

## Assessing the Impact of Risk Management Practices on Financial Performance of Banking Sector Companies Listed on IDX 2021-2023

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**Abstract.** This study aims to assess the impact of risk management practices on the financial performance of banking sector companies listed on the Indonesia Stock Exchange (IDX) during the period 2021–2023. The banking industry faces various types of risks that can affect financial performance, including credit risk, market risk, liquidity risk, and operational risk. Effective risk management practices are essential for maintaining bank stability and ensuring sustainable profitability. This research employs a quantitative approach using multiple linear regression analysis. The sample consists of 12 banking companies selected through purposive sampling based on specific criteria, including the consistent publication of financial reports during the study period and the completeness of the required data. Data were collected from annual financial reports accessed through the IDX website and the official company websites. The analysis was conducted using SPSS software and included descriptive statistics, classical assumption tests (multicollinearity, normality, heteroskedasticity, and autocorrelation), and hypothesis testing (t-test, F-test, and coefficient of determination). The results indicate that, collectively, credit risk, market risk, liquidity risk, and operational risk have a significant effect on financial performance, with an F-value of 13.160 and a significance level of 0.000. Partially, only liquidity risk shows a significant negative effect on financial performance ( $t = -2.308$ , sig. = 0.028), while credit risk ( $t = 1.288$ , sig. = 0.207), market risk ( $t = 1.409$ , sig. = 0.169), and operational risk ( $t = -1.170$ , sig. = 0.251) do not have a significant individual effect.

**Keywords:** credit risk; market risk; liquidity risk; operational risk; financial performance.

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### INTRODUCTION

Banks provide financial services to channel funds from depositors to investors to obtain profits (Fadun & Silwimba, 2023). Banks not only accept deposits but also provide loans. As a result, these activities are vulnerable to credit risk (Ekinici et al. 2019). Credit facilities offered by banks are viewed as one of the key banking activities performed by financial institutions. In other words, one of the primary risks faced by banks when extending loans to their customers is credit risk, as lending is regarded as a major source of revenue for banks (Million et al. 2015; Naili et al. 2020; Rehman et al. 2019).

Among the various risks faced by banks, credit risk is considered the most significant due to its direct impact on asset quality and profitability. Credit risk refers to the potential loss arising from the failure of borrowers to meet their contractual obligations, particularly in loan repayments (Beerbaum et al. 2015; Rakhaev 2020). When banks extend credit facilities, they expect timely repayment with interest, which constitutes a primary source of revenue. However, economic downturns, business failures, or individual borrower defaults can lead to non-performing loans that erode bank profitability and capital adequacy. According to Bouteille et al. (2021), lending activities are regarded as the major source of revenue for banks, making credit risk management a critical function in banking operations.

In addition to credit risk, banks are also exposed to market risk, which arises from fluctuations in market prices, interest rates, and exchange rates. Market risk can significantly affect the value of banks' trading portfolios and investment securities, potentially leading to

substantial losses (Horserininassab et al., 2013). The volatility of financial markets, exacerbated by global economic uncertainties and geopolitical events, has made market risk management an increasingly complex challenge for banking institutions (Nafiu et al. 2025). Furthermore, liquidity risk represents another critical concern, referring to the inability of banks to meet their short-term financial obligations due to insufficient cash or marketable securities (Badawi, 2017). Liquidity problems can trigger bank runs and systemic crises, as evidenced by numerous banking failures throughout financial history (Thakor 2015).

Operational risk, which encompasses losses resulting from inadequate or failed internal processes, human errors, system failures, or external events, has also gained prominence in recent years. The increasing digitization of banking services, while enhancing efficiency and customer convenience, has introduced new operational risks related to cybersecurity, technology failures, and fraud (Nafiu et al. 2025; Oko-Odion et al. 2025). The Basel Committee on Banking Supervision has recognized the importance of operational risk management by including it as one of the pillars in the Basel regulatory framework. Indonesian banks, operating in a rapidly evolving digital landscape, must continuously enhance their operational risk management capabilities to protect against emerging threats (Jameaba 2020, 2024).

The significance of effective risk management in the banking sector has been underscored by various global financial crises (Widjaja 2026; Zéghal et al. 2016). The 2008 global financial crisis, triggered by subprime mortgage defaults in the United States, demonstrated how inadequate risk management practices can lead to catastrophic consequences for individual banks and entire financial systems (Li & Chen, 2024). In the aftermath of the crisis, regulatory authorities worldwide implemented stricter risk management requirements, including higher capital adequacy ratios, stress testing, and enhanced disclosure requirements. Indonesian banks, operating under the supervision of the Financial Services Authority (OJK), are required to comply with these international standards while adapting to local market conditions (Arum et al. 2025; Erlangga et al. 2026; Widjaja 2026).

Previous research has extensively examined the relationship between various types of risk and bank financial performance. Al Zaidanin and Al Zaidanin (2021) investigated the impact of credit risk management on the financial performance of United Arab Emirates commercial banks, finding that effective credit risk practices significantly influence profitability. Similarly, Ali and Dhiman (2019) studied public sector banks in India and concluded that credit risk management has a substantial impact on bank profitability. Sathyamoorthi et al. (2020) examined financial risk management practices in commercial banks in Botswana and found significant relationships between risk indicators and financial performance. These studies provide valuable insights into the importance of risk management across different banking contexts and geographical regions.

In the Indonesian context, several researchers have explored the relationship between risk and bank performance. Azura et al. (2023) investigated the effect of credit risk management on financial performance in the Indonesian banking industry, finding significant relationships. Badawi (2017) examined the effects of credit risk, liquidity risk, and market risk on bank profitability, providing evidence of the interconnected nature of these risks. Sunaryo (2022) studied the effect of credit risk management, market risk, and liquidity risk on the financial performance of state-owned business entities in Indonesia. These studies contribute to the understanding of risk-performance dynamics in the Indonesian banking sector, but they often

focus on specific types of risk or particular bank categories.

Despite the wealth of research on risk management in banking, several gaps remain in the existing literature. First, most studies tend to examine individual risk types in isolation without considering the simultaneous effects of multiple risks on financial performance. Second, the majority of research focuses on periods of economic stability, with limited attention to periods characterized by significant economic uncertainty, such as the post-pandemic recovery period. Third, there is a need for more recent empirical evidence from the Indonesian banking sector, particularly given the significant regulatory changes and economic developments that have occurred in recent years. Fourth, many studies do not adequately address the integrated nature of risk management, where different types of risks are interconnected and can amplify each other's effects.

The urgency of this research is underscored by several factors. The period 2021–2023 represents a unique phase in economic history, characterized by the gradual recovery from the COVID-19 pandemic, which had profound effects on banking operations worldwide (Li & Chen, 2024). During this period, Indonesian banks faced unprecedented challenges, including economic contraction, increased credit defaults, and changes in customer behavior. Understanding how various risks affected bank performance during this critical period can provide valuable lessons for future crisis management. Additionally, the Indonesian banking sector has experienced significant consolidation and digital transformation, which have altered risk profiles and created new challenges for risk managers.

The novelty of this research lies in its comprehensive examination of four key risk types (credit risk, market risk, liquidity risk, and operational risk) simultaneously, using recent data from the post-pandemic period. Unlike previous studies that often focus on individual risk types, this research adopts an integrated approach that recognizes the interconnected nature of banking risks. The study also employs rigorous statistical methods, including comprehensive classical assumption testing and multiple regression analysis, to ensure the validity and reliability of findings. By focusing on banks listed on the Indonesia Stock Exchange, the research provides insights that are directly relevant to investors, regulators, and banking practitioners in the Indonesian context.

The primary purpose of this research is to assess the impact of risk management practices, as reflected in key risk indicators, on the financial performance of banking sector companies listed on the Indonesia Stock Exchange during the 2021–2023 period. Specifically, the study aims to: (1) examine the effect of credit risk on financial performance; (2) analyze the impact of market risk on financial performance; (3) investigate the relationship between liquidity risk and financial performance; (4) assess the influence of operational risk on financial performance; and (5) evaluate the simultaneous effects of all four risk types on bank performance. The contribution of this research is both theoretical and practical. Theoretically, it enriches the literature on banking risk management by providing empirical evidence from an emerging market context. Practically, it offers insights for banking managers in prioritizing risk management efforts, for regulators in formulating appropriate policies, and for investors in assessing bank risk profiles and performance potential.

## **MATERIALS AND METHODS**

The methodology is an essential component of any research to obtain accurate and effective results. This chapter presented the description of the research methods used in the study. It included the research design, research method, research instrument, and the population and sample.

Research design refers to a detailed and systematic plan for collecting, analyzing, and interpreting data. According to Nazir (in Nasution, 2004), research design includes all processes required in the planning and implementation of a study, from the preparation stage to the preparation of the research report.

The research design was used to analyze and identify the subject of this study and to ensure that the research was conducted in a systematic manner. This research employed a descriptive quantitative method because the data were presented in numerical and descriptive form. The descriptive quantitative approach was used to examine and describe the variables under study using numerical data and statistical analysis. Quantitative methods emphasize objective measurements and the statistical or numerical analysis of data collected through questionnaires, surveys, or existing statistical data processed using computational techniques.

## **RESULTS AND DISCUSSION**

### **Result Analysis**

#### **1. Descriptive Analysis**

Using the frequency distribution table, the key statistics and the calculation of descriptive measures, such as the central tendency indices (mean, median, and mode) and the dispersion indices (variance and standard deviation), were obtained. To determine the mean, mode, and standard deviation, the researchers used SPSS software.

**Table 1.** Descriptive Statistics

<b>Descriptive Statistics</b>					
	N	Minimum	Maximum	Mean	Std. Deviation
credit risk	36	.01	.20	.0672	.05417
market risk	36	32.13	35.05	33.4611	.98604
liquidity risk	36	3.21	16.37	6.5836	3.24697
operational risk	36	32.24	35.32	33.6367	.99693
financial performance	36	.01	.03	.0161	.00766
Valid N (listwise)	36				

Based on the table above, it shows that the total number of observations from the annual financial reports of banking companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2023 period is 36 data points. From the calculations above:

a) Credit risk had a minimum value of 0.01 at PT Bank Central Asia Tbk for the years 2021–2023 and a maximum value of 0.20 at PT Bank Danamon Indonesia Tbk in 2021, with a standard deviation of 0.054 and a mean value of 0.067.

b) Market risk had a minimum value of 32.13 at PT Bank Pembangunan Daerah Jawa Barat Tbk in 2021 and a maximum value of 35.05 at PT Bank Mandiri (Persero) Indonesia Tbk in 2023, with a standard deviation of 0.986 and a mean value of 33.461.

c) Liquidity risk had a minimum value of 3.21 at PT Bank Danamon Tbk in 2022 and a maximum value of 16.37 at PT Bank Tabungan Negara (Persero) Tbk in 2021, with a standard deviation of 3.257 and a mean value of 6.584.

d) Operational risk had a minimum value of 32.24 at PT Bank Pembangunan Daerah Jawa Timur Tbk in 2021 and a maximum value of 35.32 at PT Bank Mandiri (Persero) Tbk in 2023, with a standard deviation of 0.997 and a mean value of 33.638.

e) Financial performance had a minimum value of 0.01 at PT Bank Pan Indonesia Tbk for the years 2021–2023 and a maximum value of 0.03 at PT Bank Central Asia Tbk for the years 2021–2023, with a standard deviation of 0.008 and a mean value of 0.016.

### **Classical Assumption Test**

#### **a. Multicollinearity Test**

Given the presence of several independent variables, it was essential to conduct a multicollinearity assessment.

**Table 2.** Multicollinearity Test

Model		Coefficients <sup>a</sup>	
		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	credit risk	.596	1.677
	market risk	.137	1.345
	liquidity risk	.258	3.872
	operational risk	.114	1.775
a. Dependent Variable: financial performance			

Based on the multicollinearity test results in Table 2 above, it was found that the tolerance values for credit risk, market risk, liquidity risk, and operational risk were greater than 0.01 (>0.01), and the Variance Inflation Factor (VIF) values were also less than 10 (<10). Therefore, it can be concluded that there was no multicollinearity in this model.

#### **b. Normality Test**

The normality test is a widely used statistical method for evaluating whether the residuals derived from regression analysis follow a normal distribution.

**Table 3.** Normality Test

One-Sample Kolmogorov-Smirnov Test			
		Unstandardized Residual	
N			36
Normal Parameters <sup>a,b</sup>	Mean		.0000000
	Std. Deviation		.00466558
Most Differences	Extreme	Absolute	.161
		Positive	.161
		Negative	-.087
Test Statistic			.161

Exact Sig. (2-tailed)	.276
a. Test distribution is Normal.	
b. Calculated from data.	
c. Lilliefors Significance Correction.	

The table above shows a Sig. value of 0.276. The significance value is greater than 0.05 (sig. > 0.05), so it can be concluded that the research data were normally distributed and the regression model fulfilled the assumption of normality.

c. Heteroscedasticity Test

The heteroscedasticity test was used to assess the uniformity of the residual variances across various observations. The Glejser test was employed to perform this assessment.

**Table 4.** Heteroscedasticity Test

Coefficients <sup>a</sup>			
Model		t	Sig.
1	(Constant)	-.973	.338
	credit risk	.367	.716
	market risk	1.360	.184
	liquidity risk	-1.745	.091
	operational risk	-1.317	.198
a. Dependent Variable: ABSRES			

In accordance with the table above, the heteroscedasticity test using the Glejser test resulted in significance (Sig.) values for the independent variables greater than 0.05 (Sig. > 0.05). Therefore, it can be concluded that there was no heteroscedasticity in the data used in this study. This indicates that the data met the assumption requirements, with the obtained variance being efficient and stable.

d. Autocorrelation Test

The autocorrelation test was used to determine whether there was a correlation between a period (t) and the previous period (t – 1). In regression analysis, autocorrelation testing is conducted to ensure that there is no correlation between current observations and previous observation data when analyzing the influence of independent variables on the dependent variable.

**Table 5.** Autocorrelation Test

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.793 <sup>a</sup>	.629	.582	.00496	1.813
a. Predictors: (Constant), operational risk, liquidity risk, credit risk, market risk					
b. Dependent Variable: financial performance					

Based on the autocorrelation test results in the table above, the Durbin–Watson value for the regression equation was 1.813. Therefore, the DW value fell within the range of  $-2 < DW$

< 2 (-2 < 1.813 < 2). It can be concluded that the regression model was free from autocorrelation and could be used for decision-making.

### Multiple Regression Analysis

In this research, the investigators employed multiple regression analysis to examine the data. This analytical method utilized independent variables (X) to determine the dependent variable (Y). The following equation represents the analysis:

**Table 6.** Multiple Regression Analysis

Model		Coefficients <sup>a</sup>		
		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	-.188	.035	
	credit risk	.026	.020	.182
	market risk	.036	.025	4.568
	liquidity risk	-.001	.001	-.497
	operational risk	-.029	.025	-3.781

a. Dependent Variable: financial performance

The results of the regression test above are the results of processing that show the magnitude of the influence of financial literacy and self-control variables on financial behavior variables. The regression equation obtained from the test results above is:

$$Y = -0.188 + 0.026X_1 + 0.036X_2 - 0.001X_3 - 0.029X_4 + \epsilon$$

Where :

Y : Financial Performance

X<sub>1</sub> : Credit Risk

X<sub>2</sub> : Market Risk

X<sub>3</sub> : Liquidity Risk

X<sub>4</sub> : Operational Risk

€ : Error / Residual

The regression equation above can be interpreted as follows:

- The constant value (a) of -0.188 indicates that if the independent variables, which consist of credit risk, market risk, liquidity risk, and operational risk, are equal to zero (0), the dependent variable, financial performance, will be -0.188.
- The regression coefficient value for X<sub>1</sub> is 0.026, indicating that the credit risk variable positively affects financial performance. This result shows that every 1% increase in credit risk will increase financial performance by 0.026 units, assuming other independent variables are held constant.
- The regression coefficient value for X<sub>2</sub> is 0.036, indicating that the market risk variable positively affects financial performance. This result shows that every 1% increase in market

risk will increase financial performance by 0.036 units, assuming other independent variables are held constant.

d) The regression coefficient value for X3 is -0.001, indicating that the liquidity risk variable negatively affects financial performance. This result shows that every 1% increase in liquidity risk will decrease financial performance by 0.001 units, assuming other independent variables are held constant.

e) The regression coefficient value for X4 is -0.029, indicating that the operational risk variable negatively affects financial performance. This result shows that every 1% increase in operational risk will decrease financial performance by 0.029 units, assuming other independent variables are held constant.

## 2. Research Tests

a. **Partial Significance Test (t-statistic test):** This test was used to determine whether each independent variable had a statistically significant effect on the dependent variable.

**Table 7. t Statistics Test**

Coefficients <sup>a</sup>			
Model		t	Sig.
1	(Constant)	-5.378	.000
	credit risk	1.288	.207
	market risk	1.409	.169
	liquidity risk	-2.308	.028
	operational risk	-1.170	.251

a. Dependent Variable: financial performance

Based on the hypothesis testing output using the t-test for individual variables, the calculated t-values are as follows:

1. From the results of the t-test on the influence of credit risk variables on financial performance, the calculated t-value was 1.288, which was smaller than the t-table value of 1.694, with a significance level of 0.207. This significance value was greater than 0.05, indicating that credit risk had no significant effect on financial performance. Thus, H1 was rejected.
2. From the t-test results on the effect of the market risk variable on financial performance, the calculated t-value was 1.409, which was smaller than the t-table value of 1.694, and the significance level was 0.169. This significance value was greater than 0.05, indicating that market risk had no significant effect on financial performance. Thus, H2 was rejected.
3. From the t-test results on the effect of the liquidity risk variable on financial performance, the calculated t-value was -2.308, which was greater than the t-table value of 1.694, and the significance level was 0.028. This significance value was less than 0.05, indicating that liquidity risk had a significant effect on financial performance. Thus, H3 was accepted.
4. From the t-test results on the effect of the operational risk variable on financial performance, the calculated t-value was -1.170, which was smaller than the t-table value of 1.694, and the significance level was 0.251. This significance value was greater than 0.05, indicating that operational risk had no significant effect on financial performance. Thus, H4 was rejected.

**a. F-statistic test**

This assessment was frequently used to evaluate the significance of the influence exerted by the independent variables on the dependent variable simultaneously.

**Table 8.** F Statistic Test

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	4	.000	13.160	.000 <sup>b</sup>
	Residual	.001	31	.000		
	Total	.002	35			
a. Dependent Variable: financial performance						
b. Predictors: (Constant), operational risk, liquidity risk, credit risk, market risk						

Based on the ANOVA or F-test results above, the calculated F value was 13.160 with a significance level of 0.000, which was less than 0.05. This indicated that the independent variables—credit risk, market risk, liquidity risk, and operational risk—significantly and simultaneously affected the dependent variable, financial performance.

**a. Coefficient of Determination (R<sup>2</sup>)**

The purpose of testing the coefficient of determination was to assess the extent to which the model explained the variation in the dependent variable.

**Table 9.** Coefficient of Determination (R<sup>2</sup>)

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.793 <sup>a</sup>	.629	.582	.00496	1.813
a. Predictors: (Constant), operational risk, liquidity risk, credit risk, market risk					
b. Dependent Variable: financial performance					

Based on the results of the coefficient of determination test, as shown in Table 4.9, it can be concluded that the adjusted R-square was 0.582 or 58.2%. This means that 58.2% of the variation in the financial performance variable could be explained by variations in the variables of credit risk, market risk, liquidity risk, and operational risk. The remaining 41.8% was explained by other variables not included in this study.

**CONCLUSIONS**

Based on the findings of this research on the impact of risk management practices on the financial performance of banking companies listed on the Indonesia Stock Exchange (IDX) during 2021–2023, it can be concluded that risk management variables collectively had a significant effect on banks’ financial performance. However, when examined individually, only liquidity risk showed a statistically significant influence, indicating that higher liquidity risk negatively affected bank profitability, while credit risk, market risk, and operational risk did not demonstrate significant individual effects. The coefficient of determination indicated that

58.2% of the variation in financial performance could be explained by the four risk variables analyzed in this study, whereas the remaining 41.8% was influenced by other factors outside the model, such as macroeconomic conditions, corporate governance, regulatory frameworks, and strategic decision-making. These findings highlight the importance of effective risk management, particularly in controlling liquidity risk, to maintain financial stability and profitability in the banking sector; therefore, future research is recommended to incorporate additional variables and a broader time period in order to provide a more comprehensive understanding of the factors influencing bank financial performance.

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