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The Effectiveness of Internal Audit and Risk Management Implementation on Operational Risk Governance and Operational Performance

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ABSTRACT

This study examines how internal audit effectiveness and risk management implementation influence operational risk governance and, in turn, operational performance. Using a quantitative explanatory design and survey data from non-bank financial institutions applying risk-based audit practices, we estimated a PLS-SEM model to test direct and mediated effects. The results show that both internal audit effectiveness and risk management implementation significantly strengthen operational risk governance, which subsequently improves operational performance. Operational risk governance also mediates the effects of the two antecedents on performance. These findings underscore the importance of integrating the Three Lines model with ISO 31000 and COSO ERM to institutionalize risk culture, enhance control effectiveness, and support evidence-based decision making. The study contributes by offering an integrated governance perspective for non-bank financial institutions and provides actionable insights for regulators and practitioners seeking sustainable operational resilience.

Keywords: *internal audit effectiveness, risk management;,operational risk governance, operational performance, risk culture*

1. INTRODUCTION

In an increasingly dynamic and uncertain global business landscape, operational risk has evolved into a strategic issue that directly affects the sustainability and competitiveness of organizations, particularly in the financial sector. This type of risk does not only arise from internal process weaknesses, human errors, or system failures but also from unpredictable external factors such as economic volatility, digital disruptions, and rapidly changing regulations (Nguyen & Dang, 2022). Amid such complexity, the effectiveness of internal audit and risk management has become two fundamental pillars in ensuring sound and

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ethical corporate governance (Abdelrahim & Al-Malkawi, 2022). Internal audit serves as the third line of defense in detecting and assessing the effectiveness of internal controls, whereas risk management acts as a proactive radar in identifying and mitigating potential threats before they impact organizational operations. Recent empirical studies also emphasize that internal audit practices significantly enhance governance quality and control effectiveness when supported by information systems integration, thereby reinforcing their strategic contribution to organizational performance (Kuswandi et al., 2023).

In addition to international empirical evidence, local studies in Indonesia also highlight the importance of strengthening internal oversight functions, particularly through operational audits and internal control mechanisms. Research demonstrates that operational audits play a crucial role in enhancing process reliability, preventing procedural deviations, and supporting organizational accountability across various sectors (Lemana et al., 2025; Syifa Aulia and Fikriyah, 2025). These findings reinforce the view that robust internal audit activities whether operational or compliance-oriented serve as a fundamental component of effective governance structures, particularly for organizations seeking to improve operational efficiency and mitigate emerging risks.

Numerous studies highlight the crucial role of internal audit and Enterprise Risk Management (ERM) in strengthening risk governance. Research by Abdelrahim and Al-Malkawi (2022) demonstrates that the effectiveness of internal audit is influenced by factors such as resources, audit processes, and strong organizational support. Meanwhile, comprehensive implementation of ERM has been proven to enhance financial stability and firm performance. Sajid et al. (2023) found that key components of ERM directly affect an organization’s reputation and financial performance. Furthermore, Vinh Quang et al. (2024) emphasize that ERM improves competitive advantage and decision-making effectiveness, even though its impact on corporate performance is not always direct. In addition, Ahmad Jaber et al. (2024) reveals that internal auditor characteristics such as experience, independence, and competence positively influence the effectiveness of internal audits and the successful implementation of ERM. Therefore, the effectiveness of risk governance does not solely depend on the independent application of internal audit or ERM, but rather on the integration of both in building an adaptive, transparent, and high-integrity organization.

However, the gap in existing research indicates that the relationship between internal audit effectiveness, risk management, and operational risk governance remains empirically inconsistent and insufficiently measured. In the Indonesian context, several governance failures in financial institutions and state-owned enterprises such as fictitious loans at Pegadaian Syariah Batam and collateral misuse practices in Bekasi and Cimahi branches reflect weak synergy among the three lines of Défense (Sari & Khudri, 2024). This situation reveals a decoupling between regulation and implementation, where frameworks such as POJK, ISO 31000, and COSO ERM are often applied ritualistically without producing substantial impact on actual risk control.

Based on this context, this study proposes a more comprehensive conceptual approach by integrating the Three Lines of Defence (3LOD) framework, ISO

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31000:2018, and COSO ERM (2017) into a single analytical model that combines dimensions of oversight, risk management, and operational performance (ISO, 2018). This approach not only examines the direct influence of internal audit effectiveness and risk management implementation on organizational performance but also emphasizes the strategic role of operational risk governance as a mediating variable bridging these relationships (Sajid, Syed Zain Ul Abdin, & Saleem, 2023). Through this integration, the study seeks to demonstrate how synergy between internal control systems and risk management practices can strengthen operational resilience, improve efficiency, and promote sustainable performance among non-bank financial institutions in Indonesia.

Thus, the objective of this research is to analyse and empirically verify the relationships between internal audit effectiveness and risk management implementation toward operational risk governance and their subsequent impact on operational performance in financial institutions. The findings of this study are expected to provide academic contributions to the development of risk governance literature in Indonesia, as well as practical recommendations for regulators and management in strengthening risk culture and enhancing the long-term effectiveness of internal control systems.

Building on these objectives, this study develops a set of hypotheses grounded in established theories and prior empirical evidence on internal audit, risk management, and governance. By integrating insights from the Three Lines of Defense model, ISO 31000, and COSO ERM, the hypotheses are formulated to examine how internal audit effectiveness and risk management implementation influence operational risk governance and, in turn, operational performance.

a. Internal Audit Effectiveness and Operational Risk Governance (H1)
Internal audit plays a critical role in strengthening organizational oversight and ensuring the effectiveness of internal control systems. An effective internal audit function enhances compliance with risk policies, improves transparency, and supports management in identifying and mitigating operational risks. Prior studies indicate that audit effectiveness, which is reflected in auditor independence, competence, and risk-based planning, contributes significantly to the quality of risk governance within organizations (Abdelrahim & Al-Malkawi, 2022; Ardianingsih, Setiawan, Payamta, Widarjo, & Langelo, 2024). In the context of financial institutions, internal audit functions also serve as the third line of defences, providing independent assurance on the adequacy of risk management and control mechanisms. Therefore, this study proposes the following hypothesis:
H1: Internal audit effectiveness has a positive effect on operational risk governance.

b. Risk Management Implementation and Operational Risk Governance (H2)
The implementation of risk management frameworks enables organizations to systematically identify, assess, and control risks across operational activities. Comprehensive risk management practices, particularly those aligned with ISO 31000 and COSO ERM, support the establishment of structured risk governance mechanisms and clarify roles across organizational functions. Empirical evidence suggests that effective risk management implementation

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enhances coordination among governance bodies and improves the consistency of risk-related decision making (Mujalli, 2024; Nguyen & Dang, 2022). As such, risk management implementation is expected to strengthen operational risk governance. Accordingly, the following hypothesis is proposed:
H2: Risk management implementation has a positive effect on operational risk governance.

c. Operational Risk Governance and Operational Performance (H3)
Operational risk governance represents an integrated framework through which organizations oversee risk-related activities and align control mechanisms with strategic objectives. Strong governance structures ensure that risks are managed proactively, resources are allocated efficiently, and operational processes remain resilient. Previous studies show that effective risk governance contributes to improved organizational performance by enhancing efficiency, reliability, and regulatory compliance (Nguyen & Dang, 2022; Vinh Quang, Ngoc-Long, & Xuan Giang, 2024). Therefore, operational risk governance is expected to positively influence operational performance.
H3: Operational risk governance has a positive effect on operational performance.

d. Internal Audit Effectiveness and Operational Performance (H4)
Internal audit effectiveness does not only influence governance mechanisms but also directly affects organizational performance. A competent and independent internal audit function supports management by improving process reliability, preventing procedural deviations, and promoting accountability. Empirical research demonstrates that effective internal auditing enhances operational efficiency and performance outcomes across various organizational contexts (Ardianingsih et al., 2024; Yousef A & Saleh M H, 2023). Based on this evidence, the following hypothesis is formulated:
H4: Internal audit effectiveness has a positive effect on operational performance.

e. Risk Management Implementation and Operational Performance (H5)
Risk management implementation is closely associated with organizational performance, as it enables firms to anticipate uncertainties and minimize operational disruptions. Organizations that consistently apply risk management principles are better positioned to maintain stability, enhance productivity, and achieve sustainable performance. Prior studies indicate that well-implemented risk management systems positively affect operational and financial performance, although the impact may vary depending on governance quality (Sajid et al., 2023; Vinh Quang et al., 2024). Thus, this study proposes the following hypothesis:
H5: Risk management implementation has a positive effect on operational performance.

f. The Mediating Role of Operational Risk Governance in the Relationship between Internal Audit Effectiveness and Operational Performance (H6)

While internal audit effectiveness can directly influence operational performance, its impact is often strengthened through effective risk governance mechanisms. Operational risk governance facilitates the translation of audit

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findings into actionable controls and coordinated risk responses across organizational units. Prior research highlights that governance structures frequently act as mediating mechanisms through which internal control functions contribute to performance improvement (Sajid et al., 2023). Accordingly, operational risk governance is expected to mediate the relationship between internal audit effectiveness and operational performance.

H6: Operational risk governance mediates the relationship between internal audit effectiveness and operational performance.

g. The Mediating Role of Operational Risk Governance in the Relationship between Risk Management Implementation and Operational Performance (H7)
Risk management implementation alone may not fully translate into performance gains without effective governance structures that ensure consistent execution and oversight. Operational risk governance integrates risk management practices with organizational controls, decision-making processes, and accountability mechanisms. Empirical evidence suggests that governance plays a crucial mediating role in linking risk management implementation to performance outcomes (Nguyen & Dang, 2022; Sajid et al., 2023). Therefore, this study proposes the following hypothesis:

H7: Operational risk governance mediates the relationship between risk management implementation and operational performance.

2. RESEARCH METHOD

This study employs a quantitative explanatory approach to analyze the causal relationships among internal audit effectiveness, risk management, operational risk governance, and operational performance in non-bank financial institutions in Indonesia. This approach is considered appropriate as it enables empirical testing of both direct and indirect effects among variables. Ardianingsih et al. (2024) demonstrate that internal auditors' competence and independence enhance the effectiveness of risk-based auditing, while Nurnaningsih et al. (2024) find that risk-based audits have a positive influence on operational performance. Furthermore, Sari and Khudri (2024) emphasize the importance of synergy between internal audit and risk management in strengthening transparency and accountability within governance structures.

Research Design and Population

This study adopts a verificative research design employing path analysis based on Structural Equation Modeling (SEM). This method was selected because it allows for the explanation of simultaneous relationships and mediating effects among complex latent constructs, while providing a comprehensive understanding of the interconnections among variables within the risk governance system (Mujalli, 2024). Such an approach enables the researcher to empirically and quantitatively assess both direct and indirect effects among variables.

The research population consists of employees and structural officials of non-bank financial institutions in Indonesia that have formally implemented

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internal audit functions and risk management systems. The purposive sampling technique was applied to select respondents with relevant experience and direct understanding of internal audit, risk management, and operational control practices. The total target population comprised approximately 500 employees and officers from several non-bank financial institutions operating in West Java, Indonesia.

Following the SEM-PLS rule of thumb, which requires at least ten times the number of indicators in the construct with the largest dimension, the minimum sample size was determined to be 200 respondents, based on 20 indicators across four latent constructs. Accordingly, 200 valid responses were collected and analyzed, ensuring statistical reliability and model robustness.

To provide a clearer context for the respondents' characteristics, their demographic profiles are summarized in Table 1 below.

Table 1 Respondents' Demographic Profile

No	Respondent Identity	Category	Frequency (n)	(%)
1	**Gender**	Male	120	60.0
		Female	80	40.0
	Total		**200**	**100**
2	**Position**	Staff	110	55.0
		Supervisor	60	30.0
		Manager	30	15.0
	Total		**200**	**100**
3	**Years of Experience**	< 5 years	70	35.0
		5–10 years	90	45.0
		> 10 years	40	20.0
	Total		**200**	**100**
4	**Type of Institution**	Cooperative	100	50.0
		Multifinance	60	30.0
		Insurance	40	20.0
	Total		**200**	**100**
5	**Education Level**	Bachelor	150	75.0
		Master	45	22.5
		Others	5	2.5
	Total		**200**	**100**

Source: Processed primary data (2025)

Types and Sources of Data

This study two types of data: primary data and secondary data. Primary data are obtained through the distribution of structured questionnaires to respondents who meet the research criteria. The instrument is designed in the form of closed-ended statements using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) to measure respondents' perceptions of each indicator (Sugiyono, 2020). Meanwhile, secondary data are collected from annual reports, risk management guidelines, internal audit reports, and relevant corporate governance documents. The use of both data sources aims to enhance the validity of the analysis and provide a contextual understanding of the empirical findings.

Operationalization of Variables

The research variables consist of four main constructs, each measured based on relevant theories and internationally recognized standards.

Table 2 Operationalization of Research Variables

Variable	Indicators	Theoretical Source	Measurement Scale
Internal Audit Effectiveness (X_1)	Independence, Auditor Competence, Risk-Based Planning, Audit Results Communication, Follow-Up on Findings	Institute of Internal Auditors (IIA, 2024)	Likert 1–5
Risk Management Implementation (X_2)	Risk Identification, Risk Analysis, Risk Evaluation, Risk Treatment, Risk Monitoring	ISO 31000:2018; COSO ERM (2017)	Likert 1–5
Operational Risk Governance (Y_1)	Three Lines of Défense Structure, Risk Policy, Control Effectiveness, Risk Reporting, Risk Culture	Basel Committee (2019); Power (2007)	Likert 1–5
Operational Performance (Y_2)	Efficiency, Accuracy, Asset Security, Regulatory Compliance, Productivity and Innovation	Kaplan & Norton (1996); Barney (1991)	Likert 1–5

Analysis Method

The research model is designed to examine the direct and indirect relationships among the variables as follows:

$$Y1 = \beta 1X1 + \beta 2X2 + \varepsilon 1$$
$$\mathrm{Y2} = \beta 3X1 + \beta 4X2 + \beta 5Y1 + \varepsilon 2$$

Notation:

X_1= Internal Audit Effectiveness
X_2= Risk Management Implementation
Y_1= Operational Risk Governance
Y_2= Operational Performance
β= Path Coefficient
ε= Residual Error

This model assumes that Operational Risk Governance (Y_1) functions as a mediating variable that bridges the influence of Internal Audit Effectiveness (X_1) and Risk Management Implementation (X_2) on Operational Performance (Y_2).

The relationships among variables in this study are illustrated in Figure 1, which depicts the direction of both direct and indirect effects between internal audit effectiveness, risk management implementation, operational risk governance, and operational performance.

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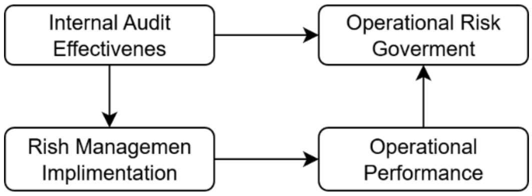

Figure 1 Conceptual Research Model

Data analysis in this study was conducted in two main stages: descriptive analysis and inferential analysis. The descriptive analysis was used to describe the characteristics of respondents and to identify the general patterns of responses for each variable. The next stage employed Partial Least Squares Structural Equation Modelling (SEM-PLS) to examine the relationships among latent variables, as this method is highly effective for analysing complex models with non-normal data distributions (Mujalli, 2024).

3. RESULTS AND DISCUSSION

Results of the Outer Model Analysis

The first stage in testing using Partial Least Squares Structural Equation Modeling (PLS-SEM) is the evaluation of the outer model, which aims to ensure that the indicators used possess adequate validity and reliability. Based on the analysis results, all indicators demonstrated loading factor values above 0.70**,** indicating that each indicator strongly represents its corresponding latent construct **(**Pereira et al., 2024**).** The Average Variance Extracted (AVE) values for all constructs exceeded 0.50**,** signifying that more than half of the variance of the indicators is explained by the respective constructs being measured. In addition, both the Composite Reliability (CR) and Cronbach's Alpha values for all variables were greater than 0.70**,** reflecting a high level of internal consistency **(**Tilahun et al., 2023**).**

Table 3 Results of Construct Validity and Reliability Testing

Variable	Loading Factor Range	AVE	CR	Cronbach's Alpha	Description
Internal Audit Effectiveness (X_1)	0.74–0.89	0.68	0.91	0.87	Valid & Reliable
Risk Management Implementation (X_2)	0.71–0.86	0.63	0.89	0.84	Valid & Reliable
Operational Risk Governance (Y_1)	0.73–0.88	0.65	0.90	0.86	Valid & Reliable
Operational Performance (Y_2)	0.78–0.92	0.72	0.93	0.89	Valid & Reliable

Source : Data processed (2025)

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Results of the Inner Model Analysis

The inner model analysis was conducted to examine the relationships among the latent variables that had previously been confirmed as valid and reliable. The results show that the R-square (R^2) value for the construct Operational Risk Governance (Y_1) is 0.67, and for Operational Performance (Y_2) is 0.72. These values indicate that the model demonstrates strong explanatory power, meaning that 67% of the variance in Y_1 and 72% of the variance in Y_2 can be explained by the independent variables included in the model. Furthermore, the path coefficient analysis produced the following coefficients and significance values, as shown in Table 3.

Table 4 Path Coefficient Results (Relationships Among Variables)

	Relationships Among Variables	Path Coefficient (β)	T-Statistic	P-Value	Description
H1	Internal Audit Effectiveness → Operational Risk Governance	0.41	5.27	0.000	Significant
H2	Risk Management Implementation → Operational Risk Governance	0.38	4.92	0.000	Significant
H3	Operational Risk Governance → Operational Performance	0.46	6.18	0.000	Significant
H4	Internal Audit Effectiveness → Operational Performance	0.24	2.65	0.008	Significant
H5	Risk Management Implementation → Operational Performance	0.19	2.21	0.027	Significant
H6	Internal Audit Effectiveness → Operational Performance (via Y_1)	0.19	3.47	0.001	Significant (Mediated)
H7	Risk Management Implementation → Operational Performance (via Y_1)	0.17	3.22	0.002	Significant (Mediated)

Source : SmartPLS Output (2025)

Results of Hypothesis Testing

The results of hypothesis testing demonstrate a consistent and statistically significant pattern across the proposed relationships. Internal audit effectiveness is found to have a positive and significant effect on operational risk governance ($\beta = 0.41$; $p < 0.001$), thereby supporting H1. Similarly, risk management implementation significantly influences operational risk governance ($\beta = 0.38$; $p < 0.001$), confirming H2. These findings indicate that both strong internal audit functions and effective risk management practices play complementary roles in reinforcing governance structures that oversee operational risks. Furthermore, operational risk governance exhibits a strong positive effect on operational performance ($\beta = 0.46$; $p < 0.001$), supporting H3 and suggesting that well-established governance mechanisms contribute directly to improvements in efficiency, reliability, and regulatory compliance.

In addition to these indirect pathways, the results reveal significant direct effects on operational performance. Internal audit effectiveness shows a positive

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and significant direct influence on operational performance (β = 0.24; p = 0.008), supporting H4, while risk management implementation also demonstrates a significant positive effect (β = 0.19; p = 0.027), supporting H5. The mediation analysis further indicates that operational risk governance serves as a meaningful intermediary in these relationships. Specifically, operational risk governance significantly mediates the relationship between internal audit effectiveness and operational performance (β = 0.19; p = 0.001), supporting H6, and also mediates the relationship between risk management implementation and operational performance (β = 0.17; p = 0.002), supporting H7. Together, these findings highlight the central role of operational risk governance as a mechanism through which audit and risk management practices are translated into tangible performance outcomes.

Figure 2 below illustrates the results of the structural model derived from the SEM-PLS analysis, showing the direction of relationships among the variables and the corresponding path coefficients.

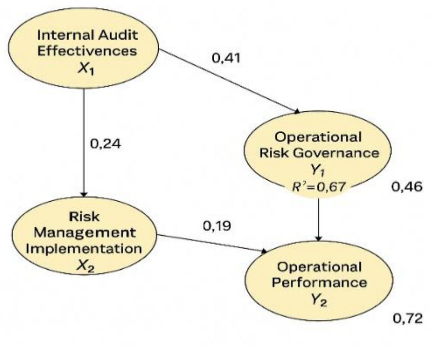

Figure 2 Structural Model of the Study (SmartPLS Output)

Discussion

This study provides empirical evidence that internal audit effectiveness and risk management implementation play critical and complementary roles in strengthening operational risk governance and improving operational performance. The findings confirm that both internal audit effectiveness and risk management implementation significantly enhance operational risk governance, thereby supporting H1 and H2. These results underscore the importance of robust oversight mechanisms and structured risk management processes in ensuring effective governance within non-bank financial institutions. Furthermore, the positive relationship between operational risk governance and operational performance (H3) highlights that governance is not merely a compliance function, but a strategic enabler of efficiency, reliability, and regulatory adherence. This finding reinforces prior studies that emphasize governance as a central mechanism linking control systems and organizational performance, particularly in environments characterized by operational complexity and uncertainty.

In addition to these indirect effects, the study reveals that internal audit effectiveness and risk management implementation also exert significant direct influences on operational performance, supporting H4 and H5. This suggests that

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well-functioning audit and risk management practices can independently contribute to performance improvements by enhancing process discipline, accountability, and decision-making quality. More importantly, the mediation analysis demonstrates that operational risk governance serves as a key intermediary through which audit and risk management practices are translated into tangible performance outcomes, thereby supporting H6 and H7. This finding extends existing literature by empirically validating the strategic role of operational risk governance as an integrative mechanism that aligns internal control systems with risk management practices. In the Indonesian context, these results offer valuable insights for regulators and practitioners, emphasizing that sustainable operational performance is most effectively achieved when audit and risk management functions operate in synergy within a well-structured governance framework.

The findings of this study confirm that internal audit effectiveness has a positive influence on operational risk governance. This indicates that a competent, independent, and risk-oriented internal audit function plays a vital role in strengthening internal control systems (IIA, 2024). This finding is consistent with prior studies showing that effective internal audit functions particularly auditor independence and risk-based audit planning strengthen governance mechanisms and reduce operational risk exposure (Ardianingsih et al., 2024; Yousef & Saleh, 2023).

Furthermore, risk management implementation was found to have a significant effect on operational risk governance. The application of the ISO 31000:2018 principles and the COSO ERM (2017) framework encourages organizations to systematically identify, analyse, and mitigate risks across all lines of activity. This result aligns with Nguyen and Dang (2022), who emphasized that a strong risk governance structure characterized by the active involvement of the supervisory board, risk committee, and internal control unit contributes significantly to the effectiveness of risk management and the improvement of financial institutions’ performance across the ASEAN region. Thus, the success of risk management implementation depends not only on the presence of policies and procedures but also on the extent to which risk governance is integrated into the organization’s strategic decision-making processes

Another key finding highlights the mediating role of operational risk governance in the relationship between internal audit effectiveness, risk management implementation, and operational performance. This supports the Basel Committee (2019) perspective that effective operational risk governance requires cross-functional coordination through the Three Lines of Défense (3LOD) model where the first line of management assumes responsibility for risks, the risk management function provides guidance and oversight, and the internal audit ensures objectivity and compliance.

The effectiveness of operational risk governance has been shown to enhance operational performance, as reflected in improved efficiency, accuracy, regulatory compliance, and service innovation. This finding is consistent with recent empirical evidence indicating that strong internal control and accounting information systems significantly improve employee and organizational performance, reinforcing the mediating role of governance in achieving operational excellence (Anugrahayu and

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Meiriyani, 2024). This finding aligns with the Balanced Scorecard theory (Kaplan & Norton, 1996) and the Resource-Based View (Barney, 1991), which posit that effective resource management and robust governance mechanisms are key drivers of organizational competitiveness. In conclusion, these results not only reinforce existing theories of risk governance but also underscore the critical synergy between internal audit and risk management functions in achieving sustainable organizational performance.

4. CONCLUSION

This study demonstrates that the integration of internal audit effectiveness and risk management implementation plays a crucial role in strengthening operational risk governance and enhancing operational performance within non-bank financial institutions in Indonesia. The findings confirm that organizations with competent, independent, and risk-oriented internal audit functions, supported by structured risk management practices, are better equipped to build resilient governance mechanisms that support sustainable operational outcomes. By positioning operational risk governance as a central linkage between internal control systems and performance, this study highlights governance not merely as a compliance requirement but as a strategic organizational capability.

From a theoretical perspective, this research contributes to the risk governance and internal audit literature by providing empirical evidence that operational risk governance functions as a key mechanism through which audit and risk management practices translate into performance improvements. The integration of the Three Lines of Défense framework with ISO 31000 and COSO ERM extends existing governance models by demonstrating their complementary roles in shaping effective oversight and control systems. Practically, the findings offer valuable insights for regulators, senior management, and internal auditors, emphasizing the importance of aligning audit functions and risk management processes to foster a strong risk culture, enhance decision-making quality, and improve operational efficiency.

Despite these contributions, this study is subject to several limitations. The research focuses on non-bank financial institutions within a specific national context, which may limit the generalizability of the findings to other sectors or countries. In addition, the cross-sectional design restricts the ability to capture dynamic changes in governance and performance over time. Future research is therefore encouraged to extend this model to different institutional settings, employ longitudinal approaches, and incorporate additional governance-related variables to further enrich the understanding of how internal control and risk management systems contribute to organizational resilience and long-term performance.

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