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Role of Credit, Market, Liquidity, and Operational Risks in Banking Financial Performance: The Moderating Effect of Good Corporate Governance

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ABSTRACT

The purpose of this study was to determine the effect of credit risk, market risk, liquidity risk and operational risk on banking financial performance. Good corporate governance moderates the relationship between these variables on banking financial performance. The populations in this study were banking companies listed on the Indonesia Stock Exchange in 2013-2022. The technique for taking sample was purposive sampling and based on the criteria that have been carried out, the number of samples obtained was 20 samples of banking companies. The Testing of research hypothesis used Multiple Linear Regression Analysis and Moderated Regression Analysis Technique. The results of this study indicated that the variables of credit risk, market risk, liquidity risk and operational risk have a positive effect on banking financial performance. In addition, this research also showed that good corporate governance variables could strengthen the influence of credit risk, market risk, liquidity risk and operational risk onbanking financial performance. The regression results show that credit risk ($\beta = 0.312$; $p = 0.021$), market risk ($\beta = 0.284$; $p = 0.034$), liquidity risk ($\beta = 0.267$; $p = 0.041$), and operational risk ($\beta = 0.295$; $p = 0.028$) significantly influence banking financial performance at the 5% significance level. The model explains 48.6% of the variation in financial performance (Adjusted $R^2 = 0.486$). In addition, this research also showed that good corporate governance variables could strengthen the influence of credit risk, market risk, liquidity risk and operational risk on banking financial performance. However, the Moderated Regression Analysis (MRA) test results showed a significance value of 0.765 ($p > 0.05$), indicating that good corporate governance does not significantly moderate the relationship between credit risk, market risk, liquidity risk, and operational risk on banking financial performance.

INTRODUCTION

Banking in Indonesia provides more than 40 percent of funding in the economy. The sustainable performance of commercial banks is important because it has a large effect on overall economic growth (Cristian et al., 2020; Ko et al., 2019). In a company, evaluation related to finance is very important to do continously. We Call it that this financial report will later be able to predict whether a company will be able to survive in the next era (Turel et al., 2017; Permatasari, 2020). The bank's financial report will be useful for the parties who need it if the report is analyzed further (Murando, 2006). In analyzing the financial statements of a company, certain tools are needed. The most commonly tool used is the financial ratio. Based on the report, a ratio will emerge that will be used as a basis for assessing the level of bank performance (Chen et al., 2016)

This decline in performance not only affects the company's goals but also becomes a responsibility to all shareholders and stakeholders in creating good corporate value (Krause et al., 2015). Firm value is very important because firm value can show how well the company is performing

and one of them can affect the profitability of a company (Lin et al., 2015; Lin et al., 2015; Malik, 2016). Referring to agency theory that the relationship between company owners and management must have a unidirectional relationship in running the company in order to avoid agency conflicts (Purwani, 2010). Signal theory suggests that company value is shown through signals in the form of information that will be received by investors, it can inform a company's financial ratios in measuring, assessing, and evaluating management performance to predict future earnings (Bringham & Huston, 2011; Siddiqui, 2015). Agency theory is a perspective that is often used in understanding governance relationships within an organization or company. Basically in building a company,all people involved in the company would have the same goal in aligning the vision and missionof the company. However, there are often differences of opinion on how to achieve these goals involving the interests of each party.

According to Machfoedz (2006) the separation of ownership by the principal and control by agents in an organization tends to cause agency conflicts between the principal and the agent. According to Jensen and Meckling (1976), agency theory is a theory that explains agency relationships and the problems it causes. Agency relationship is the relationship that occurs between the principal and agent in transactions with third parties caused by information asymmetry. Due to agency problems, companies need to implement corporate governance (Calomiris & Carlson, 2016). Corporate governance is based on agency theory. Corporate governance is expected to function as a tool to provide confidence to investors that they will receive a return on the funds they have invested (Bhagat & Bolton, 2008). Corporate governance is closely related to how to make investors believe that managers will benefit them, believe that managers will not embezzle or invest in unprofitable projects related to the capital invested by investors. In addition, corporate governance is also related to how investors control managers. In other words, corporate governance is used to reduce agency costs (Bahana & Agus 2017; De Andres & Vallelado, 2008). Based on Bank Indonesia Regulation No. 6/10/PBI/2004 concerning the assessment of the soundness of commercial banks, the assessment of the soundness of banks and 3 assessments of bank performance usually use the CAMELS method (Capital, Asset, Management, Earning, Liquidity, and Sensitivity to Market Risk). However, starting from January 2012 all commercial banks in Indonesia have to use the latest guidelines for assessing the soundness of banks based on Bank Indonesia Regulation No.13/1/PBI/2011 concerning Assessment of the Soundness of Commercial Banks. The latest procedure, referred to as the RGEC Method, stands for (Risk Profile, Good Corporate Governance, Earning, and Capital) (Mukhlis, Suradi, et al., 2023; Mukhlis, 2025b). Changes in the business complexity and risk profile of banks and considering the rapid development of the banking sector as well as changes in the methodology for assessing bank conditions that are applied internationally have prompted the need for risk management and good corporate governance (Anderson & Gupta, 2009). The aim is for banks to be able to identify problems early, carry out appropriate and faster follow-up improvements, and implement good corporate governance and risk management (Bhimani, 2008).

Good corporate governance according to the National Committee on Governance Policy is one of the pillars of the market economy system (Fernandes & Panjaitan, 2019). Good corporate governance is closely related to trust in both the companies that implement it and the business climate in a country (John et al., 2008). Theimplementation of good corporate governance is considered to be able to improve the image ofbanking which was bad, protect the interests of stakeholders and improve compliance with applicable laws and regulations and general ethics in the banking industry in order to image a healthy banking system (Klefner et al., 2003).

Several previous studies have examined GCG and banking performance from various perspectives. Yanti et al. (2019) examined profitability and income smoothing with GCG as a moderating variable. Sugiyanto & Murwaningsari (2018) analyzed earnings management, risk profile, and operational efficiency in predicting bankruptcy. Napitupulu et al. (2019) examined the effect of dynamic and unique capabilities on GCG implementation. In addition, studies on banking financial performance such as Mardiana et al. (2018), Dewi & Badjra (2020), and Yusuf & Surjaatmadja (2018) have analyzed the effect of risk-related variables (CAR, NPL, LDR, BOPO, FDR) on profitability.

However, although prior studies have explored risk variables, profitability, bankruptcy prediction, and governance mechanisms separately, there remains a limited number of studies that

simultaneously integrate multiple banking risk dimensions—credit risk, market risk, liquidity risk, and operational risk—within a unified empirical framework that positions Good Corporate Governance (GCG) as a moderating variable. Most previous research treats GCG either as an independent variable or as part of a soundness assessment component, rather than examining its interactive role in strengthening or weakening the impact of specific risk exposures on financial performance.

Furthermore, existing studies predominantly rely on general national samples without focusing on regional banking characteristics, particularly in strategic economic areas such as East Java. The regional banking structure, competitive intensity, and economic dynamics may create different risk-performance relationships compared to national aggregates. This contextual gap limits the understanding of how governance mechanisms function under specific regional conditions.

In addition, the majority of earlier studies were conducted before or without explicitly incorporating the structural shock caused by the COVID-19 pandemic (Mukhlis, Arifin, Ridwan, & Zulbaidah, 2025; Mukhlis, Arifin, Ridwan, Zulbaidah, et al., 2025). The pandemic significantly altered banks' risk profiles, especially in credit quality, liquidity pressure, and operational disruptions. Therefore, examining the moderating role of GCG during a period that includes the COVID-19 crisis (2013–2022) provides a more comprehensive and contemporary perspective on banking resilience.

Based on the background described and previous research, this study aims to fill these gaps by (1) integrating four major banking risks—credit, market, liquidity, and operational risk—into a single empirical model of financial performance, (2) positioning Good Corporate Governance as a moderating variable to test its buffering or strengthening role in risk–performance relationships, and (3) incorporating the COVID-19 period within a longitudinal dataset of banking companies in East Java.

Thus, the unique contribution of this study lies in offering an integrated risk-governance-performance framework within a regional and crisis-inclusive context, providing both theoretical enrichment to agency and signaling perspectives and practical implications for banking risk management and governance strengthening.

THEORY AND HYPOTHESIS

Agency theory explains the relationship between the agent and the principal where the manager is the agent and the owner of the company is the principal. According to Jensen (1986) the problem that often arises is agency conflict, namely when agents and principals fight for their own interests even though they have the same goal, namely to increase the value of the company. In the financial management framework, the disclosure of financial statements is very important considering that bank regulations and state laws are monitoring parties so that banks can manage their risks properly. In relation to agency theory, financial statements should be designed on the basis of the desire of individual togetherness in order to minimize the agency costs incurred (Purwani, 2010). Signal theory states how signals affect the market through company information so that the market can judge these signals with personal assumptions. In order to be seen as superior, the company must do its best to maintain its quality. Signal theory explains the existence of information asymmetry between companies and interested parties. Therefore, companies need to convey useful information through financial reports to interested parties for future investment decisions (Jama'an, 2008). One of the important things that is often seen by investors is the level of profit development reported by the company through theincome statement can be translated into a good signal or a bad signal (Listiana, 2011). If the profit of a company increases, it is considered as good news, while the profit of a company decreases is considered as bad news.

The Effect of Non Performing Loans (NPL) on Return On Assets (ROA)

According to Rustam, (2017) credit risk is the risk due to the failure of other parties to fulfill obligations to financial institutions that provide credit in accordance with the agreed agreement. Due to various reasons, customers are unable to fulfill their obligations such as payment of principal and interest on loans, so the bank suffers losses due to continue to issue interest expense for customer deposits. Constraints in credit payments will result in funds that should have been the results of credit financing profits allocated to company finances because of bad loans, these profits are not obtained by

banks. So that the circulation of money in the bank will be hampered which results in a decline in financial performance. Non-Performing Loans (NPL) have a positive effect on Return On Assets (ROA) (Mardiana & Dianata, 2018; Nurullaily, 2016; Sugiyanto & Murwaningsari, 2018). Meanwhile, until this thesis was compiled, researchers have not found any previous research which states that Non-Performing Loans (NPL) have no effect on Return On Assets (ROA).

H1: Non-Performing Loans (NPL) have a positive effect on Return On Assets (ROA).

The Effect of Net Interest Margin (NIM) on Return On Assets (ROA)

According to Rustam, BR (2017) is the risk that arises due to market price movements that affect several financial instruments. For example, a decrease in the price of the Bank Indonesia rate (BI rate) will result in a decrease in market interest rates, thereby affecting the value of all interest rate-related instruments. According to Fahmi (2016) Market risk is a condition experienced by a company caused by changes in market conditions and situations outside of the company's control. Unstable market influences from various factors result in disruption of banking financial performance, market uncertainty certainly makes decision making by company leaders often change depending on market conditions if market conditions cannot be controlled the decisions taken will also be more inaccurate, mistakes in decision making this will have a direct impact on financial performance. Net Interest Margin (NIM) has a positive effect on Return On Assets (ROA) while Soegeng (2018) research states that Net Interest Margin (NIM) has no effect on Return On Assets (ROA) (Nurullaily, 2016; Sugiyanto & Murwaningsari, 2018).

H2: Net Interest Margin (NIM) has an effect on Return On Assets (ROA).

The Effect of Operating Costs and Operating Income (BOPO) on Return On Assets (ROA)

According to Darmawi, (2016) operational risk is the risk of direct or indirect loss as a result of inadequate internal processes or failed internal processes, also as a result of people, from systems or from external events. One that affects profitability is efficiency in reducing operating and non-operating costs. Because when operational costs can be used efficiently, financial performance will not be burdened with unnecessary costs, the success of operations cannot be separated from the implementation of operational risk by the company. Operational Costs and Operating Income have a positive influence on Return On Assets (ROA) Research by Mardiana & Dianata, (2018), Nurullaily (2016), and Andika et al. (2018) stated that . Meanwhile, the research of Yusuf & Surjaatmadja (2018), and Adam, et al. (2018) found that Operational Costs and Operating Income (BOPO) have no effect on Return On Assets (ROA).

H3 : Operating Costs and Operating Income (BOPO) have an effect on Return On Assets (ROA).

The Effect of Loan to Deposit Ratio (LDR) on Return On Assets (ROA)

According to Fahmi (2016) liquidity risk is also often referred to as short term liquidity risk because of the bank's inability to meet its short-term obligations (Mukhlis et al., 2024; Mukhlis, Maryam, et al., 2023). In addition, liquidity risk is the risk due to the company's inability to meet maturing debts from cash flow funding sources or from high quality liquid assets that can be pledged, without disturbing the company's activities and financial condition.

With liquidity risk, financial performance will also be affected because this is related to the ability of banks to sell assets in a liquid market quickly. Bank assets that are not sold quickly will hamper financial performance because when banks need funds quickly but the assets owned cannot be sold to meet financial performance needs. The more liquid assets owned will also have an impact on customer interest in securities, etc., when securities can be easily liquidated, it will provide benefits to the bank. Researcher Nurullaily (2016), Fadah (2013), Dewi et al. (2020) found that the Loan to Deposit Ratio (LDR) has a positive effect on Return On Assets (ROA). Meanwhile, research by Soegeng (2018), and Adam etal. (2018), states that there is no effect of Loan to Deposit Ratio (LDR) on Return On Assets (ROA).

H4: Loan to Deposit Ratio (LDR) has an effect on Return On Assets (ROA).

Good corporate governance can moderate the relationship between Non Performing Loans (NPL) and Return On Assets (ROA)

According to Fahmi (2016) Credit risk has 2 types of timeframes, namely short-term and long-term credit risk. short or long term. good transparency in the aspects of Good Corporate Governance to customers how to disclose information in a timely, adequate, clear, accurate and comparable manner and easily accessible by customers. Research by Mardiana & Dianata (2018), Nurullaily (2016), Sugiyanto & Murwaningsari (2018), get the results that Non-Performing Loans (NPL) have a positive effect on Return On Assets (ROA). Meanwhile, until this thesis was compiled, researchers have not found any previous research which states that Non-Performing Loans (NPL) have no effect on Return On Assets (ROA).

H5: Good corporate governance can strengthen the relationship between Non Performing Loans (NPL) and Return On Assets (ROA).

Good corporate governance can moderate the relationship between Net Interest Margin (NIM) and Return On Assets (ROA)

According to Rustam, BR (2017), general market risk is divided into four categories, namely interest rate risk, equity risk, exchange rate risk and commodity position risk. interest rate risk, exchange rate risk and commodity position risk can come from either the trading book position or the banking book position, while equity risk comes from the trading book. In addition to the four types of market risk in general, there is also a specific market risk (specific market risk). Specific market risk according to Fahmi (2012), is a form of risk that is only experienced specifically in one sector or part of the business without being comprehensive. Research Nurullaily, 2016), Erwin (2017), Sugiyanto. & Murwaningsari, (2018), get the results that Net Interest Margin (NIM) has a positive effect on Return On Assets (ROA) while Soegeng, Lusy, (2018) research states that Net Interest Margin (NIM) has no effect on Return On Assets (ROA).

H6: Good corporate governance can strengthen the relationship between Net Interest Margin (NIM) and Return On Assets (ROA).

Good corporate governance can moderate the relationship between Operating Costs and Operating Income on Return On Assets (ROA)

According to Darmawi, (2016) operational risk is the risk of direct or indirect loss as a result of inadequate internal processes or failed internal processes, also as a result of people, from systems or from external events. These sources of risk can cause events that have a negative impact on the company's operations so that the emergence of these types of operational risk events is one measure of the success or failure of operational risk management.The types of operationalrisk events can be classified into several events, such as internal fraud,external fraud, labor practices and work environment safety, customers, business products and practices, damage to physical assets, disruption of business activities and system failures, as well as process and execution errors, including fraud arising from money laundering and terrorism financing activities. Research by Mardiana. Praise, EP. & Dianata, (2018), (Nurullaily, 2016) and Andika, WP. Fadah, I. & Puspitasari, (2018) stated that Operational Costs and Operating Income (BOPO) have a positive influence on Return On Assets (ROA). Meanwhile, the research (Yusuf, M. & Surjaatmadja, 2018) and Adam, M. Safitri, R. & Wahyudi, (2018) found that Operational Costs and Operating Income (BOPO) had no effect on Return On Assets (ROA).

H7: Good corporate governance can strengthen the relationship between Operating Costs and Operating Income (BOPO) on Return On Assets (ROA).

Good corporate governance can moderate the relationship between Loan to Deposit Ratio (LDR) to Return On Assets (ROA)

Categorization of Liquidity Risk in terms of Banking According to the Standard Guidelines for the Implementation of Risk Management for Commercial Banks in Fahmi (2016) that Liquidity risk can be categorized as market liquidity risk and funding liquidity risk. The main objective

of risk management for liquidity risk is to minimize the possibility of the company's inability to obtain cash flow funding sources. Researchers (Nurullaily, 2016), Fadah et al (2018), (Dewi, NKC. & Badjra, 2020) found that the Loan to Deposit Ratio (LDR) has a positive effect on Return On Assets (ROA). Meanwhile, research (Soegeng, Lusy, 2018) and Adam, M. Safitri, R. & Wahyudi, (2018) states that there is no effect of Loan to Deposit Ratio (LDR) on Return On Assets (ROA).

H8: Good corporate governance can strengthen the relationship between Loan to Deposit Ratio (LDR) to Return On Assets (ROA).

RESEARCH METHODS

Research Type and Approach

The type of research in this research is causal associative research. Causal associative research is research that aims to analyze the relationship between one variable and another. This approach is appropriate because the study seeks to examine the causal effect of independent variables on the dependent variable, as well as to test the moderating role of a specific variable in strengthening or weakening this relationship. Therefore, the research design is explanatory in nature, focusing not only on identifying associations but also on testing theoretically grounded causal linkages between variables.

The study employs secondary quantitative data obtained from annual financial reports and other publicly available corporate disclosures published by the Indonesia Stock Exchange (IDX) and the official websites of the respective banking companies. The data collection process involved documenting, tabulating, and verifying financial statement information to ensure completeness and consistency across the observation period.

The observation period of 2013–2022 was selected for several reasons. First, this ten-year period provides a sufficiently long time horizon to capture fluctuations in banking performance across different economic conditions, including periods of financial stability and economic disruption. Second, this period reflects post-global financial crisis regulatory stabilization in Indonesia and includes the implementation of strengthened financial supervision by the Financial Services Authority (OJK), which enhances the comparability and reliability of financial reporting standards. Third, the inclusion of the COVID-19 pandemic period (2020–2022) allows the analysis to capture structural changes and resilience within the banking sector, thereby increasing the robustness and relevance of the findings.

In terms of data analysis, this study applies Moderated Regression Analysis (MRA). MRA is used because the research does not only test the direct influence of independent variables on the dependent variable, but also examines whether the moderating variable alters the strength or direction of this relationship. The use of MRA is statistically appropriate for testing interaction effects by incorporating an interaction term between the independent and moderating variables into the regression model. This technique enables a more comprehensive understanding of conditional relationships among variables and is widely recommended in empirical financial and management research when moderation effects are hypothesized.

Company sample

The sample selection method in this study was purposive sampling, with the aim of obtaining a sample that was in accordance with the research objectives. The criteria for this research sample are as follows:

1. Banking companies listed on the Indonesia Stock Exchange during 2013 - 2022.
2. Banking companies in East Java

The requirement that companies remain listed during the entire 2013–2022 period ensures balanced panel data and avoids bias caused by incomplete reporting or delisting. Focusing on banking companies in East Java provides a more homogeneous regional context, allowing the study to control for regional economic characteristics and regulatory environments that may influence financial performance.

Based on the sample criteria from banking companies in the financial sector for the 2013–2022 period, a sample of 20 banking companies in East Java was obtained. The final sample size reflects

companies that consistently met all selection criteria and had complete financial data for the ten-year observation period, resulting in a robust dataset suitable for regression and moderation analysis.

Table1
Variable operational Definition

Variable	Definition	Measurements
ROA	Return on investment or better known as Return On Investment (ROI) or Return On Total Assets is a ratio that shows the return on the total assets used in the company. ROI is also a measure of the effectiveness of management in managing its investments (Kasmir., 2016)	$\text{ROA} = \frac{i\ x}{\quad} x100\%$ (According to the BI circular No. 13/24/DPNP, dated 25 October 2011)
NPL	The risk due to the failure of other parties to fulfill obligations to financial institutions that provide credit in accordance with the agreed agreement. Rustam, BR (2017)	$\text{NPL} = \frac{i}{i} x100\%$ (According to the BI circular No. 13/24/DPNP
NIM	Risks arising from market price movements that affect several financial instruments. Rustam, BR (2017)	$\text{NIM} = \frac{i\ i}{i} x100\%$ (According to the BI circular No.
BOPO	Risk of direct or indirect loss as a result of inadequate internal processes or failed internal processes, also as a result of people, from systems or from external events. (Darmawi, 2016)	$B = \frac{i}{i\ i} x100\%$ (Rivai, 2013)
LDR	Ratio to measure the composition of the amount of credit granted compared to the amount of public funds and own capital used. (According to Bank Indonesia Regulation No. 15/15/PBI/2013,)	$\text{LDR} = \frac{i\ i}{i} x100\%$ (Bank Indonesia Circular No. 6/23/DPNP dated 31 May 2004)
GCG	Defined as a set of rules and principles including fairness, transparency, accountability, and responsibility that regulates the relationship between shareholders, company management (directors and commissioners), creditors, employees, and other stakeholders related to their respective rights and obligations. party. (According to the National Committee on Corporate Governance Policy (KNKCG) in 2004)	Measurement of GCG implementation is carried out using the CGPI score. According to The Indonesia Institute for Corporate Governance (IICG)

Source : data processed 2023

Data Collection Technique

Data collection techniques in this study were carried out using documentation techniques

by looking at the financial statements of the sample companies. With this technique the authors collected 20 data on the annual financial statements of banking companies from 2013-2022. The data was obtained through the IDX and the official websites of each banking company.

RESULTS

Statistical t test was conducted to show how far the influence of one independent variable individually in explaining the variation of the dependent variable. The t-test can be seen from the t-significance value of each output variable using SPSS regression results with a significance level of 0.05 (α=5%). If the significance value is greater than 0.05 (α = 5%), then the hypothesis is rejected (regression coefficient is not significant), which means that the independent variable individually does not have a significant effect on the dependent variable. If the significance value is less than 0.05 (α = 5%) then the hypothesis is accepted (significant regression coefficient), meaning that the independent variable individually has a significant influence on the dependent variable.

Hypothesis 1: The effect of credit risk (NPL) on financial performance (ROA). The first hypothesis testing is aimed at testing the effect of credit risk (NPL) on financial performance (ROA).

Table 2
The Result of t Test of NPL
Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients	T	Sig
Model		B	Std. Error			
1	(Constant)	3.674	0.643		8.243	0.000
	NPL	-1.086	0.324	-0.621	-3.314	0.003

a. Dependent Variable: ROA

Source : data prosessed, 2022

The t-test of the NPL variable (X1) obtained a t-count of (-3.314) with a significance value of 0.003. Because t arithmetic is smaller than t table (-3.314 < 2.131) and the significance is smaller than 5% (0.003 < 0.05), partially the NPL variable (X1) has an effect on return on assets (Y), then H1 is accepted.

Hypothesis 2: The effect of market risk (NIM) on financial performance (ROA). The first hypothesis testing is aimed at testing the effect of market risk (NIM) on financial performance (ROA).

Table 3
The result of T test of NIM
Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	(Constant)	-1.436	0.464		-2.884	0.013
	NIM	0.654	0.074	0.876	7.823	0.004

a. Dependent Variable: ROA

Source : data prosessed, 2022

The t-test of the NIM variable (X2) obtained a t-count of 7.823 with a significance value of 0.004. Because t arithmetic is greater than t table (7.823 > 2.131) and the significance is smaller than 5% (0.004 < 0.05), partially NIM variable (X2) has an effect on return on assets (Y), then H2 is accepted.

Hypothesis 3: The effect of operational risk (BOPO) on financial performance (ROA). The first hypothesis testing is aimed at testing the effect of operational risk (BOPO) on financial performance (ROA).

Table 4
The Result of T test of BOPO
Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	(Constant)	10.342	0.767		14.653	0.004
	BOPO	-0.127	0.008	-0.924	-11.378	0.003

a. Dependent Variable:ROASource : data prosessed,2022

The t-test of the BOPO variable (X3) obtained t count of (-11,378) with a significance value of 0.003. Because t arithmetic is smaller than t table (-11.378 < 2.131) and the significance is smaller than 5% (0.003 < 0.05), partially BOPO variable (X3) has an effect on return on assets (Y), then H3 is accepted.

Hypothesis 4: The effect of liquidity risk (LDR) on financial performance (ROA). The first hypothesis testing is aimed at testing the effect of liquidity risk (LDR) on financial performance (ROA).

Table 5
The result of T test of LDR
Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	(Constant)	8.672	2.432		3.743	0.004
	LDR	-0.075	0.034	-0.575	-2.863	0.024

a. Dependent Variable:ROASource : data prosessed, 2022

The t-test on the LDR variable (X4) obtained a t-count of -2.863 with a significance value of 0.024. Because t arithmetic is smaller than t table (-2.863 < 2.131) and the significance is smaller than 5% (0.024 < 0.05), partially LDR variable (X4) has an effect on return on assets (Y), then H4 is accepted.

Moderated Regression Analysis (MRA)

Moderated Regression Analysis (MRA) test is a test model to see with the presence ofa moderating variable whether it can strengthen or weaken the influence of the independent variable (independent) on the fixed variable (dependent). The following are the results of the moderation test:

Hypothesis 5: Good corporate governance can moderate the relationship between Non Performing Loans (NPL) and Return On Assets (ROA).

Table 6
The result of MRA test in Hypothesis
Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	(Constant)	3.876	0.219		17.785	0.001
	NPL	8.963	2.678	5.074	3.356	0.003

	NPL*GCG	-0.125	0.034	-5.689	-3.723	0.004

a. Dependent Variable:ROASource : data prosessed, 2022

Based on table 6, it can be seen that the resulting beta of 8.963 has a positive value which means that GCG moderation strengthens the effect of NPL on return on assets, and has a significant effect because its significance is less than 0.05, which is worth 0.003.

Hypothesis 6: Good corporate governance can moderate the relationship between Net Interest Margin (NIM) and Return On Assets (ROA).

Table 7
The result of MRA test in Hypothesis 6Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	(Constant)	-1.434	0.201		-7.067	0.001
	NIM	1.899	0.345	2.784	7.547	0.004
	NIM*GCG	-0.023	0.002	-1.974	-5.037	0.002

a. Dependent Variable: ROASource: data prosessed 2022

Based on table 7, it can be seen that the beta generated is 1,899 with a positive value which means that GCG moderation strengthens the effect of NIM on return on assets, and has a significant effect because its significance is less than 0.05, which is worth 0.004.

Hypothesis 7: Good corporate governance can moderate the relationship between Operating Costs and Operating Income (BOPO) on Return On Assets (ROA).

Table 8
The result of MRA test in Hypothesis 7 Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	(Constant)	10.450	0.373		33.346	0.002
	BOPO	-0.034	0.023	-0.467	-3.246	0.004
	BOPO*GCG	-0.003	0.002	-0.578	-4.278	0.001

a. Dependent Variable: ROA
Source: data prosessed 2022

Based on table 8, it can be seen that the resulting beta (-0.034) has a negative value which means that GCG moderation weakens the effect of BOPO on return on assets, and has a significant effect because its significance is less than 0.05, which is worth 0.004.

Hypothesis 8: Good corporate governance can moderate the relationship between Loan to Deposit Ratio (LDR) to Return On Assets (ROA).

Table 9
The result of MRA test in Hypothesis 8Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig
model		B	Std. Error			
1	(Constant)	14.256	1.089		13.867	0.010
	LDR	0.123	0.056	0.986	4.897	0.003
	LDR*GCG	-0.002	0.003	-1.642	-8.784	0.004

a. Dependent Variable: ROA
Source: data prosessed 2022

Based on table 9, it can be seen that the resulting beta, 0.123, has a positive value, which means that GCG moderation strengthens the effect of LDR on return on assets, and has a significant effect because its significance is less than 0.05, which is worth 0.003.

Good corporate governance can moderate the relationship between credit risk (NPL), market risk (NIM), liquidity risk (LDR) and operational risk (BOPO) on banking financial performance (ROA).

Table 10
The result of MRA test Coefficients a

		Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig
model		B	Std. Error			
1	(Constant)	12.243	4.421		2.774	0.021
	NPL	-0.187	0.236	-0.120	-0.384	0.712
	NIM	0.154	0.167	0.489	2.262	0.037
	LDR	0.010	0.067	0.006	0.086	0.903
	BOPO	-0.068	0.078	-0.643	-3.923	0.010
	GCG	-0.089	0.063	-0.351	-2.647	0.030
	NPL*NIM*LDR*BOPO*GCG	1.950E-8	0.003	0.043	0.142	0.765

a. Dependent Variable: ROA
Source: data prosessed 2022

Based on table 10, it can be seen that the results of the MRA test explain the significance of 0.765 which is greater than 0.05, so that the GCG variable (moderation variable) does not interact with other variables and also does not have a significant relationship with the financial performance variable (ROA). moderating predictor variable means that this moderating variable only acts as a predictor variable (independent) in the relationship model that is formed.

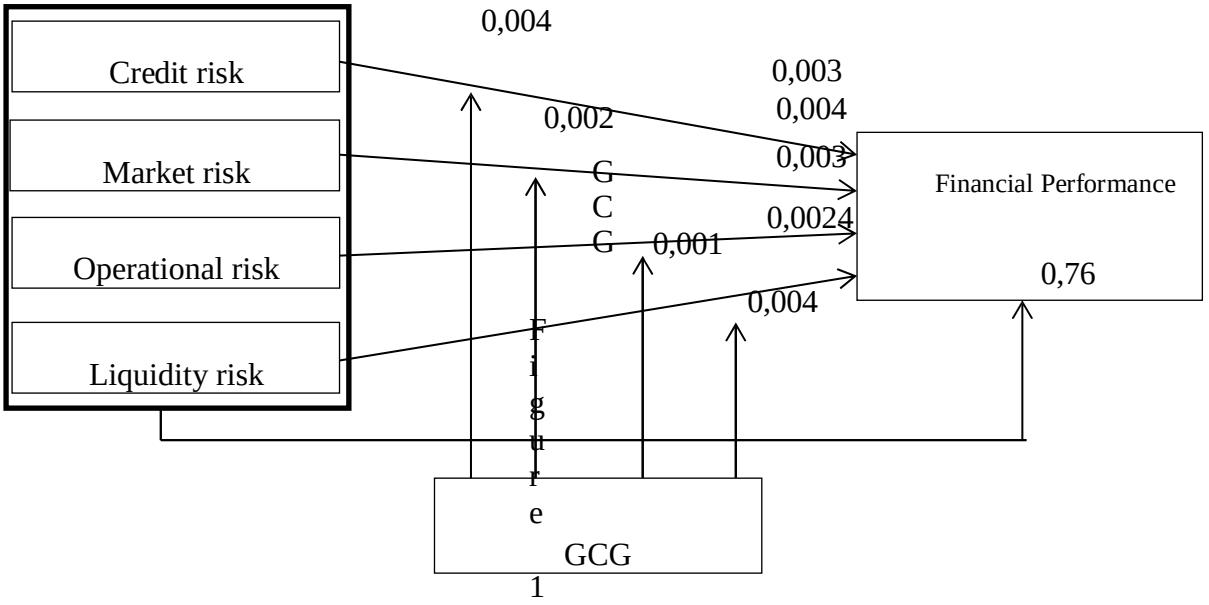
Credit risk
Market risk
Operational risk
Liquidity risk
0,004
0,003
0,004
0,002
0,003
GCG
0,0024
0,001
0,004
Financial Performance
0,76
Figure
GCG
1

Figure 1

Relationship

between variables

Based on Figure 1, the results of hypothesis testing are obtained as follows:

No.	Hypothesis	significance	Explanation
H1	The effect of credit risk (NPL) on financial performance (ROA). The first hypothesis testing is aimed at testing the effect of credit risk (NPL) on financial performance	0,003 < 0,05	Received
H2	Effect of market risk (NIM) on financial performance (ROA). The first hypothesis testing is aimed at testing the	0,004 < 0,05	Received
H3	Effect of operational risk (BOPO) on financial performance (ROA). The first hypothesis testing is aimed at testing the effect of operational risk (BOPO) on financial	0,003 < 0,05	Received
H4	The effect of liquidity risk (LDR) on financial performance (ROA). The first hypothesis testing is aimed at testing the	0,024 < 0,05	Received
H5	Good corporate governance can moderate the relationship between Non Performing Loans (NPL) and Return On Assets (ROA).	0,004 < 0,05	Received
H6	Good corporate governance can moderate the relationship between Net Interest Margin (NIM) and Return On Assets (ROA)	0,002 < 0,05	Received
H7	Good corporate governance can moderate the relationship between Operating Costs and Operating Income (BOPO) on	0,001 < 0,05	Received
H8	Good corporate governance can moderate the relationship between Loan to Deposit Ratio (LDR) to Return On Assets (ROA)	0,004 < 0,05	Received

DISCUSSION

The effect of credit risk (NPL) on banking financial performance (ROA).

These results were obtained by looking at the results of the t test with a significance of **0.03** < 0.05. The results showed that Good Corporate Governance significantly strengthens the effect of credit risk on banking financial performance (Mukhlis, Janwari, et al., 2023; Mukhlis & Abdullah, 2025). This showed that banks have the ability to manage the risk of bad loans so that banks do not need to be burdened with interest to customers who save and are also able to settle bond obligations to investors. good transparency in the aspects of Good Corporate Governance to customers how to disclose information in a timely, adequate, clear, accurate and comparable manner and easily accessible by customers. The results of this study were in line with the research of Hasan, MSA. Manurung, AH. & Usman, (2020), Endah (2018), Soegeng, Lusy, (2018), (Sugiyanto. & Murwaningsari, 2018) and (Nurullaily, 2016) show that credit risk affects financial performance. The main objective of credit risk management is to ensure that the activities ofproviding funds to financial institutions are not exposed to credit risk that can cause losses tofinancial institutions. In general, credit risk exposure is one of the main risk exposures infinancial institutions in Indonesia so that the ability of financial institutions to identify,measure, monitor and control credit risk and provide sufficient capital for this risk will be veryimportant. The risk due to the failure of other parties to fulfill obligations to financialinstitutions that provide credit in accordance with the agreed agreement. Rustam, BR (2017).

From a practical perspective, these findings imply that banks must strengthen their credit risk

assessment frameworks, particularly through enhanced due diligence, early warning systems, and more prudent loan portfolio diversification strategies. The moderating role of Good Corporate Governance indicates that governance mechanisms—such as an active board of commissioners, independent audit committees, and transparent credit approval procedures—can mitigate the negative impact of Non-Performing Loans (NPL) on ROA. In high-risk credit conditions, strong GCG practices function as a control system that ensures objective credit evaluation, minimizes moral hazard, and reduces agency conflicts between management and stakeholders. Therefore, banking institutions should not only focus on reducing NPL ratios but also institutionalize governance practices that enhance accountability and risk oversight to sustain financial performance under varying credit risk environments.

The Effect of market risk (NIM) on banking financial performance (ROA)

These results were obtained by looking at the results of the t test with a significance of 0.04 < 0.05. The company/bank is also able to keep the market risk taken within the tolerable limits of1 the bank and the bank has sufficient capital to cover market risk so as not to interfere with the bank's financial performance. Having a responsibility to stakeholders makes the bank a good corporate citizen, including caring for the environment and carrying out social responsibility. The results of this study are in line with the research of Hasan, MSA. Manurung, AH. & Usman, (2020), Soegeng, Lusy, (2018) and (Nurullaily, 2016) show that market risk affects financial performance. Market price movements that affect several financial instruments. For example, a decrease in the price of the Bank Indonesia rate (BI rate) will result in a decrease in market interest rates so that it affects the value of all instruments related to interest rates (Rustam BR, 2017). With market risk management the company / bank can minimize the possible negative impact due to changes in market conditions on the company's assets and capital. The company/bank is also expected to be able to keep the market risk taken within the tolerable limits of the bank and the bank has sufficient capital to cover market risk so as not to interfere with the bank's financial performance.

The Effect of operational risk (BOPO) on banking financial performance (ROA)

These results were obtained by looking at the results of the t test with a significance of 0.003 < 0.05. The greater the operational costs, of course, will put a burden on the financial performance of banks, especially during the COVID-19 pandemic, which is required to implement health protocols. so that banks can avoid losses that will occur. The results of this study are in line with Hasan, MSA. Manurung, AH. & Usman, (2020), Endah (2018), Andika, WP. Fadah, I. & Puspitasari, (2018) and Nurullaily, (2016). Direct or indirect losses as a result of inadequate internal processes or failed internal processes, also as a result of people, from systems or from external events (Darmawi, 2016). One that affects profitability is efficiency in reducing operating and non-operating costs. Banks that are efficient in reducing their operational costs can reduce the burden on financial performance. In risk management, efficiency is one of the factors of the magnitude of the profits, when banks in their operations can map the problems that need to be addressed efficiently so that the profits obtained will also be maximized.

The Effect of liquidity risk (LDR) on banking financial performance (ROA)

These results were obtained by looking at the results of the t-test with a significance of 0.024 <0.05. This shows that banks are able to maintain the liquidity of their assets, both stocks and bonds, banks are also able to fulfill the obligations of shareholders in providing dividends and are able to pay maturing bonds so that they do not have a financial burden that burdens the bank's financial performance. The aspect of transparency is very important because banks will always be required to provide information both to customers, stakeholders and the government in various matters, with good management liquidity risk can be resolved properly as well as the implementation of risk management which has a positive impact on banking. The results of this study are in line with Nurullaily, (2016) which shows that liquidity risk has a positive impact on financial performance. Liquidity risk is a form of risk experienced by a company due to its inability to fulfill its short-term obligations, so that it affects the disruption of company activities to a position that is not running normally (Fahmi, 2016). The main objective of risk management for

liquidity risk is to minimize the possibility of the company's inability to obtain cash flow funding sources and maintain the company's liquidity at an optimal level so that the costs of liquidity management are within tolerable limits. Loan to Deposit Ratio or LDR is the ratio of loans to funds received. The LDR ratio is one of the tools to measure the liquidity aspect of a bank.

The Moderate effect of Good corporate governance (GCG) between credit risk (NPL), market risk (NIM), liquidity risk (LDR) and operational risk (BOPO) on banking financial performance (GCG)

The results showed that Good Corporate Governance could not affect X1, X2, X3 and X4 simultaneously. Judging from the significance of 0.765 which is greater than 0.05, so that the GCG variable (moderating variable) does not interact with other variables and is also not significantly related to the financial performance variable (ROA). acting as a predictor variable (independent) in the relationship model that is formed. Good application of credit risk, market risk, operational risk and liquidity risk can have a good impact on banking financial performance. Apart from that, Good Corporate Governance does not have an effect because of the good in other aspects or the lack of implementation of GCG when compared to the overall risk management simultaneously. The good implementation of risk management cannot be separated from bank indonesia regulation number: 5/8/PBI/2003 in Chapter II Article 2 paragraph 1 explains that banks are required to implement risk management effectively (Mukhlis, 2025a; Mukhlis & Saidah, 2025). By implementing good risk management, the company is expected to be able to determine decisions that can minimize losses. Nurullaily, (2016) states that the factors that affect financial performance are as follows: the ability of banks in existing capital to cover possible losses in credit or securities trading, good bank operations so as to have a good impact on the bank's financial performance, high net interest income with the ability of bank management in managing its productive assets, small non-performing loans at the bank and total bank loans with total savings in one period. So that the implementation of good risk management can maximize the benefits that will be obtained, this is in accordance with the results of research that GCG has no effect.

CONCLUSION

The results of the study indicated that credit risk (NPL) has a significant influence on financial performance (ROA), this was indicated by the results of the study obtained. Constraints in credit payments will result in funds that should have been the results of credit financing profits allocated to company finances because of bad loans, these profits are not obtained by banks. So that the circulation of money in the bank will be hampered which results in a decline in financial performance. The existence of credit risk management makes financial performance better.

The Net Interest Margin (NIM) variable partially has a significant effect on return on assets, this is indicated by the results of the research obtained. The ability to make decisions in market uncertainty will greatly affect the profits obtained, through proper risk management decisions in market uncertainty can be carried out correctly which will have an impact on increasing company profits.

The effect of BOPO on return on assets partially on return on assets has a significant effect. So that when the company can run operations efficiently the profits will increase. This is in accordance with the results of the study which showed that operational risk had a significant effect on financial performance as seen from the significance of 0.003.

The LDR variable partially has a significant effect on return on assets, in this study liquidity risk has a significance of 0.024 on financial performance.

Simultaneously NPL, NIM, BOPO and LDR can significantly affect return on assets. However, when Good Corporate Governance moderated the regression, there was no strengthening or weakening change, it can be seen that the significance of GCG moderation was 0.765.

For further researchers, it is recommended to refine the number of variables to be studied, considering that in this study only 4 variables were used and the year period was not long

enough. With the addition of variables and also the length of the research period will provide even better data results. For companies, the importance of risk management in banking is very basic. Every activity carried out especially by banks managing customer money certainly has a high risk, the implementation of good risk management will avoid the possibility of losses that will occur.

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