3706	Negative, not significant
TD/TA	6.5900	0.0557	Positive, not significant
CAR	0.0128	0.5060	Positive, not significant
AGR	0.5070	0.3631	Positive, not significant
SIZE	0.0000	0.4595	Not significant
LDR SIZE	0.0000	0.2284	Not significant
AER SIZE	0.0000	0.2193	Not significant
TDTA SIZE	0.0000	0.2215	Not significant
CAR SIZE	0.0000	0.1264	Not significant
AGR SIZE	0.0000	0.7060	Not significant

Source: Processed by the author (2026)

Systematically, the EViews output explanation indicates that this research model is feasible to use simultaneously, but the partial influence of each variable is not strong enough to explain variations in bank profitability at the 5 percent significance level. This finding is realistic in the context of the banking industry because internal financial ratios are not always the sole determinant of ROA. In practice, bank profitability is often more influenced by the interaction between operational efficiency, productive asset quality, risk management, and broader economic conditions. Therefore, the results of this panel data regression provide a strong foundation for substantive discussion in the following sections, particularly in explaining why some hypotheses are not supported and what the implications are for banking research and practice.

The results of the hypothesis testing in this study are based on the output of the Random Effects Model (REM), which was selected as the best model in the panel data regression analysis. Hypothesis testing was conducted at a 5% significance level ($\alpha = 0.05$). A hypothesis is declared supported if the probability value (p-value) is less than 0.05, whereas if the probability value is greater than 0.05, the hypothesis is declared statistically unsupported. A summary of the hypothesis testing results can be seen in the following table.

Table 9. Summary of Hypothesis Test Results

Hypothesis	Tested Relationships	Coefficient	Direction	Probability	Statistical Conclusion
H1	LDR → ROA	0.0145	Positive	0.0847	Not significant
H2	AER → ROA	-0.1118	Negative	0.3706	Not significant
H3	TD/TA → ROA	6.5900	Positive	0.0557	Not significant
H4	CAR → ROA	0.0128	Positive	0.5060	Not significant
H5	AGR → ROA	0.5070	Positive	0.3631	Not significant

H6	LDR×SIZE → ROA	0.0000	Negative	0.2284	Not significant
H7	AER×SIZE → ROA	0.0000	Positive	0.2193	Not significant
H8	TDTA×SIZE → ROA	0.0000	Negative	0.2215	Not significant
H9	CAR×SIZE → ROA	0.0000	Positive	0.1264	Not significant
H10	AGR×SIZE → ROA	0.0000	Negative	0.7060	Not significant

Source: Processed by the author (2026)

Discussion of the effect of the Loan to Deposit Ratio (LDR) on Return on Assets (ROA). Based on the regression model estimation results, the LDR variable has a positive but statistically insignificant coefficient on ROA. Theoretically, the LDR reflects a bank's ability to channel third-party funds into productive loans, so this ratio is often used to assess the effectiveness of the bank's intermediation function. When the LDR ratio increases, banks tend to disburse more credit than they collect, thus increasing the potential for interest income. However, in the context of this study, the effect of the LDR on ROA does not show strong significance, indicating that an increase in credit volume is not always followed by an increase in bank profitability. This may occur because credit risk factors, asset quality, and bank operational efficiency also play important roles in determining profitability levels. This finding aligns with research showing that an increase in the loan to deposit ratio does not always increase profitability because bank profitability is strongly influenced by credit quality and the efficiency of productive asset management (R & Syaipudin, 2024) . Thus, the results of this study indicate that increasing credit intermediation in Indonesian banking does not necessarily directly increase profitability if it is not balanced with effective credit risk management.

Discussion of the effect of the Asset to Equity Ratio (AER) on Return on Assets (ROA). The regression results show that the AER variable has a negative and insignificant coefficient on ROA. This ratio essentially describes the level of leverage or the bank's funding structure derived from debt compared to equity. In capital structure theory, high leverage can increase a company's financial risk due to greater dependence on external funding sources. When leverage increases excessively, the burden of financial costs that must be borne by the bank will also increase, thereby suppressing the level of profitability generated from its assets. This finding is consistent with research showing that a high debt to equity ratio can reduce the level of bank profitability due to the increased burden of financial obligations that must be met by the company (Khatri, 2024) . In the context of Indonesian banking, these results indicate that a bank funding structure that is too dependent on debt does not always result in improved financial performance, especially if the cost of funds borne by the bank is greater than the income generated from financing activities.

Discussion of the effect of the Total Deposit to Total Asset Ratio (TD/TA) on Return on Assets (ROA). The estimation results show that the TD/TA variable has a positive coefficient and approaches the level of statistical significance with respect to ROA. This ratio reflects the proportion of third-party funds used in the bank's asset structure. Theoretically, increasing third-party funds can expand a bank's ability to disburse credit or make productive investments, thus potentially increasing interest income and profitability. However, increasing third-party funds can also increase the interest costs that banks must pay to depositors. Therefore, the effect of this ratio on profitability is highly dependent on the bank's ability to manage these funds efficiently. Previous research has shown that the deposit-to-asset ratio does

not always have a significant impact on bank profitability because the successful utilization of these funds is heavily influenced by the productive asset management strategy (Poudel et al., 2022) . Therefore, the results of this study indicate that increasing third-party funds in the Indonesian banking industry does not necessarily directly improve profitability performance if it is not accompanied by an optimal fund distribution strategy.

The discussion of the effect of the Capital Adequacy Ratio (CAR) on Return on Assets (ROA) shows that the CAR variable has a positive but not statistically significant relationship with ROA. The CAR ratio is the main indicator used to assess a bank's capital adequacy level in facing operational and credit risks. In banking theory, banks with a high level of capital adequacy are considered more stable and have a greater capacity to expand credit. However, increasing capital can also have consequences in the form of increased capital costs that must be borne by the bank, so it is not always directly proportional to increased profitability. This finding is consistent with research showing that the capital adequacy ratio can have a positive relationship with profitability, but the effect is not always significant because bank profitability is also influenced by operational efficiency and credit asset quality (Khatiwada et al., 2024) . Thus, the results of this study indicate that high capital adequacy in the Indonesian banking sector does not automatically increase bank profitability if it is not balanced with an efficient asset management strategy.

Discussion of the effect of the Asset Growth Ratio (AGR) on Return on Assets (ROA). Regression results show that the AGR variable has a positive coefficient but is not statistically significant. The asset growth ratio reflects the business expansion undertaken by banks within a certain period. Theoretically, asset growth can increase a bank's capacity to generate income if the assets are used for productive activities such as providing credit or financial investment. However, excessively rapid asset growth can also increase operational risks and the need for greater funding. Previous research has shown that asset growth does not always increase profitability because overly aggressive expansion can increase operational costs and financial risks faced by banks (Bhandari, 2024) . In the context of this research, these results indicate that the increase in bank assets in Indonesia during the study period has not been fully able to generate significant increases in profitability.

Discussion of the role of bank size as a moderating variable in the relationship between financial ratios and bank profitability. The results of interaction tests indicate that most moderating variables involving bank size do not have a significant effect on the relationship between the independent variables and ROA. Theoretically, bank size is often assumed to strengthen the relationship between financial variables and company performance because larger banks have greater resources, broader access to funding, and better risk diversification capabilities. However, in practice, bank size does not always strengthen this relationship, because larger banks also face higher operational complexity and higher management costs. Previous research has shown that company size does not always moderate the relationship between financial ratios and profitability because the influence of financial variables is more influenced by operational efficiency and the quality of bank risk management (Resmawan et al., 2023) . Thus, the results of this study indicate that the role of bank size as a moderating variable in the Indonesian banking sector is still limited and does not consistently strengthen the relationship between financial ratios and bank profitability performance.

Hypothesis 1 (H1), which states that the Loan to Deposit Ratio (LDR) has a significant effect on Return on Assets (ROA), shows a coefficient value of 0.014495 with a positive relationship direction and a probability value of 0.084707. This probability value is greater than 0.05, so statistically the effect of LDR on ROA is not significant. Thus, H1 is not supported. This statistical conclusion indicates that changes in LDR in the research sample have not been able to explain changes in ROA significantly at the 95 percent confidence level.

Hypothesis 2 (H2), which states that the Asset to Equity Ratio (AER) has a significant effect on Return on Assets (ROA), produces a coefficient value of -0.111782 with a negative relationship direction and a probability of 0.370618. Because the probability value is greater than 0.05, the effect of AER on ROA is statistically insignificant. Thus, H2 is not supported. This conclusion indicates that an increase or decrease in AER in the banks included in the study sample has not resulted in a significant change in the level of profitability proxied by ROA.

Hypothesis 3 (H3) states that the Total Deposit to Total Asset Ratio (TD/TA) has a significant effect on Return on Assets (ROA). The estimation results show a coefficient value of 6.589956 with a positive relationship direction and a probability of 0.055679. Although the direction of the relationship indicates a positive influence and the probability value is relatively close to the significance limit of 0.05, statistically the value is still greater than 0.05. Therefore, the effect of TD/TA on ROA is declared insignificant. Thus, H3 is not supported. This means that statistically there is not enough strong evidence that the proportion of third party funds to total assets has a significant effect on ROA.

Hypothesis 4 (H4), which states that the Capital Adequacy Ratio (CAR) has a significant effect on Return on Assets (ROA), shows a coefficient value of 0.012813 with a positive relationship and a probability of 0.506040. This probability value is much greater than 0.05, so the effect of CAR on ROA is declared insignificant. Thus, H4 is not supported. This statistical conclusion indicates that the level of bank capital adequacy in this study is not able to significantly explain variations in bank profitability.

Hypothesis 5 (H5), which states that the Asset Growth Ratio (AGR) has a significant effect on Return on Assets (ROA), obtained a coefficient value of 0.506978 with a positive relationship direction and a probability of 0.363147. Because the probability value is greater than 0.05, statistically, AGR is declared to have no significant effect on ROA. Thus, H5 is not supported. This indicates that bank asset growth during the study period has not been proven to have a significant effect on bank profitability.

Hypothesis 6 (H6), which states that Bank Size moderates the relationship between Loan to Deposit Ratio (LDR) and Return on Assets (ROA), was tested through the LDR×SIZE interaction variable. The test results show a coefficient value of -0.0000000861 with a negative relationship direction and a probability of 0.228366. Because the probability value is greater than 0.05, the moderating effect is declared statistically insignificant. Thus, H6 is not supported. This conclusion indicates that bank size is not proven to significantly strengthen or weaken the influence of LDR on ROA.

Hypothesis 7 (H7) states that Bank Size moderates the relationship between Asset to Equity Ratio (AER) and Return on Assets (ROA), the AER×SIZE interaction variable produces a coefficient value of 0.0000008319 with a positive relationship direction and a probability of 0.219251. Because the probability value is greater than 0.05, the interaction is declared insignificant. Thus, H7 is not supported. This means that statistically there is no evidence that bank size moderates the relationship between AER and ROA.

Hypothesis 8 (H8), which states that Bank Size moderates the relationship between Total Deposit to Total Asset Ratio (TD/TA) and Return on Assets (ROA), was tested through the interaction variable TDTA×SIZE. The test results show a coefficient value of -0.0000000249 with a negative relationship direction and a probability of 0.221508. Because the probability value is above 0.05, the moderating effect is declared insignificant. Thus, H8 is not supported. This statistical conclusion indicates that bank size has not been proven to change the strength of the relationship between TD/TA and ROA.

Hypothesis 9 (H9), which states that Bank Size moderates the relationship between Capital Adequacy Ratio (CAR) and Return on Assets (ROA), shows a CAR×SIZE interaction coefficient of 0.0000003230 with a positive relationship direction and a probability of 0.126404. Because the probability value is greater than 0.05, the moderating effect is not

statistically significant. Thus, H9 is not supported. This means that bank size is not proven to moderate the relationship between CAR and ROA in this study sample.

Hypothesis 10 (H10), which states that Bank Size moderates the relationship between Asset Growth Ratio (AGR) and Return on Assets (ROA), was tested through the interaction variable $AGR \times SIZE$. The estimation results show a coefficient value of -0.000000002378 with a negative relationship direction and a probability of 0.7060. This probability value is far above 0.05, so the moderating effect is statistically declared insignificant. Thus, H10 is not supported. This conclusion indicates that bank size has not been proven to strengthen or weaken the relationship between asset growth and bank profitability.

Overall, the hypothesis testing in this study yielded two major conclusions. First, the research model is simultaneously valid because all independent variables and interactions jointly influence ROA, thus supporting the research framework at the model level. Second, partially, almost all hypotheses do not receive empirical support at the 5 percent level, for either direct or moderating effects. These results do not imply that the research variables are irrelevant, but rather indicate that the relationship between financial ratios and bank profitability in Indonesia is more complex, influenced by many other factors not fully captured in the model. In banking research, profitability is rarely determined by a single ratio; instead, profitability is the outcome of the interaction between intermediation strategy, credit portfolio quality, operational efficiency, funding structure, and broader economic conditions (Pradhan et al., 2024).

CONCLUSION

This study concludes that internal financial ratios—LDR, AER, TD/TA, CAR, and AGR—do not have a significant effect on bank profitability as measured by Return on Assets (ROA), indicating that the relationship between these ratios and profitability is neither direct nor linear but influenced by other factors such as asset quality, credit risk, and operational efficiency. Additionally, funding structure and capital adequacy (AER and CAR) appear to play a greater role in maintaining stability and managing risk rather than directly driving profits, suggesting that higher capital levels do not necessarily lead to increased profitability. The findings also show that bank size does not moderate the relationship between financial ratios and profitability, implying that the scale of bank assets neither strengthens nor weakens these effects. Overall, banking profitability is shaped by complex and multidimensional factors, including management quality and macroeconomic conditions, rather than solely by internal financial metrics and size. Future research is recommended to incorporate additional variables such as asset quality indicators (e.g., non-performing loans), operational efficiency measures (e.g., cost-to-income ratio), corporate governance factors, and macroeconomic variables, as well as to explore nonlinear or dynamic models to better capture the determinants of bank profitability.

REFERENCE

- Abiad, Z., Abraham, R., El-Chaarani, H., & Binsaddig, R. O. (2025). The Impact of Board of Directors' Characteristics on the Financial Performance of the Banking Sector in Gulf Cooperation Council (GCC) Countries: The Moderating Role of Bank Size. *Journal of Risk and Financial Management*, 18(1), 1–21. <https://doi.org/10.3390/jrfm18010040>
- Afriyani, N., Kamaliah, K., & Indrawati, N. (2025). The Effect of Governance, Risk, Compliance (GRC) And Intellectual Capital On Company Value Through Financial Performance. *Golden Ratio of Data in Summary*, 5(2), 282–299. <https://doi.org/10.52970/grdis.v5i2.954>

- Akinselure, O. P., Ayoola, T. J., Aregbesola, O. D., & Adenikinju, O. (2025). Effect of Prominent Asset Liability Management Risk Components on the Financial performance of Nigerian Commercial Banks. *International Journal of Economics and Financial Issues* , 15(1), 280–287. <https://doi.org/10.32479/ijefi.17092>
- Al-Khazaleh, S., Badwan, N., Qubbaj, I., & Bani Ahmad, A. (2025). Impact of banking models on the relationship between corporate social performance and financial stability: a focus on value-based banking models. *Journal of Applied Accounting Research*. <https://doi.org/10.1108/JAAR-02-2024-0076>
- Attatur, M. K., & Gymyastiar, A. (2024). *Determinants of Profitability in Commercial Banks Listed on the Indonesian Stock Exchange* 2537. 12(6), 2537–2548. <https://doi.org/10.37641/jimkes.v12i6.2980>
- Azad, M. A. K., Akhter, T., Saona, P., Mosqueira, P., & Ahmad, N. (2025). Corporate governance, national culture and bank performance: evidence from MENA countries. *International Journal of Islamic and Middle Eastern Finance and Management*, October. <https://doi.org/10.1108/IMEFM-04-2024-0185>
- Ben Ali, A., & Chouaibi, S. (2025). Does the value-added intellectual capital moderate the relationship between banking governance and financial performance? A cross-banking analysis. *Managerial Finance*, October. <https://doi.org/10.1108/MF-11-2024-0856>
- Bhandari, P. (2024). *Impact of Capital Structure , Loan to Deposit , Firm Size and Asset Tangibility on the Profitability of Nepalese Commercial Banks*. 11(4), 142–162.
- Bhatter, H. K., Gupta, J., & Chhatoi, B. P. (2025). Unveiling the curvilinear dynamics: financial inclusion and bank performance in India. *Managerial Finance*, October. <https://doi.org/10.1108/MF-12-2024-0925>
- Cangombe, E. L., Almeida, L. G., & Tavares, F. O. (2025). Determinants of Banking Profitability in Angola: A Panel Data Analysis with Dynamic GMM Estimation. *Risks*, 13(7), 1–22. <https://doi.org/10.3390/risks13070123>
- Dwita, F., Kamila, N., Adhi, T. M., & Desliana, N. (2024). *Dampak Rasio Kecukupan Modal dan Risiko terhadap Profitabilitas pada Bank Konvensional di Indonesia (The Impact of Capital Adequacy Ratio and Risk on Profitability in Conventional Banks in Indonesia)*. 5(2), 209–223.
- Enam, M., Singh, N., & Das, N. (2025). Do cybersecurity policies influence the effectiveness of corporate governance on bank performance? Insights from Quad countries. *Digital Policy, Regulation and Governance*, March. <https://doi.org/10.1108/DPRG-03-2024-0043>
- Faqera, A. F., Waemustafa, W., Md Jadi, D., Al-Matari, E. M., Bajary, A. R., & Bin-Nashwan, S. A. (2025). The interplay of financial risk and governance mechanisms in shaping banks' performance: evidence from major banks in the UAE. *Corporate Governance (Bingley)*, October 2024. <https://doi.org/10.1108/CG-10-2024-0515>
- Fathihani, F., Santoso, N., Sulistiyowati, R., & Veronica, M. (2025). ESG Disclosure and Financial Performance: The Moderating Role of Firm Size in Indonesian Banking Sector. *Shirkah: Journal of Economics and Business*, 10(3), 331–348. <https://doi.org/10.22515/shirkah.v10i3.960>

- Fiana, F., & Endri, E. (2025). Corporate Social Responsibility and Financial Performance: The Moderating Role of Firm Size. *International Journal of Economics and Financial Issues* , 15(2), 244–251. <https://doi.org/10.32479/ijefi.18059>
- Handriani, E., & Anggara, S. B. (2025). *An Analysis of Firm-Specific , Industry Specific , And Macroeconomic Determinants Influencing Bank Profitability in Indonesia*. 22(1), 58–88. <https://doi.org/10.14710/jsmo.v22i1.72650>
- Islam, M. U., Abdul Hamid, B., & Shahid, M. N. (2025). ESG activities and bank performance with the moderating influence of competition and regulatory quality: a study in the organization of Islamic countries. *International Journal of Islamic and Middle Eastern Finance and Management*, 18(2), 441–466. <https://doi.org/10.1108/IMEFM-01-2024-0052>
- Jalloh, M. A. (2024). Examining the Impact of Capital Adequacy on Bank's Profitability in Sierra Leone. *Economic Insights – Trends and Challenges*, 2024(1), 61–70. <https://doi.org/10.51865/eitc.2024.01.06>
- Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *The Economic Nature of the Firm: A Reader, Third Edition*, 283–303. <https://doi.org/10.1017/CBO9780511817410.023>
- Jevennie, & Estralita. (2025). Tax Avoidance, Financial Performance and Growth on Firm Value : Capital Structure as Moderation. *Sentralisasi*, 14(3), 1–26. <https://doi.org/10.33506/sl.v14i3.4433>
- Julian, & Estralita. (2024). Profitabilitas, Struktur Modal Dan Likuiditas Terhadap Nilai Perusahaan Di Bursa Efek Indonesia Periode 2017-2020. *Jurnal Kontemporer Akuntansi*, 4(1), 86–98.
- Khatiwada, M., Bhatta, M., Shah, M. M., & Bogati, N. (2024). *Impact of Operating Efficiency on Profitability of Nepalese Commercial Banks*. VIII(Ii), 199–215.
- Khatri, D. (2024). *Impact of Capital Structure and Growth on the Profitability of Nepalese Commercial Banks*. 11(4), 126–142.
- Labban, H., & Roussel, J. (2025). The impact of corporate governance frameworks on Middle East and North Africa banks performance. *International Journal of Islamic and Middle Eastern Finance and Management*, October. <https://doi.org/10.1108/IMEFM-03-2024-0149>
- Le, V. H., Nguyen, A. H., & Ngo, T. Van. (2025). Financial intermediation and profitability of commercial banks in Vietnam: does bank size matter? *Journal of International Economics and Management*, 1–15. <https://doi.org/10.1108/jiem-04-2025-0018>
- Maminaina, R., Sedera, H., & Risfandy, T. (2022). *Financial Inclusion and Bank Profitability : Evidence from Indonesia*. 23(3). <https://doi.org/10.18196/jai.v23i3.14721>
- Mkadmi, J. E., & Benali, W. (2025). The impact of the characteristics of Sharia committee on Islamic bank performance: evidence from the Gulf Cooperation Council. *Management and Sustainability*. <https://doi.org/10.1108/MSAR-08-2024-0088>
- Modigliani, & Miller. (1958). Addison's anaemia. *British Medical Journal*, 2(3594), 952–953. <https://doi.org/10.1136/bmj.2.3594.952>
- Molla, M. T., & Kaur, R. (2025). Association of risk management practices and financial performance of microfinance institutions in Ethiopia: A two-step system generalized

- method of moments approach. *Plos One*, 20(7 July), 1–19. <https://doi.org/10.1371/journal.pone.0321415>
- Muhammed, S., Desalegn, G., & Emese, P. (2024). Effect of Capital Structure on the Financial Performance of Ethiopian Commercial Banks. *Risks*, 12(4), 1–16. <https://doi.org/10.3390/risks12040069>
- Mukoffi, A., Sulistyowati, Y., & Lewa, D. H. (2024). *Pengaruh Financial Distress , Good Corporeate Govenance , Audit Report Lag dan Opini Audit Terhadap Ketepatan Waktu Publikasi Laporan Keuangan*. 8(April), 1956–1967.
- Nasim, A., Juliana, J., Ruzain, H., Rusydiana, A. S., Nusannas, I. S., & Abduh, M. (2025). The impact of the Islamic performance index on the financial performance of Indonesian Islamic banks. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-08-2024-0288>
- Nguyen, D. T. N. (2025). Impact of e-government development, economic growth and government management efficiency on financial performance of commercial banks in ASEAN countries. *Asian Journal of Economics and Banking*, 1–23. <https://doi.org/10.1108/ajeb-04-2025-0036>
- Of, A., Influence, T. H. E., Loan, O. F., Deposit, T. O., Ratio, A., Efficiency, O., Asset, T., On, T., On, R., Of, A., Bank, C., On, L., Indonesian, T. H. E., & Exchange, S. (2024). *Jurnal Ilmiah AccUsi ANALYSIS OF THE INFLUENCE OF LOAN TO DEPOSIT RATIO , CAPITAL RATIO , AND TOTAL ASSET TURNOVER ON RETURN ON ASSET OF Jurnal Ilmiah AccUsi*. 6(1), 66–76.
- Ofori, B. S., Padi, A., & Musah, A. (2025). Corporate Governance Effectiveness, Operational Risk and Financial Performance of Banks: the Role of Firm Size. *ECONOMICS - Innovative and Economics Research Journal*, 13(2), 71–93. <https://doi.org/10.2478/eoik-2025-0031>
- Ogundele, O. S., & Nzama, L. (2025). Risk Management Practices and Financial Performance: Analysing Credit and Liquidity Risk Management and Disclosures by Nigerian Banks. *Journal of Risk and Financial Management*, 18(4). <https://doi.org/10.3390/jrfm18040198>
- Pandit, S. (2024). *Effect of Capital Structure on the Financial Performance of Nifty 50 Companies*. 843–846. <https://doi.org/10.5220/0012514300003792>
- Pertiwi, A. P., & Muslih, M. (2023). Pengaruh Governance, Risk and Compliance (Grc) Dan Ukuran Perusahaan Terhadap Kinerja Keuangan. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, 7(1), 537–554. <https://doi.org/10.31955/mea.v7i1.2904>
- Pham, V. T. H. (2025). Profitable Investment Channels of Vietnamese Commercial Banks (2018–2024). *Journal of Risk and Financial Management*, 18(4). <https://doi.org/10.3390/jrfm18040182>
- Poudel, S. R., Dahal, S., & Panthi, R. (2022). *The Role of Financial Ratios in Predicting Return on Equity of Commercial Banks*. 28(1).
- Pradhan, P., Jha, P., Sah, P., & Magar, R. B. (2024). *Impact of Non-Performing Loans on Bank Profitability and Lending Behavior in Nepalese Commercial Banks*. VIII(Iii), 71–90.
- R, F. S. L., & Syaipudin, U. (2024). *The Effect of Loan to Deposit Ratio and Growth Opportunity on Return on Asset in Banking Companies in 2019-2022*. 3, 116–127.
- Rahmi, herlina, N. (2022). *THE EFFECT OF CAPITAL ADEQUACY RATIO (CAR), NET INTEREST MARGIN (NIM), AND LOAN TO DEPOSITS RATIO (LDR) ON RETURN*

ON ASSET (ROA) IN PT BANK NEGARA INDONESIA PERSERO TBK PERIOD OF
Source : www.idx.co.id (Data processed) Figure 1 . Graph of ROA Va. 01(01).

- Raja, A., & Saragih, B. (2023). *Determinant Factors Analysis of Bank Profitability : Study On Indonesian Banks Period 2019-2022*. 1(2), 250–262.
<https://doi.org/10.58229/jims.v1i2.118>
- Resmawan, A. I., Kawiana, I. G. P., & Wijaya, P. Y. (2023). *The Moderation Role of Company Size in Increasing Profitability in the Sector Banking*. 6(2), 820–828.
<https://doi.org/10.47191/jefms/v6-i2-26>
- Rohman, A., Nurkhin, A., & Wolor, C. W. (2022). *19 pandemic analysis ” Determinants of Indonesian banking profitability : Before and during the COVID-19 pandemic analysis*.
[https://doi.org/10.21511/bbs.17\(2\).2022.04](https://doi.org/10.21511/bbs.17(2).2022.04)
- Rusdi, N. F., & Rimin, D. F. (2025). Effect of Risk Management Committee (Rmc) Independence on the Financial Performance of Commercial Banks in Malaysia. *Labuan Bulletin of International Business and Finance (LBIBF)*, 23(1), 117–127.
<https://doi.org/10.51200/lbibf.v23i1.5939>
- Sar, A., & Panigrahi, K. (2025). The dynamics of financial performance and market performance in the context of Indian banking industry. *F1000Research*, 13.
<https://doi.org/10.12688/f1000research.151628.2>
- Suryawijaya, & Masman. (2025). *The influence of Macroeconomic*. 44(1), 312–322.
- Tahu, G. P., Luh, N., Saputri, G., Ngr, I. G., & Gunadi, B. (2023). *The Influence of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), and Loan to Deposit Ratio (LDR) on Profitability in Banking Companies on the Indonesia Stock Exchange*. 06(01), 184–192. <https://doi.org/10.47191/ijmra/v6-i1-23>
- Tong, X., & Yang, W. (2025). Empirical analysis of the impact of financial technology on the profitability of listed banks. *International Review of Economics and Finance*, 98, 1–23.
<https://doi.org/10.1016/j.iref.2024.103788>
- Yamin, N., Asif, M., Hasnat, M. A., Islam, M. M., Nasiruddin, M., Khandakar, H., & Rahman, M. A. (2025). the Impact of Basel Iii Implementation on the Financial Performance of the Banking Industry in Bangladesh. *Banks and Bank Systems*, 20(1), 98–108.
[https://doi.org/10.21511/bbs.20\(1\).2025.09](https://doi.org/10.21511/bbs.20(1).2025.09)
- Yudaruddin, R., Che Yahya, N., & Mohd Rashid, S. N. (2025). How ESG risk influences bank performance: insights from Islamic banking sector in Indonesia. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-09-2024-0343>
- Zahid, M. S. I., & Ramij, M. G. (2025). Strengthening financial sustainability through corporate governance: a study on commercial banks of Bangladesh. *International Journal of Research in Business and Social Science (2147- 4478)*, 14(3), 207–217.
<https://doi.org/10.20525/ijrbs.v14i3.4005>