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The Effect of Liquidity Risk, Credit Risk, and Operational Risk on Banking Financial Performance

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Abstract:
This study aims to examine the effect of liquidity risk, credit risk, and operational risk on the financial performance of banking companies listed on the Indonesia Stock Exchange during the 2020-2024 period. This study employs a quantitative method using a purposive sampling technique, resulting in 205 observations. However, based on the test results, 26 observations were identified as outliers and were therefore excluded from the research sample. Consequently, the number of observations used in the analysis was reduced to 179. Data analysis was conducted using panel data regression with the assistance of EViews 13 software. The results indicate that liquidity risk, as measured by the Loan to Deposit Ratio (LDR), has a positive effect on financial performance; credit risk, as measured by the Non-Performing Loan (NPL), has a negative effect on financial performance; and operational risk, as measured by Risk-Weighted Assets (RWA), has a positive effect on financial performance. These findings indicate that banking companies need to manage liquidity risk optimally, maintain credit risk at a controlled level, and improve the management of operational risk in order to support the enhancement of the company's financial performance.
Keywords: Liquidity Risk, Credit Risk, Operational Risk, Financial Performance, Banking.

BACKGROUND

The banking sector plays a crucial role in a country's economy as a financial intermediary that collects public funds and channels them through lending activities (Law No. 10 of 1998). This function positions banks as a key component of the financial system, where financial performance serves as an important indicator of banking soundness and stability (Christiyanto et al., 2023). Financial performance reflects a bank's ability to manage resources efficiently, maintain liquidity, and generate sustainable profitability, commonly measured through financial ratios such as profitability, liquidity, and efficiency indicators (Widhiari & Myeline, 2022).

However, the banking sector continues to face increasing challenges due to economic uncertainty, regulatory changes, and technological developments (Febriansyah & Faiqoh, 2025). Global events such as the COVID-19 pandemic, financial crises, and rising interest rates have heightened financial risks, while the implementation of Basel III and banking digital transformation has increased pressure on banks to strengthen capital, liquidity, and operational risk management (Maharani & Marheni, 2022; Wardhono, 2023). These challenges are reflected in the case of PT Bank KB Bukopin Tbk, which experienced financial difficulties due to a high gross Non-Performing Loan (NPL) ratio of 10.66% in 2021, resulting in increased loan loss provisions and a net loss of IDR 2.28 trillion before implementing strategies to reduce problematic loans (Pratama et al., 2021).

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Despite these challenges, the Indonesian financial services sector has remained resilient, supported by strong capital adequacy, stable liquidity, and controlled risk profiles (OJK, 2026). Nevertheless, banks must remain vigilant in managing various risks, particularly liquidity risk, credit risk, and operational risk, as these factors may directly influence financial performance. Strong financial performance enables banks to maintain sustainability, preserve public confidence, and support overall financial system stability. In this context, the Consumer Confidence Index (CCI) provides an important indicator of public economic expectations, which may influence saving and borrowing behavior and indirectly affect banking performance (Purwanti et al., 2023).

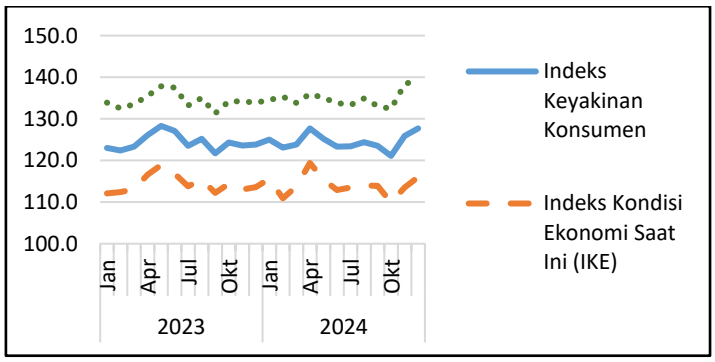


Figure 1. Consumer Confidence Index
Source: Data processed by the researcher (Bank Indonesia, 2026)

The Consumer Confidence Index (CCI) remained at an optimistic level (above 100) during 2023-2024, reflecting positive public perceptions of current economic conditions and future prospects (Bank Indonesia, 2025). This optimism may encourage saving and credit activities, thereby strengthening public trust in banks as financial intermediaries and supporting banking stability and performance (Rakhmawati et al., 2022). However, changes in household financial behavior, reflected in shifts in the allocation of income for consumption, savings, and loan repayments, indicate that economic uncertainty, inflationary pressures, and interest rate fluctuations continue to influence financial decisions. These behavioral changes may affect banks' ability to collect deposits and distribute credit, ultimately influencing their financial performance.

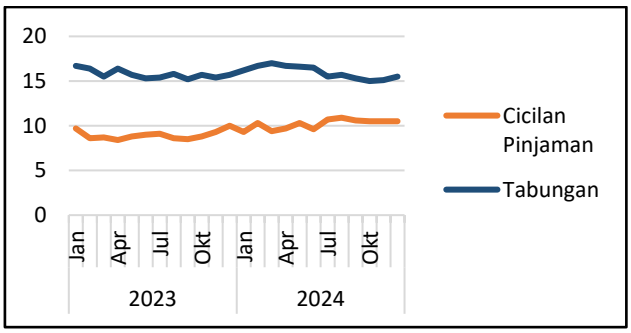


Figure 2. Growth in Consumer Spending (%)
Soure: Data processed by the researcher (Bank Indonesia, 2026)

Household financial behavior during 2023-2024 showed changes in savings and credit allocation. The proportion of savings declined from 16.7% in January 2023 to 15.5% in December 2024, while loan installment payments increased from 9.7% to 10.5% during the same period (Bank Indonesia, 2025). These trends indicate greater household reliance on credit financing, while the decline in savings may reduce third-party funds, which are the primary source of bank funding. Consequently, this condition may affect banks' liquidity management and profitability, reflecting the potential impact of liquidity risk on financial performance.

The increasing reliance on credit may also raise credit risk if repayment capacity is insufficient, potentially deteriorating asset quality and reducing profitability. Furthermore, higher lending activities require stronger monitoring systems, information technology infrastructure, and internal controls to manage operational complexity, particularly amid increasing digital transactions (Buwono et al., 2022). Failure to manage these risks effectively may increase operational costs and reduce efficiency, thereby affecting banking financial performance (Alcober et al., 2020). Therefore, banking performance may fluctuate depending on the ability of banks to manage internal and external risks (Rahmadani & Zannati, 2022).

Previous studies have reported inconsistent findings regarding the effects of liquidity risk, credit risk, and operational risk on banking financial performance. Lisbet and Viola (2023) found that liquidity and credit risks had no significant effect, while operational risk negatively affected financial performance. Meanwhile, Cecilia Juan and Teguh Erawati (2020) found that credit and liquidity risks negatively influenced performance, whereas Ragil Sihotang and Gugsanda Suria Manda (2022) reported a negative effect of credit risk but a positive effect of liquidity risk. These inconsistencies may arise from differences in research periods, measurement methods, objects, and sample characteristics. Therefore, further research is needed to provide stronger empirical evidence regarding the relationship between banking risks and financial performance, particularly among banking companies listed on the Indonesia Stock Exchange (IDX) during 2020-2024.

THEORETICAL FRAMEWORK

Stakeholder Theory

The stakeholder theory was introduced by R. Edward Freeman in his book Strategic Management: A Stakeholder Approach (1984). This theory emphasizes that companies are not only responsible for their own interests but must also create value for various stakeholders, including shareholders, creditors, governments, communities, and other related parties. The theory is rooted in the concept of corporate social responsibility, which highlights the importance of business activities being aligned with social, legal, environmental, and sustainability considerations (Hundal et al., 2022).

In the accounting perspective, financial performance reflects a company's ability to manage resources effectively and fulfill stakeholder expectations. For banks, profitability and financial stability serve as important indicators of their success in maintaining stakeholder trust and ensuring business sustainability (Sardar et al., 2023). Banks that effectively manage their resources and risks are more likely to enhance stakeholder confidence, which may contribute to improved financial performance. Conversely, ineffective resource management may reduce stakeholder trust and negatively affect financial outcomes. Therefore, stakeholder theory provides a relevant framework for explaining the relationship between internal banking

conditions, risk management, and financial performance as a form of accountability to stakeholders.

Financial Intermediation Theory

Financial intermediation theory was initially developed in classical economic literature by economists such as John Maynard Keynes (1936), who emphasized the role of financial institutions in connecting surplus fund holders and deficit fund users (Bitar et al., 2020). The theory was further developed by Gurley and Shaw (1960), who introduced the concept of financial institutions as intermediaries within the financial system. Later, Diamond (1984) expanded this perspective through the concepts of delegated monitoring and information asymmetry, explaining that banks play an important role in reducing information gaps between lenders and borrowers.

Financial intermediation theory explains that banks function as intermediaries by collecting public funds through deposits and redistributing them to parties requiring funds through lending activities (Adusei, 2021). This function requires banks to effectively manage risks arising from fund collection and credit distribution. Banks that are able to optimize their intermediation activities while maintaining sound risk management are more likely to achieve stable financial performance. Effective credit management can increase interest income, reduce default risks, minimize operational costs, and maintain asset quality and profitability. Therefore, financial intermediation theory provides an important foundation for understanding the relationship between banking functions, risk management, and financial performance.

Financial Performance

Financial performance reflects a company's ability to manage its resources effectively to generate profitability and maintain business sustainability. In the banking sector, financial performance is an important indicator of bank soundness and the effectiveness of its role as a financial intermediary. It is generally evaluated through financial statement analysis, which provides information regarding financial conditions, operational results, and financial stability (OJK, 2024; Reysa et al., 2022).

Financial performance represents a company's success in managing financial activities and resources to achieve organizational objectives (Fahmi, 2017; Kasmir, 2019; Munawir, 2014). It serves as an important reference for stakeholders, including management, investors, creditors, and regulators, in evaluating profitability, risk, and financial stability (Devi & Aisyah, 2025). In banking research, financial performance is commonly measured using profitability indicators, particularly Return on Assets (ROA). ROA measures a bank's ability to generate profits from its total assets, where higher ROA indicates more efficient asset utilization and better management effectiveness in achieving profitability (Pratiwi et al., 2024).

$$Return\ on\ Assets\ (ROA) = \frac{Net\ Income}{Total\ Assets}\ x\ 100\%$$

Liquidity Risk

Liquidity risk refers to the inability of banks to meet short-term obligations due to inadequate liquidity management (Putri & Hidayat, 2022). In the banking sector, liquidity risk is closely related to the bank's ability to maintain sufficient funds to meet customer withdrawals and other

financial obligations without disrupting operational activities. According to OJK Regulation No. 14/SEOJK.03/2017, liquidity risk arises when banks face difficulties in fulfilling matured obligations through available cash flows, funding sources, or high-quality liquid assets. Effective liquidity management is essential because banks act as financial intermediaries that collect public funds and distribute them through lending activities.

In this study, liquidity risk is measured using the Loan to Deposit Ratio (LDR), which reflects the proportion of funds collected from third parties that are allocated as loans. LDR illustrates the bank's ability to manage the balance between lending activities and available liquidity. A higher LDR indicates greater utilization of collected funds for credit distribution, which may increase profitability through higher interest income but may also increase liquidity pressure if not supported by adequate funding. Conversely, a lower LDR may indicate excessive liquidity but potentially reflects inefficient fund utilization. Therefore, maintaining an optimal LDR level is important to ensure effective intermediation, financial stability, and sustainable banking performance.

$$Loan\ to\ Deposit\ Ratio\ (LDR) = \frac{Total\ Loans}{Total\ Third - Party\ Funds\ (Deposits)}\ x\ 100\%$$

Credit Risk

Credit risk is a major risk in the banking sector arising from the possibility of borrowers failing to fulfill their obligations to banks (Sulfira et al., 2024). According to OJK Regulation No. 18/POJK.03/2016, credit risk occurs when debtors or other counterparties fail to meet their obligations, potentially affecting asset quality and financial performance. Ineffective credit risk management may increase non-performing loans (NPLs), requiring higher loan loss provisions and reducing bank profitability (Kasmir, 2019; Liana et al., 2025).

In this study, credit risk is measured using the Non-Performing Loan (NPL) ratio, which indicates the proportion of problematic loans to total loans. A higher NPL reflects greater credit risk and deteriorating loan quality, which may negatively affect banking financial performance.

$$Non - Performing\ Loan\ (NPL) = \frac{Non - Performing\ Loans}{Total\ Loans}\ x\ 100\%$$

Operational Risk

Operational risk refers to the potential losses arising from inadequate internal processes, human errors, system failures, or external events that may disrupt banking activities (Ilahi, 2024). According to OJK Regulation No. 18/POJK.03/2016, operational risk arises from failures in internal processes, human resources, information systems, or external factors that affect bank operations. These risks may reduce financial performance if not managed effectively due to potential losses, increased risk exposure, and operational disruptions.

In this study, operational risk is measured using Operational Risk-Weighted Assets (ATMR Operasional), which represent the amount of capital exposure required to cover potential losses arising from operational activities. Higher ATMR Operasional indicates greater operational risk exposure, reflecting increased vulnerability to operational failures that may negatively affect profitability. Therefore, effective operational risk management is essential to maintain banking stability and support financial performance.

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$$Operational\ RWA = Average\ Gross\ Income \times Beta\ Factor \times 12{,}5$$

HYPOTHESIS DEVELOPMENT

The Effect of Liquidity Risk on Financial Performance

Liquidity risk reflects a bank's ability to fulfill short-term obligations while maintaining effective intermediation activities. Based on stakeholder theory and financial intermediation theory, effective liquidity management enables banks to maintain stakeholder trust, optimize fund allocation, and increase profitability through productive asset utilization (Eltweri et al., 2024; Noman et al., 2021).

Previous studies have shown that liquidity risk may influence banking financial performance. Widiastuti and Cahaya (2024), Grilseda and Riyadi (2021), Desiko (2020), Arini and Sparta (2023), and Tahu et al. (2025) found that effective liquidity management positively affects bank performance by supporting credit distribution and income generation. However, excessive liquidity risk may disrupt financial stability, while excessive liquidity may indicate inefficient fund utilization. Therefore, optimal liquidity management is essential to balance liquidity needs and profitability. Based on these arguments, the following hypothesis is proposed:

H1: Liquidity risk has a positive effect on financial performance.

The Effect of Credit Risk on Financial Performance

Credit risk reflects the potential loss arising from borrowers' inability to fulfill their obligations. Based on stakeholder theory, effective credit risk management is essential for maintaining stakeholder trust by ensuring sound lending quality. Meanwhile, financial intermediation theory explains that credit risk is an inherent consequence of banks' role in channeling funds from surplus units to deficit units through lending activities. Therefore, effective credit assessment and monitoring are necessary to minimize non-performing loans (NPLs) and maintain financial performance (Rahman et al., 2022; Ozili, 2023).

Previous studies have consistently found that credit risk negatively affects banking financial performance. Pujo Gunarso et al. (2023), Widiastuti and Cahaya (2024), Tahu et al. (2025), Arini and Sparta (2023), and Adhim and Mulyati (2024) showed that higher NPL levels reduce profitability due to declining interest income and increasing loan loss provisions. Thus, increasing credit risk indicates ineffective credit management, which may weaken bank profitability and stakeholder confidence. Based on theoretical arguments and previous empirical evidence, the following hypothesis is proposed:

H2: Credit risk has a negative impact on financial performance.

The Impact of Operational Risk on Financial Performance

Operational risk refers to potential losses arising from failures in internal processes, human errors, system failures, or external events that may disrupt banking activities. Based on stakeholder theory, effective operational risk management is important to maintain stakeholder trust by ensuring reliable and sustainable banking operations. From the perspective of financial intermediation theory, banks require effective operational management to support their role as

financial intermediaries in collecting funds, distributing credit, and managing financial transactions (Sutrisno & Widarjono, 2023).

Operational risk can be reflected through Operational Risk-Weighted Assets (ATMR Operasional), which represent the level of risk exposure arising from banks' operational activities. Higher operational risk exposure indicates greater potential losses from operational failures, which may reduce efficiency and negatively affect profitability. Conversely, effective management of operational risk can strengthen operational resilience and support financial performance. Previous studies by Pujo Gunarso et al. (2023), Widiastuti and Cahaya (2024), Tahu et al. (2025), and Adhim and Mulyati (2024) found that operational risk negatively affects banking financial performance. Therefore, based on theoretical arguments and previous empirical findings, the following hypothesis is proposed:

H3: Operational risk has a negative impact on financial performance.

METHOD

This study employs a quantitative approach using financial statements and annual reports of banking companies listed on the Indonesia Stock Exchange (IDX) during 2020-2024. The sample was selected using purposive sampling based on predetermined criteria. Outlier detection was conducted using Absolute Standardized Residual (ABSZRESID) in EViews 13, where observations with |ZRESID| > 2.5 were identified as outliers (Hair et al., 2022). Outlier removal was performed at the observation level rather than the firm level, resulting in an unbalanced panel dataset to preserve relevant information and avoid potential selection bias (Adams et al., 2019). After the outlier treatment, the final sample consisted of 179 observations. This procedure was conducted to minimize the influence of extreme observations and improve the reliability of regression model estimation.

Table 1. Results of Sample Selection Criteria

No.	Sample Criteria	Amount
1.	Population: Banking companies listed on the Indonesia Stock Exchange (IDX) for the 2020–2024 period.	48
2.	Banking companies that are not listed on the Indonesian Stock Exchange and do not have complete research data for the 2020-2024 period.	(4)
3.	Banking companies that are either Sharia banks or Sharia units.	(3)
Number of Research Samples		**41**
Number of Years of Observation		**5**
Volume of Research Data		**205**

Source: Data processed by the researcher (2026).

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RESULT

1. Descriptive Statistical Analysis

Table 2. Descriptive Statistical Analysis

	N	*Min*	*Max*	*Mean*	*Std. Dev*	*Prob.*
ROA	179	-0.038	0.048	0.012	0.012	0.000
LDR	179	0.205	3.736	0.864	0.337	0.000
NPL	179	0.000	0.223	0.031	0.025	0.000
ATMR	179	1.069	1.349	1.219	2.549	0.000

Source: Processed by the researcher using EViews 13 (2026).

Financial Performace

Financial performance reflects a company's ability to generate profits through effective asset management (Fitriani & Herwiyanti, 2023). In this study, financial performance is measured using Return on Assets (ROA), which represents the effectiveness of banks in utilizing their total assets to generate earnings. Based on the descriptive statistics, ROA consists of 179 observations after outlier removal, with a mean value of 0.012, a minimum value of -0.038, a maximum value of 0.048, and a standard deviation of 0.012. The similar values between the mean and standard deviation indicate a moderate level of variation, suggesting that ROA values among sampled banks are relatively concentrated around the average value.

Liquidity Risk

Loan to Deposit Ratio (LDR) is used as an indicator to assess banks' ability to utilize third-party funds through lending activities. A higher LDR reflects greater allocation of funds into loans; however, excessive LDR levels may increase liquidity risk due to limited available funds to meet short-term obligations. Based on the descriptive statistics, the LDR variable consists of 179 observations after outlier treatment, with a mean value of 0.864, a minimum value of 0.205, a maximum value of 3.736, and a standard deviation of 0.337. The lower standard deviation compared to the mean indicates relatively low data dispersion, suggesting that LDR values among sampled banks are relatively homogeneous and concentrated around the average value.

Credit Risk

Credit risk arises when borrowers fail to fulfill their payment obligations to banks according to agreed terms. In this study, credit risk is measured using the Non-Performing Loan (NPL) ratio, which represents the proportion of non-performing loans to total loans. A higher NPL indicates greater credit risk due to an increase in problematic loans. Based on the descriptive statistics, the NPL variable consists of 179 observations after outlier treatment, with a mean value of 0.031, a minimum value of 0.000, a maximum value of 0.223, and a standard deviation of 0.025. The lower standard deviation compared to the mean indicates relatively low data dispersion, suggesting that NPL values among sampled banks are relatively stable and concentrated around the average value.

Operational Risk

Operational risk refers to the risk arising from inadequate or failed internal processes, human resources, systems, or external events that may affect banking operations. In this study, operational risk is measured using Operational Risk-Weighted Assets (ATMR Operasional), which reflects the level of operational risk exposure faced by banks. A higher ATMR indicates greater operational risk exposure, potentially reducing the availability of capital for productive activities. Based on the descriptive statistics, the ATMR Operasional variable consists of 179

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observations after outlier treatment, with a mean value of 1.219, a minimum value of 1.069, a maximum value of 1.349, and a standard deviation of 2.549. The standard deviation exceeding the mean indicates a high level of data dispersion, suggesting considerable variation in operational risk exposure among sampled banks during the research period.

2. Classical Asumption Test

a. Normality Test

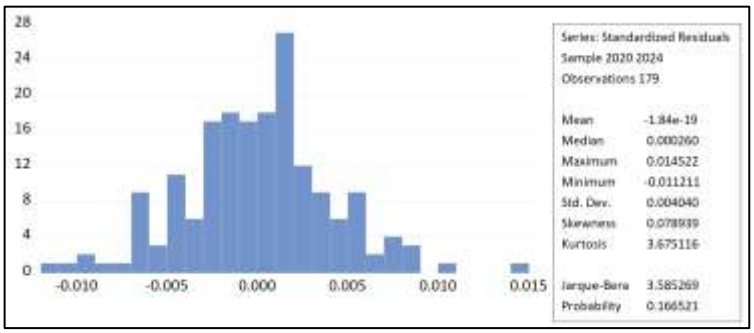


Figure 3. Normality Test

Source: Processed by the researcher using EViews 13 (2026).

The normality test results show that the probability value after outlier treatment is 0.166, which is higher than the significance level of 0.05 (0.166 > 0.05). Therefore, the data observations after outlier treatment are considered to be normally distributed.

b. Multicolinearity Test

Table 3. Multicolinearity Test

Correlation			
	LDR	NPL	ATMR
LDR	1.000	0.133	-0.063
NPL	0.133	1.000	-0.102
ATMR	-0.063	-0.102	1.000

Source: Processed by the researcher using EViews 13 (2026).

The partial correlation values of all variables are below the threshold of 0.80. Therefore, H_0 is accepted, indicating that there is no multicollinearity problem among the independent variables.

c. Heteroscedasticity Test

Table 4. Heteroscedasticity Test

	Coefficient	*Std. Error*	*t-Statistic*	*Prob.*
C	0.004	0.001	4.586	0.000
LDR	-0.001	0.001	-0.476	0.635
NPL	0.001	0.148	0.013	0.989
ATMR	-3.809	1.959	-1.950	0.053

Source: Processed by the researcher using EViews 13 (2026).

The heteroskedasticity test results show that the probability values for liquidity risk (LDR), credit risk (NPL), and operational risk (ATMR) are 0.635, 0.989, and 0.053, respectively, which are all greater than the 0.05 significance level. Therefore, it can be concluded that the regression model does not exhibit heteroskedasticity problems.

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d. Autocorrelation Test

Table 5. Autocorrelation Test

Durbin-Watson (DW)
2.211

Source: Processed by the researcher using EViews 13 (2026).

The autocorrelation test results show a Durbin-Watson (DW) value of 2.211, which falls within the inconclusive range ($1.752 < 2.211 < 2.249$). This indicates that no definitive conclusion can be drawn regarding the presence of autocorrelation. However, there is no strong evidence of serious autocorrelation problems in the regression model; therefore, further analysis can proceed.

3. Panel Data Regression Model Analysis

This study employs panel data regression analysis to examine the effects of liquidity risk, credit risk, and operational risk on financial performance.

$$\mathrm{ROA}_{it} = 0{,}008 + 0{,}015(\mathrm{LDR}_{it}) - 0{,}337(\mathrm{NPL}_{it}) + 8{,}589(\mathrm{ATMR}_{it}) + \varepsilon_{it}$$

The results show that liquidity risk proxied by the Loan to Deposit Ratio (LDR) and operational risk proxied by the Risk-Weighted Assets for operational risk (ATMR) have a positive influence on financial performance, whereas credit risk proxied by the Non-Performing Loan (NPL) has a negative effect. Specifically, operational risk has the strongest positive impact on financial performance, while credit risk contributes the most to decreasing financial performance.

4. F-Test (Model Feasibility Test)

The model feasibility test is conducted to evaluate whether the independent variables simultaneously have a significant effect on the dependent variable. This test assesses whether the regression model is appropriate for explaining the relationships among research variables (Kim, 2019). A model is considered feasible when the Prob. (F-statistic) value is below the 0.05 significance level, indicating that all independent variables jointly influence the dependent variable significantly (Hair et al., 2021).

Table 6. F-Test

F-statistic	27.093
Prob (F-statistic)	0.000

Source: Processed by the researcher using EViews 13 (2026).

The F-test results show that the Prob. (F-statistic) value is 0.000, which is lower than the significance level of 0.05. Therefore, the independent variables simultaneously have a significant effect on the dependent variable.

5. R^2 Test (Coefficient Determination Test)

The coefficient of determination test (R^2) is conducted to assess the extent to which the research model explains variations in the dependent variable (Douglas C. Montgomery et al., 2021). The R^2 value represents the proportion of the dependent variable's variation explained by the independent variables, while the remaining variation is influenced by other factors outside the model. A higher R^2 value indicates greater explanatory power of the model. The results of the R^2 test based on the Fixed Effect Model estimation are presented in the following table.

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Table 7. R^2 Test

Adjusted R-Squared	0.860

Source: Processed by the researcher using EViews 13 (2026).

Based on the results, the adjusted R-squared value is 0.860, indicating that 86% of the variation in banking financial performance can be explained by liquidity risk, credit risk, and operational risk included in the research model. The remaining 14% is explained by other factors outside the model that are not examined in this study.

6. t-Test (Hypothesis Testing)

The partial test (t-test) is conducted to examine the individual effect of each independent variable on the dependent variable. This test determines whether each independent variable significantly contributes to explaining changes in the dependent variable. According to Kim (2019), an independent variable is considered significant when its probability value (p-value) is below the 0.05 significance level. The results of the partial test are presented in the following table.

Table 8. t-Test

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.008	0.002	4.873	0.000
LDR	0.015	0.002	9.911	0.000
NPL	-0.337	0.028	-11.886	0.000
ATMR	8.589	3.739	2.303	0.023

Source: Processed by the researcher using EViews 13 (2026).

The partial test results indicate that liquidity risk, credit risk, and operational risk have significant effects on financial performance. Liquidity risk has a probability value of 0.000 with a regression coefficient of 0.015, indicating a positive and significant effect on financial performance. Therefore, the first hypothesis stating that liquidity risk positively affects financial performance is accepted. Credit risk also has a probability value of 0.000 with a regression coefficient of -0.337, indicating a negative and significant effect on financial performance; thus, the second hypothesis is accepted. Meanwhile, operational risk has a probability value of 0.023 with a regression coefficient of 8.589, indicating a positive and significant effect on financial performance. This finding contradicts the third hypothesis, which proposed that operational risk negatively affects financial performance; therefore, the third hypothesis is rejected.

DISCUSSION

The Effect of Liquidity Risk on Financial Performance

The empirical results indicate that liquidity risk has a positive and significant effect on banking financial performance measured by Return on Assets (ROA). Therefore, the first hypothesis (H1), which states that liquidity risk positively affects banking financial performance, is accepted.

Based on the Bank Soundness Rating Criteria regulated under POJK No. 4/POJK.03/2016, liquidity risk measured by the Loan to Deposit Ratio (LDR) reflects the effectiveness of banks in managing third-party funds through credit distribution. The distribution of research samples shows that most banks are categorized as having a healthy liquidity condition, with 34%

classified as healthy, 25% as fairly healthy, and 23% as very healthy. Furthermore, 82% of observations fall within the ideal LDR range of 50%-100%. This condition indicates that most banks are able to perform their intermediation function effectively by transforming collected funds into productive assets while maintaining adequate liquidity levels.

The dominance of banks with healthy liquidity conditions provides an explanation for the positive relationship between LDR and ROA. An increase in LDR indicates that banks are more capable of utilizing third-party funds for credit expansion, thereby reducing the risk of idle funds and increasing interest income. Since credit growth remains within a controlled risk level, higher lending activities can contribute to increased profitability without creating excessive liquidity pressure.

This finding supports the stakeholder theory perspective, which emphasizes that banks are responsible for maintaining the interests of various stakeholders, including customers, creditors, investors, and regulators through effective risk management. In the context of liquidity risk, the ability of banks to balance liquidity requirements and productive fund allocation reflects sound management practices that enhance stakeholder confidence and financial performance (Eltweri et al., 2024).

Furthermore, the result is consistent with financial intermediation theory, which explains that banks function as intermediaries between surplus and deficit fund holders. A higher LDR indicates that banks successfully channel a greater proportion of collected funds into productive credit activities, generating higher interest income and ultimately improving ROA. Therefore, liquidity risk within an appropriate level does not necessarily reduce financial performance; instead, it may represent effective utilization of available resources.

The findings suggest that well-managed liquidity risk enables banks to optimize the trade-off between liquidity preservation and profitability enhancement. Similar results were reported by Noman et al. (2021), who found that effective liquidity management through optimal credit distribution can improve banking profitability. This study is also consistent with Tahu et al. (2025) and Widiastuti Murtiningrum and Yohanes Ferry Cahaya (2024), who demonstrated that LDR has a positive and significant effect on ROA due to improved efficiency in converting third-party funds into productive earning assets. However, this finding differs from Ratih Nurmalita Hapsari (2022), who found that liquidity risk does not significantly influence banking financial performance.

Overall, this study confirms that effective liquidity risk management is an important determinant of banking profitability. Banks that are able to maintain sound liquidity levels while maximizing credit distribution have greater potential to improve financial performance, as reflected by higher ROA.

The Effect of Credit Risk on Financial Performance

The empirical results indicate that credit risk has a negative and significant effect on banking financial performance measured by the Non-Performing Loan (NPL) ratio. Therefore, the second hypothesis (H2), which states that credit risk negatively affects banking financial performance, is accepted.

The findings demonstrate that an increase in credit risk, reflected by a higher NPL ratio, reduces banks' ability to generate profits from their assets. Higher levels of non-performing loans

indicate an increase in the probability of debtor default, which can reduce interest income and increase credit loss provisions, thereby decreasing profitability as measured by ROA (Rahman et al., 2022).

This result supports the stakeholder theory, which emphasizes that banks must maintain the interests of various stakeholders, including customers, creditors, investors, and regulators through effective risk management. The ability to maintain credit quality is a crucial factor in preserving stakeholder confidence, as poor credit management may generate financial losses and negatively affect banking performance.

Furthermore, the findings are consistent with financial intermediation theory, which explains that banks act as intermediaries by collecting funds from surplus units and distributing them to deficit units through lending activities. However, the effectiveness of this intermediation function depends not only on credit expansion but also on banks' ability to conduct proper credit assessments, select qualified borrowers, and continuously monitor credit quality. An increase in NPL reflects deterioration in loan quality, leading to higher risk management costs, increased allowance for impairment losses, and reduced net income, ultimately lowering ROA.

Based on the Bank Soundness Rating Criteria under POJK No. 4/POJK.03/2016, credit risk measured by NPL is categorized into five health levels. The sample distribution indicates that most banks are classified as healthy and very healthy, with 55% categorized as healthy, 36% as very healthy, and 6% as fairly healthy. Meanwhile, only a small proportion of observations fall into the less healthy (2%) and unhealthy (1%) categories. Although the overall NPL level remains within the regulatory threshold, the negative relationship between NPL and ROA indicates that any increase in non-performing loans still creates pressure on bank profitability. This occurs because NPL reflects not only the absolute health condition of banks but also changes in credit quality across banks and reporting periods.

The findings are consistent with previous studies by Pujo Gunarso et al. (2023), Widiastuti and Cahaya (2024), and Tahu et al. (2025), which found that NPL has a negative and significant effect on banking financial performance. These studies suggest that higher credit risk reduces profitability due to declining interest income and increasing costs associated with managing problematic loans. Similar conclusions were also reported by Thania Putri Arini and Sparta (2023) and Chairul Adhim and Mulyati (2024), confirming that effective credit risk management is essential for maintaining banking profitability. However, this finding differs from Maulidah et al. (2022), who found that credit risk does not significantly affect banking financial performance.

Overall, this study confirms that credit risk management plays an important role in maintaining banking profitability. Banks with stronger credit quality control are better able to minimize potential losses from non-performing loans, sustain financial performance, and maintain stakeholder confidence.

The Effect of Operational Risk on Financial Performance

The empirical results indicate that operational risk has a positive and significant effect on banking financial performance measured by Risk-Weighted Assets (RWA) for operational risk.

Therefore, the third hypothesis (H3), which states that operational risk negatively affects banking financial performance, is rejected.

The descriptive statistics show that operational risk measured by RWA has an average value of IDR 12.09 trillion, with a maximum value of IDR 133.83 trillion and a minimum value of IDR 10.63 billion. The wide range of RWA values reflects differences in operational scale, business complexity, asset composition, and risk exposure among banking companies. Furthermore, the distribution of observations indicates a relatively balanced condition, with 90 observations having RWA values above the average and 89 observations below the average, suggesting considerable variation in operational risk exposure among banks.

The positive and significant relationship between RWA and ROA indicates that higher operational risk exposure in this study is associated with improved banking profitability. This finding suggests that increased RWA does not necessarily represent inefficiency or excessive risk, but may reflect greater operational capacity, business expansion, and the utilization of productive assets. When banks are able to manage operational risks effectively through adequate risk management systems and internal controls, increased risk exposure can generate additional economic benefits and improve financial performance.

This finding can be explained through financial intermediation theory, which emphasizes the role of banks as intermediaries that transform collected funds into productive assets through lending and investment activities. Increased intermediation activities, such as credit expansion and asset growth, may increase risk-weighted assets due to higher risk exposure. However, these activities also provide opportunities for banks to generate higher income through productive asset utilization, thereby contributing to improved ROA.

Furthermore, the result supports the stakeholder theory perspective, which highlights the responsibility of banks to create value for stakeholders through effective governance and risk management. Although higher RWA reflects greater operational complexity and risk exposure, proper risk management practices enable banks to control potential losses while maintaining profitability and stakeholder confidence.

The positive effect of operational risk on financial performance also aligns with the concept of banking risk management, which states that increased business activities are often accompanied by higher risk exposure. However, when such risks are supported by effective internal control mechanisms, governance structures, and risk mitigation strategies, they can contribute to business growth and profitability. Thus, higher RWA in this study more likely represents increased productive capacity rather than operational failure (Haryanto, 2016).

These findings are consistent with Sunaryo et al. (2021), who found that operational risk has a positive and significant effect on banking profitability. The study suggests that operational risk does not always reduce financial performance when banks are capable of managing risk effectively. In contrast, this finding differs from Yuwita Ariessa Pravasanti (2020), who found that operational risk negatively affects banking financial performance.

Overall, this study demonstrates that operational risk exposure, as reflected by RWA, can positively contribute to banking profitability when accompanied by effective risk management practices. Banks that are able to balance risk exposure with operational efficiency and productive asset management have greater potential to improve ROA.

CONCLUSION

This study examines the effects of liquidity risk, credit risk, and operational risk on the financial performance of banking companies operating in Indonesia during the research period. The sample consists of 41 banking companies selected from 48 financial sector companies listed on the Indonesia Stock Exchange (IDX) during 2020-2024, resulting in 179 observations after the removal of outlier data. The data were analyzed using panel data regression with EViews 13. Based on the empirical findings, the study concludes that:

1. Liquidity risk, measured by the Loan to Deposit Ratio (LDR), has a positive and significant effect on financial performance measured by Return on Assets (ROA). This indicates that effective liquidity management through optimal credit distribution contributes to improving banking profitability.
2. Credit risk, measured by the Non-Performing Loan (NPL) ratio, has a negative and significant effect on financial performance measured by ROA. This finding suggests that increasing non-performing loans reduces banks' profitability due to declining interest income and higher credit risk management costs.
3. Operational risk, measured by Risk-Weighted Assets (RWA), has a positive and significant effect on financial performance measured by ROA. This result indicates that higher RWA reflects greater operational capacity and productive asset utilization, which can enhance profitability when supported by effective risk management practices.

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