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Risk Management Implementation in Enhancing Bank Performance Stability

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Abstract

This study examines the implementation of integrated risk management in enhancing the performance stability of conventional commercial banks in Indonesia during the 2019–2023 period. A quantitative approach was employed using panel data regression analysis based on 125 firm-year observations from 25 commercial banks listed on the Indonesia Stock Exchange (IDX). The study evaluates the effects of credit risk, market risk, and operational risk management on banking performance, measured by Return on Assets (ROA), Capital Adequacy Ratio (CAR), and Non-Performing Loans (NPL). The findings reveal that integrated risk management significantly improves banking performance stability. Credit risk management exhibits the strongest positive influence on ROA ($\beta = 0.412$; $p < 0.01$) and CAR ($\beta = 0.367$; $p < 0.01$), while significantly reducing NPL ($\beta = -0.289$; $p < 0.01$). Market risk and operational risk management also demonstrate significant relationships with all performance indicators, although with relatively smaller coefficients. These findings suggest that comprehensive enterprise risk management enhances financial resilience, strengthens institutional stability, and supports sustainable banking performance amid economic uncertainty. The study contributes empirical evidence supporting integrated risk governance as a strategic driver of long-term banking sustainability in emerging economies.

Keywords: *Bank Performance Stability, Commercial Banks, Enterprise Risk Management, Indonesia, Panel Data Regression.*

INTRODUCTION

Banking system stability constitutes a fundamental prerequisite for achieving sustainable economic growth because the banking sector performs an essential intermediation function by mobilizing financial resources and allocating capital efficiently across productive sectors of the economy (Rose & Hudgins, 2013). Risk management has consequently evolved from a regulatory obligation into a strategic managerial instrument that determines the resilience and long-term competitiveness of banking institutions operating in increasingly uncertain financial environments (Adam et al., 2023). The growing interconnectedness of global financial markets has simultaneously intensified banks' exposure to credit, liquidity, operational, market, and governance risks, making comprehensive risk management frameworks indispensable for preserving institutional stability (Akhtaruzzaman et al., 2023). The implementation of the Basel III post-crisis reform package has further strengthened international expectations that banks should integrate risk governance, capital adequacy, and liquidity management into a unified organizational framework capable of mitigating systemic vulnerabilities (Basel Committee on Banking Supervision, 2017). These developments demonstrate that banking performance can no longer be evaluated solely through profitability indicators because resilience against financial shocks has become an equally important dimension of institutional success. The global financial crisis of 2008 and the COVID-19 pandemic clearly demonstrated that weaknesses in risk governance can rapidly undermine asset quality, erode public confidence, and threaten the stability of national financial systems (Banna et al., 2023). In Indonesia, the banking industry also experienced considerable pressure during the pandemic period, particularly through increasing credit risk and deteriorating loan quality reported across commercial banks (Otoritas Jasa Keuangan, 2023). Such circumstances reinforce the necessity for banking institutions to continuously strengthen integrated risk management practices that not only comply with regulatory requirements but also enhance organizational resilience under rapidly changing economic conditions.

The increasing importance of risk management has encouraged a substantial body of empirical research examining its relationship with banking performance, although the reported findings remain heterogeneous across institutional settings and economic environments (Mas'udi & Said, 2023). Enterprise Risk Management implementation has been found to improve organizational decision-making quality by integrating multiple dimensions of financial and non-financial risks into strategic planning processes, thereby supporting sustainable banking performance (Adam et al., 2023). Cross-country evidence further suggests that effective financial risk management significantly enhances banking stability, particularly within dual banking systems where prudent governance mechanisms moderate institutional vulnerability to external shocks (Banna et al., 2023). Studies conducted in ASEAN banking sectors similarly reveal that robust risk governance structures strengthen the effectiveness of risk management practices and contribute to lower overall risk exposure (Nguyen, 2022). Research investigating the interaction between governance quality, credit risk, and financial performance also indicates that institutional oversight mechanisms substantially influence the extent to which risk management creates organizational value (Mohammad et al., 2024). Within the Indonesian context, recent empirical studies consistently report positive associations between risk management implementation and financial performance indicators, including profitability, capital adequacy, and institutional resilience (Erman & Winario, 2024). Comparable evidence has also shown that integrated risk management strategies improve banking liquidity while reducing credit risk exposure, thereby strengthening overall financial stability (Wahyuningsih et al., 2024). Despite these encouraging findings, the literature still presents considerable variation regarding the magnitude and consistency of the relationship between risk management implementation and banking performance under different macroeconomic conditions, indicating that further empirical investigation remains necessary.

Although numerous studies have acknowledged the importance of risk management in strengthening banking performance, important conceptual and empirical inconsistencies remain unresolved regarding how risk management implementation contributes to long-term banking stability across different institutional contexts (Maulana et al., 2024). Existing studies predominantly concentrate on isolated dimensions of financial risk, such as credit risk, liquidity risk, or governance quality, rather than examining the comprehensive implementation of integrated risk management frameworks required under contemporary banking regulations (Irawati, 2025). Research conducted in Indonesia has likewise tended to evaluate the effectiveness of risk management primarily through profitability indicators, leaving broader measures of financial resilience and institutional stability relatively underexplored (Ardiansyah & Astuti, 2025). Recent investigations have demonstrated that risk management positively affects financial performance; however, these studies generally rely on limited observation periods and do not sufficiently capture the structural changes experienced by the banking industry during and after the COVID-19 pandemic (Inayati et al., 2025). Other empirical evidence emphasizes the role of credit risk and liquidity management in maintaining financial stability but provides limited explanation regarding how integrated risk governance simultaneously influences multiple dimensions of banking performance (Fakhrunnas, 2025). Reviews synthesizing previous literature have also highlighted methodological inconsistencies arising from differences in performance indicators, sample characteristics, and measurements of risk management effectiveness, making cross-study comparisons difficult (Mas'udi & Said, 2023). These inconsistencies indicate that the relationship between risk management implementation and banking stability remains far from conclusive despite growing scholarly attention. Such limitations create an important opportunity to develop a more comprehensive empirical investigation capable of evaluating risk management effectiveness using multiple indicators of banking performance within a unified analytical framework.

Addressing these research gaps has become increasingly important because banking institutions currently operate under unprecedented levels of geopolitical uncertainty, economic volatility, technological transformation, and evolving regulatory expectations that continuously reshape their overall risk profiles (Akhtaruzzaman et al., 2023). Financial institutions are therefore expected not only to comply with regulatory standards but also to establish proactive risk management systems capable of anticipating emerging threats before they materialize into systemic financial distress (Basel Committee on Banking Supervision, 2011). In Indonesia, the Financial Services Authority has strengthened this expectation by requiring commercial banks to implement integrated risk management covering credit, market, liquidity, operational, legal, strategic, compliance, and reputational risks through a comprehensive governance framework (Otoritas Jasa Keuangan, 2016). Recent national evidence further suggests that effective implementation of risk management contributes significantly to maintaining financial system stability while improving institutional adaptability under uncertain macroeconomic conditions (Agma, 2025). Similar findings indicate that organizations capable of embedding financial risk management into strategic decision-making processes demonstrate greater organizational stability and stronger resilience during periods of economic disruption (Eyinade et al., 2025). Case-based studies on Indonesian commercial banks likewise reveal that continuous evaluation of risk management practices plays an essential role in preserving financial performance and sustaining public confidence in banking institutions (Rahman et al., 2025). These developments demonstrate that evaluating the effectiveness of integrated risk management is no longer merely an academic concern but also a practical necessity for regulators, financial institutions, investors, and other stakeholders seeking to strengthen the resilience of the banking sector. Consequently, empirical evidence capable of explaining how comprehensive risk management implementation influences banking performance stability has become increasingly valuable for supporting evidence-based regulatory and managerial decision-making.

Building upon the existing body of literature, this study positions itself by examining risk management implementation as an integrated organizational mechanism rather than as a collection of separate financial control activities (Oyewo, 2022). Unlike previous studies that primarily emphasize individual risk categories or single financial indicators, this research evaluates how comprehensive risk management practices influence the overall stability of banking performance through multiple financial performance dimensions observed simultaneously (Naomi & Sinarwati, 2023). This perspective reflects the increasingly integrated nature of banking operations, where different categories of risk interact dynamically and collectively determine institutional resilience (Kazbekova et al., 2022). The present study also extends previous Indonesian evidence by focusing on the post-pandemic banking environment, a period characterized by structural adjustments, changing regulatory expectations, and evolving patterns of financial risk that have not been sufficiently explored in earlier empirical investigations (Kurnia, 2024). Rather than limiting the analysis to profitability alone, this research incorporates broader indicators of banking stability that better represent the multidimensional consequences of effective risk management implementation (Fakhrunnas, 2025). The adoption of this comprehensive analytical perspective is expected to provide a more accurate explanation of how integrated risk management contributes to sustainable banking performance under conditions of heightened economic uncertainty (Adam et al., 2023). The findings are anticipated to enrich the growing discussion concerning the strategic role of enterprise risk management in modern banking institutions while providing empirical evidence that is directly relevant to emerging market economies, particularly Indonesia. Such a perspective also contributes to narrowing the empirical inconsistencies identified in previous studies by examining risk management implementation within a broader institutional and regulatory framework.

This study aims to analyze the effect of risk management implementation on enhancing banking performance stability in the Indonesian banking sector during the 2019–2023 period. The research focuses on evaluating whether comprehensive risk management practices contribute to improving financial performance while simultaneously strengthening institutional resilience against internal and external shocks. In doing so, the study adopts an integrated perspective that recognizes banking stability as the outcome of interactions among various financial, operational, and governance-related risk management mechanisms rather than the consequence of a single risk dimension. The findings are expected to provide a more comprehensive understanding of the strategic value of integrated risk management in supporting sustainable banking operations within an increasingly uncertain economic environment. From a theoretical perspective, this research contributes to expanding the empirical discussion regarding the relationship between enterprise risk management and banking stability by applying a multidimensional analytical framework. From a methodological perspective, the study offers a more comprehensive approach by examining several indicators of banking performance simultaneously during the post-pandemic recovery period. The practical implications are expected to support banking managers, regulators, and policymakers in designing more effective risk management strategies capable of strengthening financial resilience and promoting sustainable banking sector development. Ultimately, this research seeks to bridge the gap between regulatory expectations and empirical evidence by demonstrating how effective risk management implementation can become a fundamental driver of long-term banking stability and performance.

RESEARCH METHODS

This study employed a quantitative empirical research design to examine the effect of risk management implementation on banking performance stability among conventional commercial banks listed on the Indonesia Stock Exchange (IDX) during the 2019–2023 observation period. The study population comprised all conventional commercial banks publicly listed on the IDX, while the research sample was determined using purposive sampling based on three criteria: (1) banks consistently listed throughout the observation period, (2) banks publishing complete annual financial statements and risk management reports, and (3) banks not classified under the Financial Services Authority's special supervisory status during the study period. Applying these criteria resulted in a balanced panel dataset consisting of 25 banks and 125 firm-year observations. Secondary data were collected from audited annual reports, financial statements, and corporate governance disclosures published by the respective banks and the Indonesia Stock Exchange. The dependent variables representing banking performance stability consisted of Return on Assets (ROA), Capital Adequacy Ratio (CAR), and Non-Performing Loans (NPL), while the independent variables included the Credit Risk Management Effectiveness Index (CRMEI), Market Risk Management Effectiveness Index (MRMEI), and Operational Risk Management Effectiveness Index (ORMEI). To minimize omitted-variable bias, bank size measured by the natural logarithm of total assets (SIZE), Loan-to-Deposit Ratio (LDR), and the annual inflation rate were incorporated as control variables. The operationalization of all variables follows widely accepted indicators of banking performance and enterprise risk management adopted in previous empirical studies (Adam et al., 2023).

Panel data regression analysis was employed to estimate the relationship between risk management implementation and banking performance stability because it accommodates both cross-sectional and time-series variations while improving estimation efficiency. The panel data regression model used to estimate the relationship between risk management implementation and banking performance stability is specified as follows:

$$\boldsymbol{Y}_{it} = \alpha + \beta_1 IMRK_{it} + \beta_2 IMRP_{it} + \beta_3 IMRO_{it} + \beta_4 SIZE_{it} + \beta_5 LDR_{it} + \varepsilon_{it}$$

Model selection between the Fixed Effects Model (FEM) and Random Effects Model (REM) was determined using the Hausman specification test to identify the most appropriate estimator for the panel dataset. Prior to hypothesis testing, several diagnostic procedures were conducted to verify the validity of the regression model, including multicollinearity testing using the Variance Inflation Factor (VIF), heteroscedasticity testing, and autocorrelation testing. Descriptive statistics and correlation analyses were also performed to provide an overview of data characteristics and preliminary relationships among variables. Statistical significance was evaluated at the 1%, 5%, and 10% significance levels to ensure robust inference regarding the impact of integrated risk management on banking performance stability. The analysis was conducted using panel econometric techniques that are widely adopted in banking and financial performance research, thereby enhancing the reliability and comparability of the empirical findings with previous international studies (Banna et al., 2023).

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics provide an overview of the financial characteristics and risk management implementation of conventional commercial banks listed on the Indonesia Stock Exchange during the 2019–2023 observation period. This preliminary analysis is essential because it illustrates the distribution, central tendency, and variability of each research variable before the econometric estimation is conducted. Descriptive evidence also enables the identification of differences in financial performance and risk management practices across the sampled institutions, thereby providing an empirical context for interpreting the subsequent regression results. The observed variation among banks reflects differences in organizational characteristics, financial structures, and operational strategies throughout the study period. Such heterogeneity is expected in banking research because financial institutions operate under diverse business models and risk profiles despite being subject to the same regulatory framework. Previous banking studies have similarly emphasized that descriptive statistics constitute an important first step in understanding the characteristics of financial datasets prior to hypothesis testing (Rose & Hudgins, 2013).

The financial performance indicators demonstrate that the sampled banks generally maintained stable operating conditions during the observation period. Return on Assets (ROA) recorded an average value of 1.87%, indicating that most institutions were able to generate positive earnings from their asset portfolios despite fluctuations in the economic environment. Capital Adequacy Ratio (CAR) averaged 21.43%, substantially exceeding the minimum regulatory requirement, while the average Non-Performing Loan (NPL) ratio remained at 2.94%, indicating that aggregate credit quality was maintained within the prudential threshold established by the financial regulator. The standard deviations of these variables indicate moderate dispersion, suggesting that although financial performance differed across banks, extreme observations were relatively limited within the sample. These descriptive findings indicate that the sampled banking sector exhibited relatively sound financial conditions during the post-pandemic recovery period, thereby providing a suitable empirical setting for evaluating the contribution of risk management implementation to banking performance stability. Similar trends have been documented in recent assessments of the Indonesian banking industry, which reported improvements in capital resilience and credit quality following the pandemic recovery phase (Otoritas Jasa Keuangan, 2023).

Table 1. Descriptive Statistics of Research Variables (2019–2023)

Variable	N	Mean	Std. Dev.	Min	Max
ROA (%)	125	1,87	0,72	0,21	4,53
CAR (%)	125	21,43	5,18	12,07	38,94
NPL (%)	125	2,94	1,23	0,31	6,47
IMRK	125	0,712	0,134	0,382	0,943
IMRP	125	0,685	0,148	0,311	0,921
IMRO	125	0,658	0,162	0,274	0,916
SIZE (ln Assets)	125	31,24	1,87	27,93	34,86
LDR (%)	125	82,47	11,23	56,34	109,72

Source: Processed from Annual Financial Reports of Listed Banks (IDX, 2019–2023).

The descriptive statistics further indicate that the Credit Risk Management Effectiveness Index (CRMEI) recorded the highest average score among the three dimensions of risk management, followed by the Market Risk Management Effectiveness Index (MRMEI) and the Operational Risk Management Effectiveness Index (ORMEI). The average values of all three indices exceed 0.65, indicating that integrated risk management practices had been implemented by most sampled banks throughout the observation period. Nevertheless, the minimum and maximum values reveal considerable differences in implementation quality across institutions, suggesting that the effectiveness of risk management systems was not uniform. The relatively larger dispersion observed for operational risk management also indicates that banks adopted different approaches in strengthening internal control systems and operational processes. This degree of variation is important because heterogeneous implementation levels provide sufficient empirical variability for evaluating the statistical association between risk management effectiveness and banking performance. Previous studies similarly report that differences in enterprise risk management implementation remain common across banking institutions because organizational governance and internal capabilities vary substantially (Adam et al., 2023).

The control variables also demonstrate substantial diversity among the sampled institutions. The average bank size of 31.24 in logarithmic total assets indicates that the dataset includes both medium-sized and large commercial banks, thereby capturing variation in organizational capacity and market presence. The Loan-to-Deposit Ratio (LDR) averaged 82.47%, suggesting that the sampled banks generally maintained balanced liquidity positions during the observation period. However, the maximum LDR value exceeding 100% indicates that several banks adopted relatively more aggressive lending policies than others. Such variation among control variables enhances the quality of panel data estimation because differences in institutional characteristics can be incorporated into the econometric model without reducing sample representativeness. Similar observations have been reported in studies examining Indonesian commercial banks, where differences in bank size and liquidity management were found to characterize institutional diversity across the banking sector (Naomi & Sinarwati, 2023).

The descriptive statistics indicate that the dataset possesses adequate cross-sectional and temporal variation across both dependent and independent variables. The observed distributions suggest that the sampled banks generally maintained favorable financial conditions while exhibiting measurable differences in the implementation of integrated risk management practices. The absence of extreme concentration around particular values indicates that the variables are sufficiently dispersed to support reliable panel data estimation. The descriptive evidence also demonstrates that the selected sample adequately represents differences in profitability, capital adequacy, credit quality, organizational scale, liquidity management, and risk management effectiveness among Indonesian commercial banks. These characteristics provide an appropriate empirical foundation for examining the statistical relationship between integrated risk management implementation and banking performance stability using panel regression analysis. The regression results derived from this dataset are presented in the following section to evaluate the magnitude and direction of these relationships.

Panel Regression Results

The relationship between risk management implementation and banking performance stability was estimated using panel data regression based on 125 firm-year observations covering the 2019–2023 period. Before estimating the regression coefficients, the appropriate panel estimation model was determined using the Hausman specification test. The test produced a Chi-square statistic of 18.47 with a probability value of 0.003, indicating that the Fixed Effects Model (FEM) was more appropriate than the Random Effects Model (REM). Accordingly, all subsequent analyses were conducted using the Fixed Effects estimator to account for unobserved bank-specific characteristics that remained constant throughout the observation period. Prior to model estimation, the diagnostic tests confirmed that the regression model satisfied the assumptions of multicollinearity, heteroscedasticity, and autocorrelation, indicating that the estimated coefficients were statistically reliable. The regression results obtained from the selected model are presented in Table 2.

Table 2. Fixed Effect Panel Regression Results

Variabel	ROA (β)	CAR (β)	NPL (β)
IMRK	0,412	0,367	−0,289
IMRP	0,218	0,301	−0,203
IMRO	0,176	0,244	−0,187
SIZE	0,134	0,289	−0,098
LDR	0,087	−0,156	0,112
Konstanta	−1,247	8,341	5,923
R^2	0,687	0,714	0,658
F-stat	24,31	27,89	21,47

Source: Panel data estimation using EViews 12.

The estimated models exhibit satisfactory explanatory power, with coefficients of determination ranging from 0.658 to 0.714 across the three dependent variables. The highest explanatory power was observed for the Capital Adequacy Ratio (CAR), where the independent and control variables explained approximately 71.4% of the total variation. The corresponding values for Return on Assets (ROA) and Non-Performing Loans (NPL) were 68.7% and 65.8%, respectively. The adjusted coefficients of determination remained relatively high, indicating that the explanatory capability of the models was maintained after accounting for the number of predictors included in the regression equation. Furthermore, the F-statistics were statistically significant at the 1% level for all estimated models, confirming that the independent variables jointly explained variations in banking performance stability.

The regression coefficients indicate that the Credit Risk Management Effectiveness Index (CRMEI) exhibited positive coefficients for Return on Assets and Capital Adequacy Ratio, while demonstrating a negative coefficient for Non-Performing Loans. Specifically, the estimated coefficients reached 0.412 for ROA, 0.367 for CAR, and −0.289 for NPL, with all coefficients remaining statistically significant at the 1% significance level. These results indicate that changes in the effectiveness of credit risk management were consistently associated with changes in all three indicators of banking performance stability. Among the three dimensions of risk management examined in this study, CRMEI recorded the largest coefficient values across the estimated models. The direction of the estimated coefficients remained consistent throughout the three regression equations, indicating a stable empirical relationship between credit risk management effectiveness and banking performance indicators.

The Market Risk Management Effectiveness Index (MRMEI) and the Operational Risk Management Effectiveness Index (ORMEI) also demonstrated statistically significant relationships with the dependent variables. Both variables exhibited positive coefficients for Return on Assets and Capital Adequacy Ratio while showing negative coefficients for Non-Performing Loans. Compared with CRMEI, the estimated coefficients for MRMEI and ORMEI were relatively smaller across all three regression models. Nevertheless, the statistical significance of these coefficients indicates that variations in market risk management and operational risk management effectiveness were consistently associated with changes in banking performance indicators during the observation period. The estimated coefficients further demonstrate that all three dimensions of integrated risk management contributed to explaining variations in banking performance stability.

The control variables also exhibited statistically measurable relationships with banking performance. Bank size (SIZE) was positively associated with Return on Assets and Capital Adequacy Ratio while displaying a negative coefficient for Non-Performing Loans. In contrast, the Loan-to-Deposit Ratio (LDR) showed a positive coefficient for Return on Assets but negative and positive coefficients for Capital Adequacy Ratio and Non-Performing Loans, respectively. The estimated coefficients of both control variables remained statistically significant across most regression specifications, indicating that institutional characteristics contributed to variations in banking performance alongside the implementation of integrated risk management. Overall, the regression estimates consistently demonstrate statistically significant associations between the explanatory variables and the three indicators of banking performance stability. These empirical findings provide the basis for the subsequent discussion regarding the mechanisms through which integrated risk management influences banking performance in the Indonesian banking sector.

Effects of Risk Management Implementation on Bank Performance

The regression results demonstrate that credit risk management exerts the strongest influence on banking performance stability among all dimensions of integrated risk management examined in this study. This finding reflects the fundamental role of lending activities as the primary source of revenue generation and financial exposure within commercial banking institutions. Because credit portfolios generally account for the largest proportion of banking assets, improvements in credit risk management directly affect asset quality, income generation, capital preservation, and overall financial sustainability. Effective identification, assessment, monitoring, and mitigation of credit risk enable banks to minimize potential loan defaults while maintaining healthy lending activities that support long-term profitability. Consequently, banks that successfully implement comprehensive credit risk management systems are better positioned to maintain financial stability during periods of economic uncertainty. The empirical findings obtained in this study therefore reinforce the argument that credit risk remains the most influential component of enterprise risk management within banking institutions operating in emerging markets. Similar conclusions have been reported by previous empirical studies, which consistently identify credit risk governance as the primary determinant of banking resilience because deteriorating loan quality rapidly affects both profitability and capital adequacy (Fakhrunnas, 2025). These findings further indicate that strengthening credit risk management should remain a strategic priority for commercial banks seeking to improve sustainable financial performance under increasingly volatile economic conditions.

The positive relationship identified between the Credit Risk Management Effectiveness Index (CRMEI) and both Return on Assets and Capital Adequacy Ratio indicates that effective credit risk governance contributes not only to higher profitability but also to stronger financial resilience. Well-managed credit portfolios reduce impairment losses, improve cash flow stability, and increase the efficiency of asset utilization, thereby enabling banks to generate greater returns from available resources. At the same time, lower credit losses reduce pressure on regulatory capital because fewer provisions must be allocated to cover impaired loans, allowing banks to preserve stronger capital adequacy positions. These findings are consistent with the risk-return paradigm in banking, which suggests that effective risk management does not merely reduce uncertainty but also enhances operational efficiency and value creation. Rather than limiting lending activities, prudent credit risk management enables financial institutions to optimize risk-adjusted returns while maintaining compliance with prudential regulations. This perspective supports the proposition that profitability and financial stability are complementary outcomes when risk governance is implemented effectively. Comparable evidence has likewise been reported in international banking studies demonstrating that integrated credit risk management significantly strengthens both financial performance and institutional resilience under changing macroeconomic conditions (Banna et al., 2023; Mohammad et al., 2024).

Another important finding concerns the negative association between credit risk management effectiveness and the Non-Performing Loan ratio. The estimated coefficient indicates that improvements in credit risk management are consistently followed by reductions in problematic loans, suggesting that more effective screening, monitoring, and recovery mechanisms substantially improve overall asset quality. From a banking perspective, lower levels of non-performing loans contribute directly to financial stability because they reduce provisioning expenses, preserve liquidity, and strengthen market confidence in the institution. The result also reflects the effectiveness of preventive risk management practices that identify potential credit deterioration before it develops into significant financial distress. Such findings are particularly relevant within the Indonesian banking sector, where maintaining acceptable levels of non-performing loans remains one of the principal supervisory objectives of financial regulators. The Basel framework similarly emphasizes that comprehensive credit risk assessment and continuous portfolio monitoring constitute essential elements of prudent banking practices capable of enhancing institutional resilience against adverse economic shocks (Basel Committee on Banking Supervision, 2017). Consequently, the present findings provide additional empirical support for regulatory initiatives encouraging commercial banks to continuously strengthen credit risk governance as an integral component of enterprise risk management. Moreover, the evidence suggests that effective credit risk management contributes not only to regulatory compliance but also to the long-term sustainability of banking operations through improvements in overall financial stability.

The empirical results further demonstrate that market risk management constitutes another important determinant of banking performance stability, although its estimated effect is relatively smaller than that of credit risk management. The positive relationship between the Market Risk Management Effectiveness Index (MRMEI) and both Return on Assets and Capital Adequacy Ratio indicates that effective management of market-related exposures contributes to stronger financial performance while reinforcing institutional resilience. Commercial banks are increasingly exposed to fluctuations in interest rates, exchange rates, and other financial market variables that directly influence the valuation of assets and liabilities. Consequently, the ability to identify and mitigate market risk enables banks to reduce earnings volatility and maintain more stable financial positions despite changing macroeconomic conditions. The relatively smaller regression coefficients observed for market risk management may reflect the structure of the Indonesian banking industry, where traditional lending activities continue to contribute a substantially larger proportion of total income than market-based transactions. Nevertheless, the statistical significance of MRMEI indicates that market risk governance remains an indispensable component of integrated enterprise risk management because financial market volatility has become increasingly pronounced following global economic disruptions. Previous studies likewise conclude that effective market risk management enhances banking resilience by improving strategic decision-making and reducing the adverse effects of external financial shocks on institutional performance (Nguyen, 2022). Therefore, although credit risk remains the dominant concern, strengthening market risk governance should continue to receive considerable managerial attention as banking institutions operate within increasingly interconnected global financial markets.

The findings also reveal that operational risk management significantly contributes to banking performance stability through its positive association with profitability and capital adequacy and its negative relationship with non-performing loans. Operational risk differs from financial risk because it originates from internal processes, human resources, information systems, technological failures, and organizational governance rather than from financial market transactions alone. Consequently, improvements in operational risk management enhance organizational efficiency by minimizing operational disruptions that could otherwise generate financial losses or reputational damage. The relatively smaller coefficient associated with the Operational Risk Management Effectiveness Index (ORMEI) should not be interpreted as evidence of limited importance because operational resilience has become increasingly critical in the era of digital banking and financial technology transformation. The rapid expansion of digital financial services has substantially increased banks' exposure to cyber threats, system failures, operational fraud, and technology-related disruptions that require sophisticated internal control mechanisms. Effective operational risk governance therefore supports sustainable banking performance by ensuring business continuity, protecting organizational assets, and maintaining customer confidence under rapidly changing technological environments. These findings are consistent with recent empirical studies demonstrating that integrated operational risk management strengthens institutional adaptability and improves long-term organizational sustainability through enhanced governance and internal control systems (Adam et al., 2023; Eyinade et al., 2025). Accordingly, operational risk management should be viewed as a strategic investment that enhances institutional resilience rather than merely a regulatory compliance requirement.

Taken together, the empirical findings indicate that integrated risk management functions as a comprehensive governance mechanism through which banking institutions simultaneously improve profitability, strengthen capital adequacy, and preserve asset quality. The consistent statistical significance observed across the three dimensions of risk management demonstrates that banking performance stability cannot be explained by a single category of financial risk but instead reflects the combined effectiveness of credit, market, and operational risk governance. This multidimensional perspective supports the fundamental principles of Enterprise Risk Management, which emphasize that organizational resilience is achieved through coordinated management of interconnected risks rather than fragmented control over individual risk categories. The results further suggest that the effectiveness of integrated risk management extends beyond regulatory compliance by creating measurable improvements in institutional financial performance. Such evidence reinforces the importance of adopting holistic governance structures capable of responding to increasingly complex financial, technological, and operational challenges confronting modern banking institutions. Although credit risk management remains the strongest contributor to banking stability, the complementary roles of market and operational risk management indicate that sustainable banking performance depends upon the successful integration of all major risk management functions within a unified organizational framework. These findings therefore provide empirical support for strengthening enterprise-wide risk governance as an essential strategy for enhancing long-term banking resilience in emerging market economies. The broader theoretical and practical implications of these findings for banking management, regulatory policy, and future research are discussed in the following section.

Discussion and Practical Implications

The findings of this study reinforce the proposition that integrated risk management should be regarded as a strategic organizational capability rather than merely a regulatory obligation imposed upon banking institutions. The significant relationships identified between the three dimensions of risk management and banking performance stability indicate that enterprise-wide risk governance creates measurable organizational value beyond ensuring compliance with prudential regulations. These findings extend the contemporary understanding of Enterprise Risk Management (ERM) by demonstrating that coordinated risk governance contributes simultaneously to profitability, capital strength, and credit quality instead of affecting only a single dimension of financial performance. Such evidence supports the theoretical argument that organizational resilience emerges from the effective integration of interconnected risk management processes across all operational functions. Banks operating under volatile economic conditions require governance systems capable of anticipating financial uncertainty before it develops into significant institutional distress. Consequently, integrated risk management should be viewed as a long-term strategic investment that strengthens institutional competitiveness while supporting sustainable value creation. Previous studies have similarly reported that comprehensive enterprise risk management enhances organizational adaptability, strategic decision-making, and long-term financial sustainability in banking institutions (Adam et al., 2023). The present findings therefore contribute additional empirical evidence supporting the growing recognition of ERM as an important determinant of sustainable banking performance in emerging economies.

Another important implication concerns the continued relevance of international regulatory frameworks in strengthening banking resilience within developing financial systems. The empirical evidence indicates that banks implementing comprehensive risk management practices consistently achieve stronger financial outcomes than institutions exhibiting weaker risk governance mechanisms. This observation is closely aligned with the objectives of the Basel III framework, which emphasizes adequate capital, prudent liquidity management, and integrated supervision as essential components of financial system stability. Rather than treating regulatory compliance as an administrative requirement, banking institutions should incorporate Basel principles into strategic planning, internal governance, and corporate decision-making processes. Such integration enables banks to respond more effectively to economic shocks, financial market volatility, and emerging operational risks associated with technological transformation. The Indonesian banking sector has experienced substantial structural changes following the COVID-19 pandemic, making comprehensive implementation of integrated risk management increasingly necessary for maintaining institutional resilience. These findings therefore support the continuing efforts of financial regulators to strengthen supervisory standards while encouraging banks to adopt more proactive and comprehensive risk governance frameworks (Basel Committee on Banking Supervision, 2017; Otoritas Jasa Keuangan, 2016). Collectively, the results suggest that regulatory effectiveness depends not only on formal compliance but also on the quality of organizational commitment to enterprise-wide risk management implementation.

From a managerial perspective, the findings highlight the importance of embedding integrated risk management into strategic decision-making at every organizational level rather than limiting its application to specialized risk management units. Senior executives should ensure that risk assessment becomes an integral component of business planning, investment evaluation, lending decisions, technological innovation, and performance monitoring. The results further indicate that strengthening credit risk governance should remain a managerial priority because this dimension demonstrated the strongest contribution to banking performance stability throughout the study period. Nevertheless, banking managers should avoid concentrating exclusively on credit risk because market risk and operational risk also contribute significantly to institutional resilience when managed within an integrated governance framework. Investments in digital infrastructure, internal control systems, employee competence, and organizational risk culture are therefore essential for improving the effectiveness of enterprise-wide risk management. Such initiatives not only reduce organizational vulnerability but also strengthen stakeholder confidence, improve operational efficiency, and support sustainable financial performance over the long term. Previous studies likewise emphasize that organizations adopting proactive and integrated risk governance consistently demonstrate greater resilience during periods of financial uncertainty than institutions relying on fragmented risk management practices (Kazbekova et al., 2022; Eyinade et al., 2025). These managerial implications indicate that risk management should function as a core strategic capability supporting sustainable banking development rather than merely satisfying supervisory expectations.

The findings of this study also contribute to the growing literature on banking performance by providing empirical evidence that supports a multidimensional perspective of risk management implementation. Previous studies have frequently examined credit risk, market risk, or operational risk as separate determinants of financial performance, whereas the present study demonstrates that these dimensions should be evaluated as complementary components of an integrated governance framework. This integrated perspective provides a broader understanding of how enterprise risk management contributes to banking resilience under dynamic economic conditions. The results further indicate that the effectiveness of risk management cannot be evaluated solely through improvements in profitability because stronger capital adequacy and lower non-performing loans are equally important indicators of institutional sustainability. Consequently, the present study extends existing empirical evidence by illustrating that integrated risk management simultaneously influences several dimensions of banking performance rather than a single financial outcome. This broader analytical approach contributes to the refinement of enterprise risk management literature, particularly in the context of emerging banking markets characterized by relatively high economic uncertainty. The findings therefore strengthen the argument that comprehensive risk governance represents a strategic organizational capability capable of supporting sustainable financial performance over the long term (Banna et al., 2023). Future empirical studies may further develop this perspective by incorporating environmental, social, and governance (ESG) risk factors, digital transformation, and cybersecurity risks into integrated banking risk management frameworks.

The practical implications of this study are equally relevant for banking regulators and financial institutions. For regulators, the findings indicate that supervisory policies should continue encouraging the implementation of integrated risk management systems that encompass credit, market, and operational risks within a unified governance structure. Strengthening regulatory monitoring should be accompanied by initiatives that promote improvements in organizational risk culture, managerial competence, and technological capability across banking institutions. For bank management, the results emphasize the importance of integrating risk considerations into strategic planning, lending decisions, investment policies, and organizational performance evaluation rather than treating risk management as an isolated compliance function. Investments in digital risk management systems, advanced analytical tools, employee training, and governance mechanisms are expected to improve organizational resilience while reducing the likelihood of financial distress during periods of economic volatility. Such initiatives may also enhance stakeholder confidence by demonstrating stronger institutional commitment to prudent banking practices and sustainable value creation. These implications are particularly relevant for Indonesian commercial banks as they continue adapting to increasingly complex financial environments characterized by rapid technological development, evolving customer expectations, and greater regulatory scrutiny. Accordingly, strengthening enterprise-wide risk management should remain a long-term strategic priority for both regulators and banking practitioners.

Despite providing meaningful empirical evidence, this study is subject to several limitations that should be considered when interpreting the findings. First, the analysis focuses exclusively on conventional commercial banks listed on the Indonesia Stock Exchange, thereby limiting the generalizability of the results to Islamic banks, regional development banks, or privately owned financial institutions. Second, the observation period is restricted to 2019–2023, which primarily captures banking performance during and immediately after the COVID-19 pandemic recovery period and may not fully reflect long-term structural changes within the banking industry. Third, the study evaluates integrated risk management using three principal dimensions of financial risk management, while other emerging sources of organizational risk, including cyber risk, climate-related financial risk, and ESG-related risk, are not explicitly incorporated into the empirical model. Future research should therefore expand the analytical framework by including a broader range of banking institutions, extending the observation period, and integrating additional dimensions of enterprise risk management that reflect the evolving complexity of the global financial system. Comparative cross-country studies would also provide valuable evidence regarding the influence of different regulatory environments on the effectiveness of integrated risk management. Such developments would contribute to a more comprehensive understanding of how enterprise risk management enhances banking performance stability under increasingly dynamic economic and technological conditions. Ultimately, continued empirical investigation is essential for supporting evidence-based policymaking and strengthening the resilience of the banking sector in the face of future financial challenges.

CONCLUSION

This study provides empirical evidence that the implementation of integrated risk management significantly contributes to enhancing banking performance stability among conventional commercial banks listed on the Indonesia Stock Exchange during the 2019–2023 period. The panel regression results demonstrate that the three dimensions of risk management, namely credit risk management, market risk management, and operational risk management, are all significantly associated with banking performance indicators represented by Return on Assets, Capital Adequacy Ratio, and Non-Performing Loans. Among these dimensions, credit risk management emerged as the most influential determinant, indicating that effective governance of lending activities remains essential for maintaining profitability, capital resilience, and asset quality. These findings confirm that integrated risk management functions not only as a mechanism for mitigating financial uncertainty but also as a strategic capability that strengthens institutional resilience and supports sustainable banking performance. The results further suggest that improvements in banking stability require coordinated management of multiple sources of organizational risk rather than isolated efforts focusing on individual risk categories. Consequently, the study reinforces the importance of adopting enterprise-wide risk management practices that integrate financial and operational considerations into organizational decision-making processes. The empirical evidence presented in this study therefore contributes to the growing body of literature emphasizing that effective risk governance represents a fundamental driver of long-term banking sustainability in emerging market economies.

The findings also generate important theoretical and practical implications for banking institutions and financial regulators. From a theoretical perspective, this study extends the enterprise risk management literature by demonstrating that integrated risk governance simultaneously influences multiple dimensions of banking performance instead of affecting profitability alone. The results provide additional support for the argument that organizational resilience is strengthened through coordinated management of interconnected financial and operational risks within a unified governance framework. From a practical perspective, bank management should continuously strengthen enterprise risk management implementation by integrating risk assessment into strategic planning, lending policies, investment decisions, and organizational performance evaluation. Financial regulators are likewise encouraged to continue improving supervisory frameworks by promoting more standardized indicators for evaluating the effectiveness of integrated risk management across banking institutions. Such initiatives are expected to strengthen financial system stability while encouraging banks to adopt more proactive approaches toward risk governance in response to increasingly complex economic and technological challenges. Collectively, these implications demonstrate that effective risk management should be regarded as a strategic organizational investment capable of creating sustainable value for both financial institutions and the broader economy.

Despite its contributions, this study has several limitations that provide opportunities for future research. The analysis is limited to conventional commercial banks listed on the Indonesia Stock Exchange and therefore may not fully represent the characteristics of Islamic banks, regional development banks, or privately owned financial institutions. In addition, the observation period is confined to 2019–2023, which primarily reflects banking performance during the pandemic recovery phase and may not capture longer-term structural developments within the banking industry. Future studies are therefore encouraged to expand the research scope by including broader categories of banking institutions, extending the observation period, and utilizing higher-frequency datasets such as quarterly observations to capture more dynamic changes in banking performance. Further research should also incorporate additional dimensions of enterprise risk management, including liquidity risk, compliance risk, cyber risk, and environmental, social, and governance (ESG)-related risks, to provide a more comprehensive understanding of organizational resilience in the evolving financial landscape. Comparative studies across different countries and regulatory environments would likewise enrich the empirical literature by identifying institutional factors that influence the effectiveness of integrated risk management implementation. Through these developments, future research is expected to provide broader insights that support evidence-based policymaking and contribute to strengthening the long-term stability and sustainability of the global banking sector..

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