

The Impact of Financial Risk Management on Banking Performance in Indonesia

Malik Safin Assagaf^a, Amanda Syifa^b, Farah Margaretha Leon^{c*}

^{abc} Fakultas Ekonomi dan Bisnis, Universitas Trisakti, Indonesia

* Corresponding author e-mail: farahmargaretha@trisakti.ac.id

ARTICLE INFO

DOI: 10.32832/jmuika.v17i3.24636

Article history:

Received:

20 Juli 2026

Accepted:

04 Oktober 2026

Available online:

08 Oktober 2026

Keywords:

Credit risk, financial performance, financial risk, leverage, market risk.

ABSTRACT

In this research, we analyzed how different types of financial risk impact the financial performance of Indonesian banks while controlling for additional variables such as: economic growth; inflation rate; bank size; capital adequacy ratio. In this study, credit risk, liquidity risk, and operational risk were analyzed. The value of the quantitative method with secondary data was used for the analysis, which consisted of using the financial statements of thirty-two banks located in Indonesia over the years 2020 to 2024. The analysis was done using panel data regression and used the random effects model, which produced the results from this study's analysis. The innovative aspect of this research is that it utilizes the capital adequacy ratio as a measure of capital adequacy in terms of assessing the effect of financial risks on banks' performance. The results demonstrate that by properly implementing risk management and maintaining a proper balance of capital, banks can sustain profitability. The study concludes that it is very important that banks strengthen their risk control systems and maintain economic stability to operate in a profitable manner.

INTRODUCTION

Since 2020, the banking industry in various countries has faced increasing pressure to maintain its stability and financial performance. The COVID-19 pandemic, coupled with economic uncertainty, has made credit quality, liquidity, operational efficiency, and capital adequacy increasingly critical considerations. Under these conditions, a bank's profitability depends not only on its ability to generate revenue but also on its effectiveness in managing the various risks arising from financial intermediation activities. Katusiime, (2021) found that during the pandemic, banking profitability came under pressure, primarily because it was negatively affected in the short term by an increase in non-performing loans and liquidity conditions. These findings indicate that the higher the level of non-performing loans, the greater the potential for a decline in bank revenue and an increase in credit loss provisioning, which could ultimately reduce a bank's ability to generate profits from its assets.

The financial performance of a business can be evaluated by revenue, income, and or appreciation of the value of the business as represented by an increase in stock price (Margaretha, 2018). Rodríguez Valencia, (2025) argues that financial ratios can provide insight into the financial performance of firms, influence investors' perceptions and, therefore, have a determining influence on how the market values the corporation. Consider examples of these ratios include profitability ratios (such as return on assets (ROA) and return on equity (ROE)), financial structure ratios, and corporate governance.

The banking industry provides a means for money to flow by receiving deposits from individuals and distributing those funds to individuals who need money in the form of loans. Profitability and operational efficiency are two primary measures of the extent to which banks have fulfilled their role of facilitating the flow of money. The banking industry's ability to influence the money supply, direct the flow of funds, and allocate resources in an economic system is substantial (Chukwu et al., 2024). When banks lend a significant volume of loans, banks will be able to bear the cost of financing more efficiently (Sari & Leon, 2023).

The phenomenon of banking sector financial performance in Indonesia shows that maintaining credit quality, liquidity, and capital adequacy does not necessarily directly reflect a bank's ability to generate an optimal return on its capital. According to the Financial Services Authority OJK, (2025), as of December 2024, the banking sector's gross Non-Performing Loan (NPL) ratio stood at 2.08% with a Capital Adequacy Ratio (CAR) of 26.69%, indicating that credit risk is relatively under control and the banking sector's capital position remains strong. However, this situation warrants further analysis from the perspective of Return on Equity (ROE), as ROE reflects a bank's ability to generate net income from its equity. In relation to ROE, an increase in NPLs has the potential to put pressure on profits through reduced credit income and increased provisioning for loan losses, while the Loan-to-Deposit Ratio (LDR) reflects a bank's ability to optimize the funds it mobilizes for redistribution in the form of

income-generating loans. Additionally, operational risk can also affect profit levels in the event of disruptions to internal processes, system errors, human resource issues, or external events that result in losses for the bank.

As of right now, the Indonesian banking sector has an element of security and competitiveness because it is strong and consists of solid banks. This does not mean there are financial threats in operation today; there are several potential risks that all Indonesian banks face, including: Credit Risks, Liquidity Risks, and Operational Risks.

The effects of economic growth and inflation on the financial performance of an organization are substantial due to both variables affecting the levels of product demand and operating costs, thus ultimately impacting the organization's profit and financial position. A separate investigation, which examined the effect of the money supply, interest rates, and inflation on bank credit expansion, identified that inflation had a negative impact on bank credit expansion over time, demonstrating how price controls impact banks' ability to expand through the banking system (Mamuaja et al., 2024). These findings are consistent with prior research conducted using panel data. They demonstrate that the financial viability and support to the economy provided by the banking system is influenced by both economic growth and inflationary pressures, thus increasing the demand for credit and bank liquidity generally; demonstrating an inverse relationship between macroeconomic conditions and banking sector performance; specifically in Indonesia.

This study introduces a new variable called the capital adequacy ratio, based on a previous study by Kharabsheh, (2026) which revealed that the capital adequacy ratio has a statistically significant positive effect on ROE. Capital adequacy ratio relates to the amount of capital a bank holds compared to its total assets and the amount of credit it has issued; as the capital adequacy ratio increases, so does the level of profit generated relative to shareholder's equity (i.e., ROE). A bank with adequate capital reduces its bankruptcy risk, enhances its market credibility, reduces its financing costs, and therefore has a higher level of profitability.

The purpose of this study is to assess how the capital adequacy ratio, credit risk, liquidity risk and operational risk impact banks' accounting returns (i.e., ROE) while controlling for macroeconomic variables (i.e., economic growth, inflation and size). Figure 1 depicts a model illustrating the relationship between banks' financial performance (i.e., ROE) and the four financial risks. Also illustrated is the financial risk management process: if financial risks are managed effectively, banks' financial performance will be positively influenced; if financial risks are not managed effectively, banks' financial performance will be negatively influenced (Ngo & Trinh, 2025).

Previous studies have extensively examined the effects of NPL, LDR, operational risk, and CAR on banking financial performance, but the results obtained still show inconsistencies, both in terms of significance and the direction of the effects. In addition, most studies have primarily used ROA as a proxy for financial performance, while the use of ROE—which reflects a bank's ability to generate returns on shareholders' equity—remains relatively limited. Previous studies

have also generally tested these variables separately or in specific combinations, thus failing to provide a fully comprehensive picture. Therefore, this study was conducted to simultaneously test the effects of NPL, LDR, operational risk, and CAR on financial performance—as proxied by ROE—while providing more up-to-date empirical evidence on the banking sector in Indonesia.

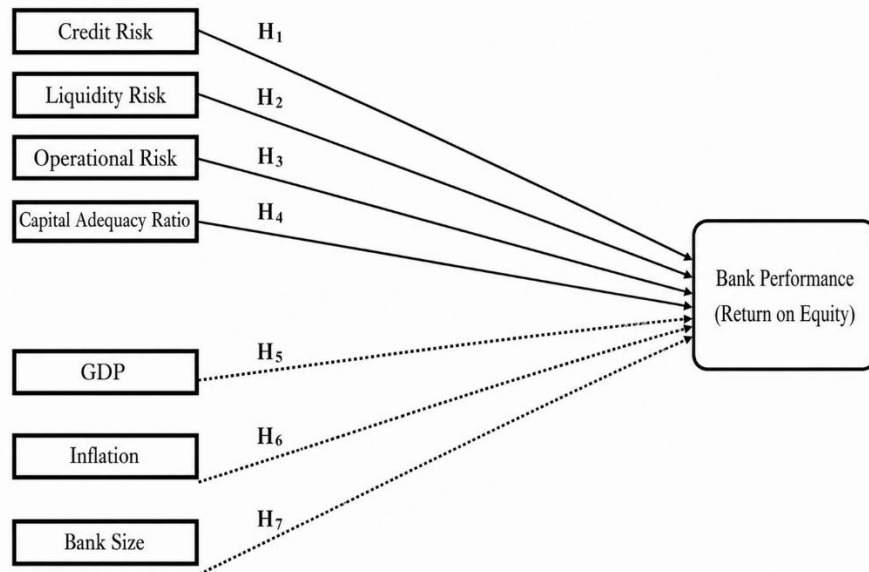


Figure 1. Research Model

Source: Research Data (Processed), 2026

This study is expected to make a theoretical contribution by enriching the empirical evidence regarding the effects of NPL, LDR, operational risk, and CAR on banking financial performance as proxied by ROE while also helping to clarify the inconsistencies in previous research findings. In practical terms, the results of this study are expected to serve as a basis for bank management to more effectively manage credit risk, liquidity risk, operational risk, and capital adequacy in order to improve the return on equity, as well as to serve as a reference for investors and stakeholders in assessing the financial condition and performance of banks

RESEARCH METHODS

This research assesses the statistical relationship between independent variables (including credit risk, liquidity risk, and operational risk) and their impact on financial performance, as measured by Return on Equity (ROE), and consists of a sample of thirty-two Indonesian Financial Institutions traded on the Jakarta Stock Exchange, over a period from 2020 to 2024. The analysis incorporates several control variables (such as GDP, inflation, and bank size), and uses E-views version 9 to conduct a panel data regression analysis. Figure 2 presents the variables being studied.

Table 1. Variable Measurement

Type of Variable	Proxy	Symbol	Formula	Source
Dependent variable	Return on Equity	ROE	$\frac{\text{Net Income After Tax}}{\text{Equity}}$	Ngo & Trinh, (2025)
Independent variable	Credit Risk	CR	$\frac{\text{Non Performing Loans}}{\text{Total Loans}}$	Ngo & Trinh, (2025)
	Liquidity Risk	LR	$\frac{\text{Total Loans}}{\text{Total Deposit}}$	Hacini, (2021)
	Operational Risk	OR	$\frac{\text{Operating Expenses}}{\text{Total Asset}}$	Qabajeh, Almajali,, (2023)
	Capital Adequacy Ratio	CAR	$\frac{\text{Total Capital}}{\text{Risk Weighted Asset}}$	Batekele & Maseka, (2025)
Control variable	Economic Growth	GDP	$\frac{\text{Real GDP}_t - \text{Real GDP}_{t-1}}{\text{Real GDP}_{t-1}}$	Abdelmoneim & Yasser, (2023)
	Inflation	INF	$\frac{\text{CPI this year} - \text{CPI Last Yea}}{\text{CPI Last Year}}$	Lilis et al., (2022)
	Bank Size	SIZE	$\ln(\text{Total Asset})$	Kharabsheh, (2026)

Source: Research Data (Processed), 2026

Research Regression Model. The panel data regression version utilized in previous research (Sharif et al., 2024) may be written as follow:

$$\text{ROE} = \beta_0 + \beta_1\text{CR} + \beta_2\text{LR} + \beta_3\text{OR} + \beta_4\text{CAR} + \beta_5\text{GDP} + \beta_6\text{INF} + \beta_7\text{SIZE} + \varepsilon$$

Description: ROE: Return on Equity, CR: Credit Risk, LR: Liquidity Risk, OR: Operational Risk, CAR: Capital Adequacy Ratio, GDP: Economic Growth, INF: Inflation, SIZE: Bank Size, ε : error term

Sampling Method. This study applied a purposive sampling technique based on a number of specific criteria that each company had to meet. The criteria used are listed as follows, with the selection being strictly directed at operational characteristics and financial conditions relevant to the needs of this research analysis.

Table 2. Sampling Criteria

Description	Amount
Commercial banks consistently listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period	48
Commercial banks that did not publish annual reports during the 2020–2024 period	(3)
Commercial banks that experienced losses during the 2020–2024 period	(13)
Total number of companies in the research sample	32
Total observation data (32 companies × 5 years of research)	160

Source: Research Data (Processed), 2026

RESULTS & DISCUSSION

Model Testing Steps in this Study: Chow Test. A Chow test is used for comparing two different models in the analysis of panel data using regression models. The two different models, in the case of this analysis, are the common effect model (CEM) and the fixed effect model (FEM). The CEM defines that all observation units will have the same parameters while the FEM provides for each observation unit to have different characteristics represented in the estimation of the model.

The results of the Chow test indicate that the chi-square statistic is 0.0000 and the probability of the f-statistic is 0.0000, both of which are less than 0.05. Therefore, based upon the results from the Chow test, the FEM would be the method that should be chosen for estimating. The analysis shows that each entity has its own unique analytical pattern caused by the different individual characteristics of the entity, which needs to be accounted for in the models in order to generate more accurate estimated results.

Hausman test. After completing the Chow test to determine if fixed effects should be used in combination with random effects or if they should be separately analyzed using just one method, a Hausman test was then completed to determine which measurement would provide the best fitting data. A measurement model based on a random effect assumes that entities have random variations in measurement and thus not correlated with the distribution of all independent variables; therefore, the variability associated with the estimated value is based on a chance factor between different units of measurement or study. Conversely, a fixed effect measurement model assumes that the attributes characterizing each entity are different from one another but constant over time; therefore, the difference between two entities would be due to these characteristics and the correlation of the data points collectively associated with the dependent variables.

Table 3. Result Test

Test	Result
Chow Test	
Chi-square	.000
F-statistic	.000
Hausman Test	
Probability	.509

Source: Research Data (Processed), 2026

According to the results of the Hausman Tests, a Cross-Sectional Random Probability of .0509 has been established (higher than .05), meaning that we accept the Null Hypothesis or reject the Alternative Hypothesis, thus indicating that the Random Effect Measurement Model is the primary Measurement Model for future analyses of the data collected for this research project. Since no further testing via LM Tests is needed for data from this research, LM Tests will not be done for this research project.

Determination coefficient test (Adj.R2). In this study, the dependent variable of the model is the Return on Equity (ROE) and its independent variables are credit risk; liquidity risk and capital adequacy ratio. The adjusted R² value of 0.388 suggests that 38.8% of the variation in ROE can be jointly explained by the explanatory variables incorporated in the regression model. Therefore, 38% of the variation in the dependent variable (ROE) is explained by the four independent variables within this model, while 62% of the variation in ROE is due to independent variables beyond this model and that could potentially impact the value of ROE.

Simultaneous Test (F Test). By analyzing the outcomes of the F-test, we can decide if our independent variable grouping has a meaningful impact on the dependent variable (Y) in question. If the p-value from the F-test (reflecting how statistically significant the whole model is) falls below .05; then there was an influence that all of the independent variables could have on the dependent variable and the regression model fits the data. If however; the p-value from the F-test exceeds .05, then all of the independent variables don't have an influence these independent variables don't interact with each other and the regression model therefore, does not fit the data very well. The purpose of the F-test is to assess how well our regression model fits the sample was compared against the true variance of what's in reality known within two distinct populations. In this study; the significance of the results collected from the instance of performing an F test was done at the .05 threshold.

Descriptive Statistics Results. Analyzing a bank's return on equity (ROE), credit risk, liquidity risk, operational risk, capital adequacy ratio, economic growth, inflation, and the size of banks indicates that financial institutions differ significantly (highly) in most of these areas. The sample banks give more detailed information about the financial situations and risk of each individual bank in our sample by providing average, maximum, minimum, and standard deviation values for each component of the financial institutions. Each individual bank will also have different levels of performance and risk, which can influence how banks interact with one

another financially and how their financial risk, control variables, and financial performance (as measured by ROE) will interact with each other.

Table 4. Descriptive Statistic

	ROE	CR	LR	ORK	CAR	GGDP	INF	SIZE
Mean	0.070422	0.057633	1.059600	0.059471	0.381858	0.070954	2.619484	31.97297
Median	0.058125	0.028655	0.817160	0.054245	0.272255	0.066560	1.860000	32.31267
Maximum	0.209360	0.629310	7.354570	0.206580	2.838780	0.153840	5.400000	35.42552
Minimum	0.001390	8.00E-05	0.026940	0.017450	0.038810	-0.024590	1.560000	27.99652
Std. Dev.	0.055543	0.095485	1.132389	0.027520	0.339101	0.058404	1.438542	1.781745

Source: Research Data (Processed), 2026

Individual Test (T-test). The objective of this study is to ascertain whether there is a significant relationship between the independent variable(s) and dependent variable(s) (AUDIT scores). The significance of this relationship will be based on a significance level of less than .05 (reject H₀), which indicates that there is a statistically significant difference between the two groups (reject H₀) and that there is a significant effect of an IV on a DV (reject H₀). Conversely, if the significance level exceeds .05 (accepting H₀) then, there is no statistically significant difference between the two groups (accept H₀) and there is no significant effect of an IV on a DV (accept H₀). Generally speaking, the greater the value of R-squared, the better the model fits the actual data (adjusted R-squared).

H1: Credit Risk Does Not Affects Financial Performance. The study's findings for the credit risk ratio (0.0475) are negatively related to the Return on equity (ROE) measurement. The p-value of 0.2130 indicates that this negative relationship is not statistically significant at general significance level 0.05. Therefore, we can conclude that credit risk does not have an impact on banks' overall performance (financially) regarding profit measures of ROE. Although this does not imply that the measure credit risk in Indonesian banks is unimportant, we can conclude that credit risk management in Indonesian banks is structured in such a way that any effect is indirect and inconsistent (statistically). This insignificant relationship may be explained by credit restructuring policies, CKPN (loss provisions), and OJK regulations that help Indonesian banks manage potential credit losses and reduce their direct impact on profitability. These mechanisms may prevent an increase in credit risk from immediately affecting banks' ROE. These findings may contradict those of previous research by Ngo & Trinh, (2025) who found that credit risk has been shown to have a highly significant negative impact on performance in such a way that increased risk will somewhat decrease bank ROE. An increase in non-performing loans will lead to increased provisions and decreased asset quality of the banks. Pandey, (2023) has shown through empirical research that credit risk (as measured by non-

performing loan (NPL) ratio) has not been found to have a significant impact on banks' ROE because an increase in non-performing loans does not automatically lead to a sudden drop in banks' equity-based profitability through ROE. Other important factors that can affect ROE, as well as capital structure and operational efficiency will also have a considerable impact on banks' returns.

H2: Liquidity Risk Affects Financial Performance. The research findings indicate an estimated liquidity risk coefficient (-0.0035), indicating that changes in liquidity risk will produce inverse changes in the performance of the bank as measured by ROE; if the liquidity risk is at relatively high levels, the performance of the bank will be adversely affected and vice versa. In addition, since the p-value of this coefficient was ≤ 0.05 (0.0419), the null hypothesis (H0) was rejected in favor of the alternative hypothesis (H1). Therefore, it can now be concluded that liquidity risk can be considered to significantly negatively impact ROE. With respect to liquidity management, banks should comply with all banking regulations, as well as maintain a good liquidity management program to ensure long-term profitability. Banks with effective liquidity management (i.e., holding sufficient liquidity vs. not enough) tend to have higher and more stable ROE for long periods of time. These results are consistent with the results of Ngo & Trinh, (2025) that reported liquidity risk to negatively affect financial performance (ROE). This finding is important because it denotes that as liquidity risk increases, ROE will decline as banks incur increased funding costs as they struggle to meet short-term

H3: Operational Risk Affects Financial Performance. The study concluded that the estimated coefficient b (for the association between operational risk and ROE bank performance) was -0.3640; operational risk (increased risk) negatively impacts ROE (increased risk). The hypothesis that there is a negative statistically significant link between operational risk and ROE was validated because $p\text{-value}=0.0000 < 0.05$; therefore, the null hypothesis (H0) was rejected, and alternative hypothesis (H1) was accepted. With respect to these findings, Ngo & Trinh, (2025) concluded that operational risk has a statistically significant negative effect on ROE. Ayomikun Seun et al., (2022) also found that operational risk management has a significant effect on bank performance, with the cost-to-income ratio having a negative significant impact on ROE. Bani Yousef (2023) further found that operational risk negatively affects the financial performance of banks. When operational risks increase (increased risk), this will result in lower profitability (ROE) due to an increase in operational expense. Higher operational risk can increase costs arising from inefficient processes, system problems, human errors, and other operational losses. These higher operational expenses can reduce the net income generated by banks, which subsequently decreases the return generated from shareholders' equity. Therefore, an increase in operational risk can negatively affect the financial performance of banks as measured by ROE.

H4: Capital Adequacy Ratio Affect Financial Performance. Analysis of the data yields a -0.0091 coefficient, which indicates that the Capital Adequacy Ratio (CAD) has an inverse relationship with return on equity (ROE) performance, meaning banks with high CAD ratios would have low ROE. Additionally, Capital Adequacy Ratios have a statistically significant

relationship with ROE ($p\text{-value} = 0.0002$), therefore the null hypothesis is rejected; and the alternative hypothesis accepted. It appears from this analysis to provide evidence of being a statistically significant negative correlation between Capital Adequacy Ratios and ROE. This negative relationship may be explained by the conservative approach adopted by banks with higher capital adequacy. Banks that maintain high levels of capital may have greater financial protection against risks, but excessive capital can also reduce the use of funds for lending and other income-generating activities. As a result, banks with higher CAR may have lower financial leverage and less efficient use of equity, which can ultimately reduce ROE. This finding is contrary to Kharabsheh, (2026), who performed an analysis of banks and determined that Capital Adequacy Ratios would positively influence profitability measured through return on assets (ROA) and return on equity (ROE). As presented in Alnajjar & Othman, (2021) study they found that the Capital Adequacy Ratio and ROE are negatively correlated, meaning as Capital Adequacy Ratio increases, returns measured using ROE decrease (or lower profitability for banks with a higher CAD).

H5: Economic Growth Does Not Affect Financial Performance. A coefficient value of 0.1130 shows that there is a positive correlation between greater economic growth and greater bank performance as measured by ROE (Return on Equity). The operator has accepted that H_0 (the null hypothesis) is accepted, as H_0 has a $p\text{-value}$ (0.1300) greater than the $p\text{-value}$ established for this analysis ($p \leq 0.05$). Therefore, the data does not support H_1 (the alternative hypothesis) - that greater economic growth increases ROE - and thus, economic growth has a positive influence on ROE directionally, but statistically, these results cannot prove H_1 . Therefore, even though economically growing countries see increases in bank performance, there is no statistically provable correlation between economic growth and bank performance. This result is different from De Leon, (2020), who found that GDP growth has a negative and statistically significant effect on ROE among ASEAN banks. Elekdag (2020) also found that real GDP growth is an important determinant of bank profitability, indicating that stronger economic conditions can influence banks' financial performance. Furthermore, found that GDP growth affects bank profitability, with ROE being one of the measures of profitability used in their study. These differences may indicate that the effect of economic growth on bank financial performance varies across countries, banking systems, and observation periods. Although economic growth may create better conditions for banking activities through increased lending opportunities, business activity, and customers' ability to repay loans, the insignificant result in this study indicates that the positive movement of economic growth was not strong enough to significantly influence the ROE of Indonesian banks during the observed period.

H7: Bank Size Does Affect Financial Performance. Based on the results of the analysis, the estimated coefficient of inflation is -0.0015, indicating that increases in inflation negatively affect bank performance (ROE) and vice versa. The null hypothesis was accepted based on the $p\text{-values}$ ($0.4674 > 0.05$), which means the hypothesis that inflation affects ROE is not supported. Therefore, it can be concluded that inflation has a negative relationship with ROE,

but the relationship is not statistically significant. Bergant (2025) found that bank profits are generally not significantly exposed to inflation, although the effect may differ depending on bank characteristics and economic conditions. Rumaly (2023) found that inflation has a negative and statistically significant effect on ROE in the commercial banking sector of Bangladesh. Gazi (2024) also examined inflation as a macroeconomic factor affecting bank profitability, measured by ROA and ROE. Similarly, Ngo & Trinh (2023) found that inflation has a significant positive effect on bank performance, suggesting that the effect of inflation on bank profitability may differ depending on economic conditions and the banking environment. These previous studies indicate that inflation can influence bank profitability through increased operating costs, reduced purchasing power, changes in interest rates, and changes in customers' borrowing and repayment capacity. However, the insignificant result in this study suggests that the effect of inflation on ROE may be mitigated by banks' ability to adjust interest rates and manage operating costs during the observed period.

Table 5. Panel Data Regression Analysis Result – Random Effect Model

Dependent Variable: Return on Equity (ROE)			
	Coefficient	Probability	Conclusion
Credit Risk	-0.0475	0.2130	Not significant to ROE
Liquidity Risk	-0.0035	0.0419	Significantly negative impact on ROE
Operational Risk	-0.3640	0.0000	Significantly negative impact on ROE
Capital Adequacy Ratio	-0.0091	0.0002	Significantly negative impact on ROE
Economic Growth	0.1130	0.1300	Not significant to ROE
Inflation	-0.0015	0.4674	Not significant to ROE
Bank Size	0.0162	0.000	Significantly positive impact on ROE

Source: Research Data (Processed), 2026

CONCLUSION & SUGGESTION

The results of this study show that financial risk management and bank-specific factors have different effects on the financial performance of conventional commercial banks in Indonesia, as measured by Return on Equity (ROE). Credit risk does not have a statistically significant effect on ROE, indicating that changes in credit risk do not necessarily lead to immediate changes in bank profitability. In contrast, operational risk has a negative and significant effect on ROE, suggesting that higher operational costs and inefficiencies can reduce bank profitability. Capital Adequacy Ratio (CAR) also has a significant negative effect on ROE, indicating that banks with higher capital adequacy may have lower returns on equity because excessive capital may reduce the funds available for lending and other income-generating activities. Economic growth and inflation show negative/positive directional relationships with ROE, respectively, but neither has a statistically significant effect on financial performance. Meanwhile, bank size has a positive and significant effect on ROE, indicating that larger banks tend to achieve higher financial performance due to economies of scale, wider access to funding, broader customer networks, and greater capacity to diversify their banking activities.

These findings are important for conventional commercial banks in Indonesia because effective financial risk management is essential to maintain profitability and financial stability. In particular, banks need to strengthen operational risk management, maintain an optimal level of capital adequacy, and use their resources efficiently to support productive lending and other income-generating activities. For credit risk, although the effect is not statistically significant in this study, banks should continue monitoring credit quality to prevent potential losses. The findings are also relevant for the Financial Services Authority (OJK) in evaluating the financial risk management and capital adequacy of Indonesian commercial banks. Future research may extend the observation period and include additional variables, such as liquidity risk, interest rates, exchange rates, and other bank-specific factors, to provide a broader understanding of the determinants of financial performance in Indonesian commercial banks.

Further analysis of the preliminary work and brainstorming different projects may provide additional insight into concepts used in this research studies. More specifically, the existing study used a short-term period to analyze financial risk and if a longer time frame could have provided insights into the relationship between the long-term trends and short-term data. Future studies should: (1) analyze multiple variables (e.g., economy, stocks, and other performance metrics) that were not included in the existing sample(s). This would allow us to measure the financial risk and how it relates to other metrics over time and thus allow researchers to conduct future studies on the relationship between these measurements in different environments and use sophisticated modeling techniques to explore the relationship between financial risk vs. financial performance. In summary, further research should consist of additional data being added to better understand the dynamics of financial risk from an economics perspective, while utilizing newer technologies (e.g., advanced models) to generate additional understanding of this relationship.

REFERENCES

- Abdelmoneim, Z., & Yasser, M. (2023). The impact of bank performance and economic growth on bank profitability: CAMEL model application in middle-income countries. *Banks and Bank Systems*, 18(3), 205–220. [https://doi.org/10.21511/bbs.18\(3\).2023.17](https://doi.org/10.21511/bbs.18(3).2023.17)
- Alnajjar, A. Z. A., & Othman, A. H. A. (2021). The Impact of Capital Adequacy Ratio (CAR) on Islamic Banks ' Performance in Selected MENA Countries. *International Journal of Business Ethics and Governance (IJBEG)*, 4(2), 116. <https://doi.org/10.51325/ijbeg.v4i2.70>
- Ayomikun Seun, B., Diping, Z., & Emmanuel Olusola, B. (2022). Research on Operational Risk Management in First Bank of Nigeria (FBN Bank). *Asian Journal of Probability and Statistics*, 17(2), 1–27. <https://doi.org/10.9734/ajpas/2022/v17i230416>
- Bani Yousef, A. N., Taha, A. P. D. R., Muhmad, S. N., & Zainul Abidin, A. F. (2023). Operational Risk And Financial Performance Of Banks In The Middle East And North Africa. *Journal of International Studies*, 19(2), 1–23. <https://doi.org/10.32890/jis2023.19.2.4>
- Batekele, H. K., & Maseka, L. T. (2025). *The Effect of Credit Risk Management on the Bank ' s Profitability : The Evidence from Commercial Banks in Democratic Republic of the Congo*. 13(3),

2143–2162. <https://doi.org/10.4236/ojbm.2025.133111>

Bergant, K., Hakamada, M., Kirti, D., & Mano, R. (2025). Inflation and Bank Profits. *Staff Discussion Notes*, 2025(001), 1. <https://doi.org/10.5089/9798400294723.006>

Chukwu, N., Muritala, A., Akande, O., & Adekunle, O. (2024). Impact Of Non-Performing Loan On Bank Performance In Nigeria. *Journal Of Law And Sustainable Development*, 1–21. <https://doi.org/https://doi.org/10.55908/sdgs.v12i6.3796>

de Leon, M. V. (2020). The impact of credit risk and macroeconomic factors on profitability: The case of the ASEAN banks. *Banks and Bank Systems*, 15(1), 21–29. [https://doi.org/10.21511/bbs.15\(1\).2020.03](https://doi.org/10.21511/bbs.15(1).2020.03)

Elekdag, S., Malik, S., & Mitra, S. (2020). Breaking the Bank ? A Probabilistic Assessment of Euro Area Bank. *Journal of Banking and Finance*, 120, 105949. <https://doi.org/10.1016/j.jbankfin.2020.105949>

Gazi, M. A. I., Karim, R., Senathirajah, A. R. bin S., Ullah, A. K. M. M., Afrin, K. H., & Nahiduzzaman, M. (2024). Bank-Specific and Macroeconomic Determinants of Profitability of Islamic Shariah-Based Banks: Evidence from New Economic Horizon Using Panel Data. *Economies*, 12(3). <https://doi.org/10.3390/economies12030066>

Hacini, I. (2021). The Impact of Liquidity Risk Management on the Financial Performance of Saudi Arabian Banks The Impact of Liquidity Risk Management on the Financial Performance of Saudi Arabian Banks. *Emerging Markets Journal*, 7(2). <https://doi.org/10.5195/emaj.2018.134>

Katusiime, L. (2021). COVID 19 and Bank Profitability in Low Income Countries: The Case of Uganda. *Journal of Risk and Financial Management*, 14(12), 588. <https://doi.org/10.3390/jrfm14120588>

Kharabsheh, B. (2026). The impact of bank-specific , industry-specific and macroeconomic variables on the profitability of Jordanian commercial banks. *Cogent Business & Management*, 13(1). <https://doi.org/10.1080/23311975.2026.2614786>

Lilis, L., Clarissa, N., Herliani, H., Dikson, D., & Wilson, J. (2022). Analisa kebijakan pemerintah terkait ancaman pengangguran pasca kenaikan inflasi di Jawa Barat. *Jurnal Ekonomi Dan Bisnis*, 11(4). <https://doi.org/https://doi.org/10.34308/eqien.v11i04.1353>

Mamuaja, R. C., Saerang, I. S., Tasik, H. H. D., Mamuaja, R. C., Saerang, I. S., & Tasik, H. H. D. (2024). Analisis Pengaruh Uang Beredar, Suku Bunga, Dan Inflasi Terhadap Pertumbuhan Kredit Perbankan Di Indonesia Sebelum Dan Sesudah Pandemi Covid-19. *Jurnal EMBA*, 12(3), 892–901. <https://doi.org/https://doi.org/10.35794/emba.v12i03.57736>

Margaretha, F. (2018). Masih Tepatkah Roa Sebagai Pengukuran Kinerja Keuangan Industri Asuransi Di Indonesia ? *Jurnal Manajemen Dan Pemasaran Jasa*, 11(1), 81–94. <https://doi.org/http://dx.doi.org/10.25105/jmpj.v10i1.2508>

Ngo, H. K., & Trinh, H. T. T. (2025). The impact of financial risks on bank performance : evidence from Bayesian analysis in Vietnam ' s commercial banks. *Discover Sustainability*. <https://doi.org/10.1007/s43621-025-01246-1>

OJK. (2025). *Statistik Perbankan Indonesia - Desember 2024*. Statistik Perbankan Indonesia - Desember 2024

Pandey, K. (2023). Impact of credit and market risk on bank performance. *International Journal of Finance and Commerce*, 5(3).

Pavic Kramaric, T., Miletic, M., & Pavic, I. (2017). Profitability Determinants of Insurance Markets in Selected Central and Eastern European Countries. *International Journal of Economic Sciences*, VI(2). <https://doi.org/10.20472/es.2017.6.2.006>

- Qabajeh, M., Almajali, D., Natour, A. R. Al, Alqsass, M., & Maali, H. (2023). The impact of operational risk on profitability: Evidence from banking sector in the MENA region. *Uncertain Supply Chain Management*, 11(4), 1459–1466. <https://doi.org/10.5267/j.uscm.2023.7.023>
- Rodríguez Valencia, L. (2025). Financial Performance and Corporate Governance on Firm Value: Evidence from Spain. *International Journal of Financial Studies*, 13(3). <https://doi.org/10.3390/ijfs13030123>
- Rumaly, N. (2023). Unlocking Profitability: Exploring the Impact of Bank-Specific and Macroeconomic Determinants on Return on Equity in Commercial Banking Sector of Bangladesh. *International Journal of Economics and Financial Issues*, 13(6), 107–115. <https://doi.org/10.32479/ijefi.15274>
- Sari, W. R., & Leon, F. M. (2023). Determinants of Banking performance in Association of Southeast Asian Nations (ASEAN) countries. *Jurnal Manajemen Dan Pemasaran Jasa*, 16(2), 271–286. <https://doi.org/http://dx.doi.org/10.25105/jmpj.v16i2.17867>
- Sharif, M. J., Lily, R. A., & Moniruzzaman, M. (2024). The Impact of Risk Management on the Financial Performance of the General Insurance Companies in Bangladesh. *BUFT Journal of Business & Economics*, 5(September), 1–20. <https://doi.org/10.58481/bjbe/2406>