The Impact of Risk Management Process Effectiveness on Risk-based Internal Audit Practice

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Abstract

Objectives: The purpose of this study is to examine the impact of risk management process effectiveness on risk-based internal audit practice.

Methodology: This research is quantitative and survey-based. Data were collected through a Likert-scale questionnaire localized to the Iranian context. Out of 436 distributed questionnaires, 408 were deemed valid for analysis. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. The reliability and validity of the constructs were confirmed, and the relationships among variables were tested based on path coefficients and t-statistics.

Findings: The results revealed significant relationships between the internal auditors' responsibilities, risk management training, and management support with risk management effectiveness. Furthermore, a significant association was observed between risk management and risk-based internal auditing. In addition, risk management, as a mediating variable, influences the relationship between the internal auditors' role, management support, and risk-based internal auditing, while it has no significant mediating effect on the relationship between risk management training and risk-based internal auditing.

Innovation: Focusing on Iran's economic environment, this study fills an existing research gap in domestic literature and highlights the evolving role of internal auditors over time. Internal auditors now go beyond their traditional responsibilities by monitoring, assessing, and evaluating risks that threaten organizational objectives. Moreover, they increasingly serve as advisors to management, as managers are responsible for implementing and executing risk mitigation strategies within business entities.

Keywords: Management support in business entities; Risk management; Risk-based internal auditing; Traditional role of internal auditors.

1. Introduction

The importance of risk management and risk-based internal auditing has significantly increased in developed countries from economic, social, and environmental perspectives. Organizational alignment with dynamic environmental changes leads to financial stability, market confidence, and enhanced reputation (Jiménez *et al.*, 2024). All business entities face various types of risks throughout their operations, including credit, operational, and market risks. Almgrashi and Mujalli (2024) emphasized that since business entities encounter numerous ambiguities in every period, it is recommended that they adopt a sustainable risk management strategy. Such a strategy is not only beneficial but also essential for overcoming future challenges. Risk management plays a vital role in minimizing potential losses and assisting organizations in achieving long-term market sustainability (Mwangi and Njoroge, 2024). A risk management strategy refers to the process of identifying, assessing, and mitigating potential threats faced by business entities. While risk management is crucial for financial stability, effective communication of its outcomes to stakeholders and investors is equally important (Adepoju *et al.*, 2025).

According to Turetken *et al.* (2020), internal auditors provide management with an independent and objective perspective on the effectiveness of risk management within business entities. Historically, internal auditors assumed a traditional and control-centered role; however, over time, their responsibilities have evolved toward a more proactive and dynamic approach aimed at managing risks and strengthening organizational control mechanisms. Many researchers, such as Yousif and Mohamed (2022) and Baharom (2025), have clearly noted that the internal auditors' role has significantly changed in areas such as risk-based decision-making and strategic planning.

No prior research in Iran has examined the effectiveness of the risk management process on risk-based internal audit practices. The present study aims to fill this research gap by analyzing perceptual data gathered from academic and professional experts actively engaged in internal audit practices. Unlike most previous studies that rely on mathematical models or financial statement data, this research employs a Likert-scale questionnaire to collect data from respondents.

The core problem addressed in this study concerns how the risk management process affects internal auditors' activities within business entities. The role of internal auditors has evolved; in the past, their work primarily focused on processing financial transactions and verifying compliance with organizational policies. However, as business environments have become more complex, internal auditors have expanded their responsibilities beyond traditional control functions to include strategic advisory roles, offering insights and recommendations on how to analyze and respond to risks. This transformation in internal auditing has led to the adoption of a risk-based approach, which serves as a modern and effective framework integrating the concept of risk management. Such integration enhances the efficiency, effectiveness, and capabilities of internal auditors, thereby increasing the overall value of business entities (Fekir *et al.*, 2025).

According to Attaf and Bensbahou (2025), all organizations face extensive risks and challenges. Therefore, to survive and remain competitive, they must continuously adapt their operations and implement effective risk management systems. In essence, risk management functions as an internal mechanism essential for the success and sustainability of all business entities.

Therefore, the main research question and objective of this study are to examine the impact of risk management process effectiveness on risk-based internal audit practice. Achieving this objective will enable the development of more effective and preventive actions in the field of risk management, which serves as a critical factor for all business entities. The outcomes of such measures are expected to enhance both the value and performance of organizations. Furthermore, this approach allows business entities to operate within a secure competitive environment, focusing not merely on mitigating

potential threats but on fostering innovation in risk management practices. Ultimately, these efforts will be reflected in the financial statements of the entities, demonstrating improved organizational resilience and performance.

2. Literature Review

The literature on internal auditing has evolved, shifting from a traditional audit approach to a risk-based review framework. The extent of implementing risk-based internal auditing varies across industries and depends on the size and structure of each business entity (Coetzee and Lubbe, 2021). According to the Institute of Internal Auditors (IIA) statement issued in 2009, the implementation of a risk-based internal audit involves several critical stages and is structured as a systematic and cyclical process (Babiker and Elseed, 2025). Figure 1 illustrates a unified framework for risk-based internal audit planning (Wang *et al*., 2025).

Having an appropriate risk-based internal audit (RBIA) plan provides business entities with a comprehensive perspective on how to allocate resources effectively to areas where auditors can have the greatest impact. Consequently, audit activities become more meaningful and value-adding for the organization (ibid). The implementation of systematic procedures through risk-based internal auditing constitutes an integral part of internal auditors' responsibilities within business entities. Such practices

enable auditors to identify and mitigate threats related to the entity's operations. Moreover, risk-based internal auditors also provide a form of assurance regarding management's behavior toward all stakeholders (Almgrashi and Mujalli, 2024). In fact, risk is an inseparable element of every decision. It should not be viewed solely as an undesirable event but rather as a potential opportunity. The growing interconnections within dynamic markets and the instability of economic environments have made risk an inherent component of both business activities and social life. Researchers argue that risk itself should not be considered inherently negative; rather, the failure to manage risk effectively, the lack of proper understanding of its nature, and the inaccurate pricing of risk in volatile economic environments are the factors that make risk appear undesirable. Most organizations attempt to manage risks, yet many fail due to fragmented or inconsistent risk management practices, a phenomenon often described as silo thinking. Effective risk management, therefore, requires a comprehensive, integrated, forward-looking, and process-oriented approach, enabling business entities to not only control risks but also transform them into opportunities. In essence, a risk management strategy entails identifying, assessing, and mitigating risks that threaten the operations and objectives of the organization (Adepoju *et al*., 2025).
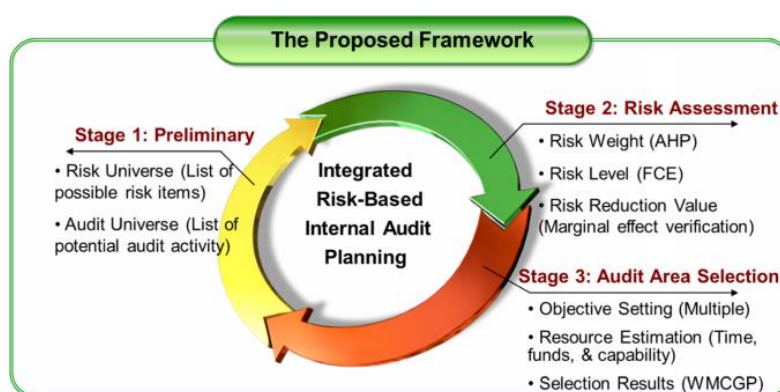

Figure (1) Framework of Risk-Based Internal Audit Planning

Setayesh *et al*. (2025) stated that the adoption of emerging technologies has a significant impact on the independence and objectivity of auditing, the efficiency and professional care of the audit process, the quality assurance and improvement programs of internal auditing, as well as management support for internal audit functions. Sajjadi and Hooshmand Kashani (2024) found that data analytics and the importance of the audit committee have a positive and significant effect on the utilization of continuous audit information in risk-based internal audit planning. Nasredin Maroof *et al*. (2024) demonstrated that risk-based internal controls have a significant effect on the transparency of financial reporting. Furthermore, Barkhordar *et al*. (2021) reported that internal audit independence, auditor competence, management support, internal audit size, and the relationship between internal and external auditors all have positive and significant effects on internal audit effectiveness. However, while effective internal auditing improves internal control systems in banks, it does not have a significant impact on bank risk management.

Fekir *et al*. (2025) stated that adopting a risk-based internal audit (RBIA) approach through a focus on organizational risks enhances the efficiency of internal auditors and helps business entities achieve their objectives. Moreover, compliance with international auditing standards increases audit accuracy and promotes effective resource allocation. Additionally, the alignment of internal auditing with risk management strategies is essential for organizations to accomplish their goals. Zahra (2025) found that internal auditors play a vital role in evaluating and strengthening internal controls, adopting a risk-based perspective, and improving the organization's ability to prevent and detect fraud. Similarly, Babiker and Elseed (2025) demonstrated that risk identification, assessment, and audit planning indicators are significantly associated with the quality of integrated reporting in organizations. Furthermore, conducting risk-based auditing and risk-based reporting has a positive effect on reporting quality. Jaber *et al*. (2024) reported that internal auditors have shown relatively strong participation in the risk management processes of business entities. Moreover, both the role of internal auditors in risk management and their independence have a significant impact on organizational risk management. However, the independence of internal auditors, as a moderating variable, does not significantly influence the relationship between the auditors' role in risk management and overall organizational management. Dmyshko (2024) emphasized that audit planning should be based on a comprehensive risk assessment. Developing a precise audit plan grounded in an in-depth evaluation of the organization's risks is crucial, and continuous monitoring allows internal auditors to promptly adjust their audit programs in response to emerging threats and opportunities. Alabdullah (2023) found that consistency in assurance and internal controls is significantly related to audit procedures, whereas no significant relationship was found between auditor failure and audit practices. Lois *et al*. (2021) revealed a significant association between the implementation of risk-based internal auditing, competence in risk management, active participation of audit committee members, and the establishment of a formal risk management system. Finally, Erlina *et al*. (2020) concluded that managerial commitment, professional competence, and policy frameworks influence the implementation of effective risk management. Additionally, the role and communication of internal auditors significantly affect the adoption of risk-based internal auditing, which in turn positively influences internal audit quality.

The present study examines the impact of risk management process effectiveness on risk-based internal audit practices. Accordingly, based on the reviewed literature and theoretical foundations, the following hypotheses have been developed:

- **H1:** There is a significant relationship between the role of internal auditor in risk management (IAR) and risk management (RME).

- **H2:** There is a significant relationship between training in risk management (TRM) and risk management (RME).
- **H3:** There is a significant relationship between management support (MS) and risk management (RME).
- **H4:** There is a significant relationship between risk management (RME) and risk-based internal audit (RBIA).
- **H5:** Risk management (RME) has a mediating effect on the relationship between the role of internal auditor in risk management (IAR) and risk-based internal audit (RBIA).
- **H6:** Risk management (RME) has a mediating effect on the relationship between training in risk management (TRM) and risk-based internal audit (RBIA).
- **H7:** Risk management (RME) has a mediating effect on the relationship between management support (MS) and risk-based internal audit (RBIA).

3. Methodology

The research strategy of the present study is built upon examining the impact of risk management process effectiveness on risk-based internal audit (RBIA), serving as the main path toward testing the proposed hypotheses. Data and information were collected through a survey method using a Likert-scale questionnaire. In terms of implementation outcome, this research is applied, and from a methodological perspective, it is quantitative in nature. Moreover, based on its purpose, the study is descriptive (survey-based), follows an inductive logic, and is cross-sectional in terms of its time horizon.

The questionnaire used in this research was adapted from previous studies, particularly Almgrashi and Mujalli (2024), and was localized and redesigned to fit the environmental and institutional conditions of Iran. According to Sekaran and Bougie (2016), a questionnaire is a highly effective and practical tool for collecting data. One of its main advantages is that it allows respondents to reflect on their answers, providing thoughtful responses while requiring less time compared to other methods, such as interviews. Conducting a questionnaire-based survey also enables researchers to obtain a substantial amount of specific and homogeneous data from the target sample (Saunders *et al*., 2009).

Table (1) Measurement Components by Construct

Construct	Measurement Component
Risk-Based Internal Audit (RBIA)	Evaluation of internal audit unit guidelines
	Risks related to receivables and shareholders' claims
	Deeper understanding of the internal audit process
	More efficient allocation of financial resources
The Role of Internal Auditor in Risk Management (IAR)	Operational and strategic objectives within organizations
	Estimating the business unit's risk levels in annual reports and their outcomes
	Inherent risks associated with organizational performance
	Assessing and providing timely information about risks that may affect organizational sustainability
	Efficiency of the internal audit system
	Effectiveness of risk management practices
Training in Risk Management (TRM)	Establishment of a risk-based audit system
	Documentation and assessment of risks associated with the business unit
	Enhancing the quality of internal audit and risk management procedures

	Evaluation of risks and risk-based internal auditing
Management Support (MS)	Duties, accountability, and responsibilities of the internal audit unit
	Allocating an appropriate budget to the internal audit department
	Clarity of accountability mechanisms and risk management procedures
Risk Management (RME)	Existence of a separate and identifiable risk management function
	Embedding risk management practices within organizational processes

4. Findings

The statistical population of this study consists of internal auditors operating within Iran. Given the extensive and uncountable number of practitioners across various organizations, the population was considered infinite. Accordingly, the minimum required sample size was determined to be 384 respondents, based on Cochran's formula for an infinite population at a 95% confidence level and a 5% margin of error.

To ensure sufficient representation and account for potential non-responses or incomplete data, a total of 436 questionnaires were distributed among internal auditors in different regions and sectors. Ultimately,

408 fully completed questionnaires were collected and deemed valid for analysis, representing a response rate of approximately 93.6%, which is considered highly satisfactory for social science research.

The collected data were subsequently coded, cleaned, and analyzed using appropriate statistical techniques to test the research hypotheses and evaluate the relationships among the study variables. Descriptive statistics were first employed to summarize the demographic and key characteristics of the respondents, followed by inferential analyses using advanced statistical models consistent with the research objectives.

Table (2) Descriptive Statistics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	301	73.8
	Female	107	26.2
Educational Level	Bachelor's	29	7.10
	Master's	132	32.4
	Ph.D.	173	42.4
	DBA	57	14.0
	Post-Doctorate	17	4.2
Field of Study	Financial Management	189	46.3
	Financial Engineering	45	11.0
	Accounting	147	36.0
	Other Finance-related Fields	27	6.6
Work Experience (Years)	5–10	66	16.2
	10–15	87	21.3
	15–20	177	43.4
	20–25	49	12.0
	25 and above	29	7.1

The descriptive analysis of the 408 respondents indicates that the majority were male (73.8%) and held

advanced academic qualifications, with Ph.D. (42.4%) and Master's degrees (32.4%) predominating. Most

participants specialized in Financial Management (46.3%) and Accounting (36%), reflecting a strong finance-oriented expertise among internal auditors. Regarding professional experience, the largest group had 15–20 years of work experience (43.4%), followed by 10–15 years (21.3%) and 5–10 years (16.2%),

demonstrating a seasoned and diverse workforce. Overall, the sample represents a highly qualified, experienced, and finance-focused population, providing a solid basis for subsequent analyses of the relationships between internal auditing practices and risk-based auditing in the Iranian context.
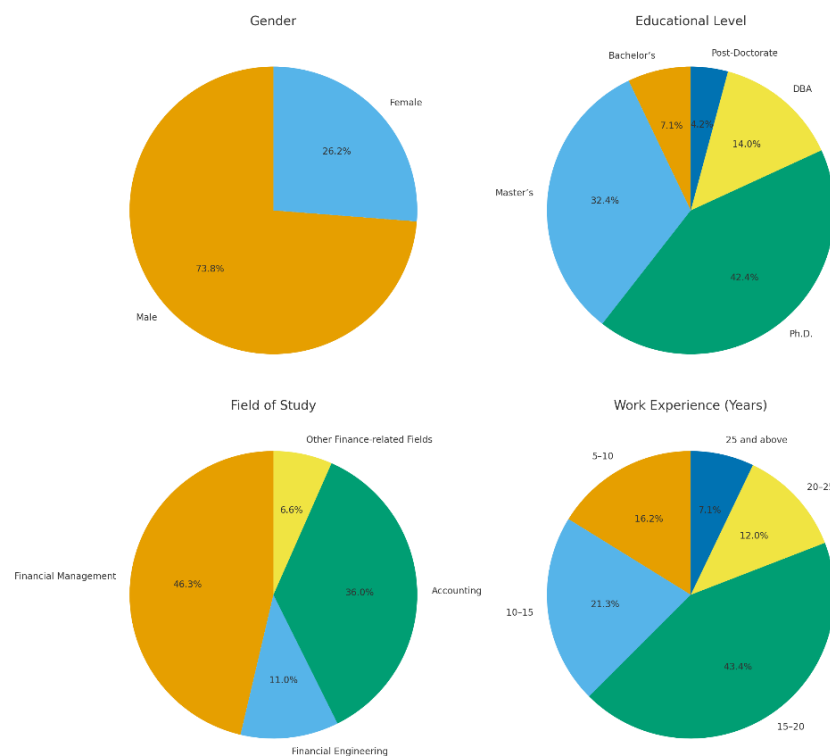

Figure 2: Descriptive Statistics of Respondents

Before structural analysis, the reliability of the measurement instruments was assessed. Internal consistency was evaluated using Cronbach's Alpha (α) and Composite Reliability (CR). Table 3 presents the reliability values for the dependent variable (Risk-based internal audit (RBIA)), independent variables (The role of internal auditor in risk management (IAR), Training in risk management (TRM),

Management support (MS)), and the mediating variable (Risk management (RME)).

Table 3 shows the reliability of all constructs, assessed using Cronbach's Alpha and Composite Reliability. All constructs demonstrate strong internal consistency, with α values ranging from 0.862 to 0.949 and CR values from 0.916 to 0.959, exceeding the recommended threshold of 0.70. The independent variables (IA, TRM, and MS), as well as the mediating

variable RME and the dependent variable RBIA, all exhibit satisfactory reliability, indicating that the measurement instruments are consistent and suitable for further structural analysis.

Table (3) Reliability of constructs

Constructs	Cronbach's Alpha	Composite Reliability
IAR	0.949	0.959
TRM	0.889	0.931
MS	0.887	0.930
RME	0.862	0.916
RBIA	0.924	0.946

Following the assessment of reliability, the convergent validity of the measurement model was examined to ensure that the indicators effectively represent their respective constructs. Convergent validity evaluates the degree to which multiple indicators of the same construct share a high proportion of variance. In this study, it is assessed using Factor Loadings and the Average Variance Extracted (AVE). Factor loadings indicate the strength of the relationship between each indicator and its underlying construct, with values above 0.70 considered acceptable. Table 4 presents the AVE values for all constructs in the study.

Table (4) Convergent Validity of Constructs

Constructs	AVE
IAR	0.795
TRM	0.819
MS	0.815
RME	0.783
RBIA	0.815

Table 4 shows the AVE values for all constructs, ranging from 0.783 to 0.815, exceeding the recommended threshold of 0.50. This indicates that the indicators of each construct, including IAR, TRM, MS, RME, and RBIA, share a high proportion of variance, confirming strong convergent validity and suitability for further structural analysis.

After assessing reliability and convergent validity, the discriminant validity of the measurement model was examined to ensure that each construct is distinct from the others. Discriminant validity evaluates the extent to which a construct differs from other constructs in the model, confirming that indicators measure their intended construct rather than overlapping with others. In this study, discriminant validity is assessed using the Fornell-Larcker criterion, which requires that the square root of the Average Variance Extracted for each construct is greater than its correlations with all other constructs. Table 5 presents the Fornell-Larcker results for all constructs in the study.

Table (5) Convergent Validity of Constructs

Constructs	√AVE	IAR	TRM	MS	RME	RBIA
IAR	0.891	1	0.713	0.687	0.815	0.899
TRM	0.904	0.713	1	0.745	0.952	0.668
MS	0.902	0.687	0.745	1	0.841	0.715
RME	0.884	0.815	0.652	0.841	1	0.617
RBIA	0.902	0.899	0.668	0.715	0.617	1

Table 5 presents the discriminant validity of the constructs using the Fornell-Larcker criterion. For all constructs, the square root of the AVE (diagonal values) ranges from 0.884 to 0.904, which is higher than their respective correlations with other constructs (off-diagonal values). This indicates that each construct is distinct from the others, confirming adequate discriminant validity. These results support that the indicators reliably capture their intended constructs without significant overlap, ensuring the robustness of the measurement model for subsequent structural analysis.

Following the evaluation of reliability and validity, the measurement model was examined to assess the relationships among constructs. Figure 3 illustrates the measurement model with the path coefficients, showing the strength of the relationships among constructs. Figure 4 displays the model with t-values, indicating the statistical significance of the paths. These visual representations provide a clear overview of both the magnitude and significance of the relationships in the proposed model.
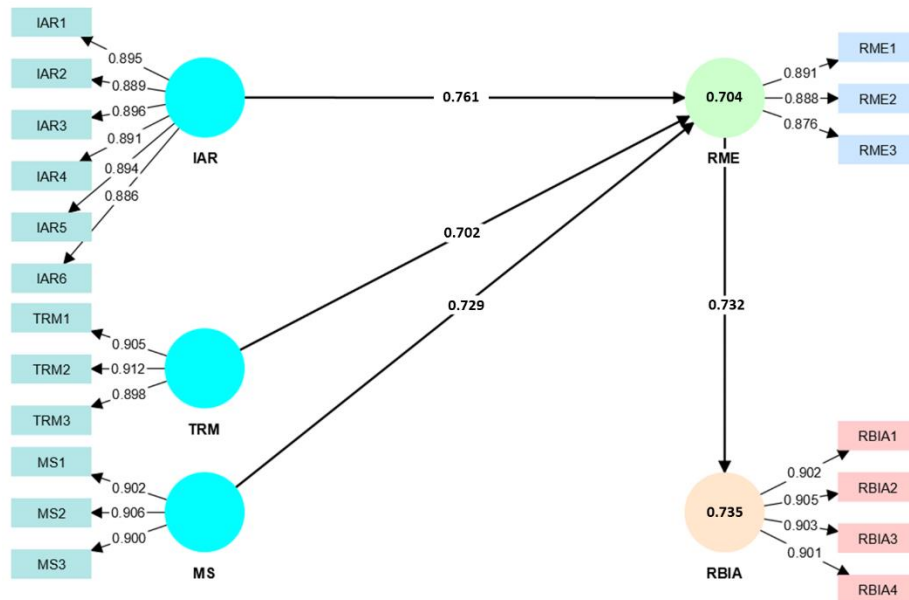
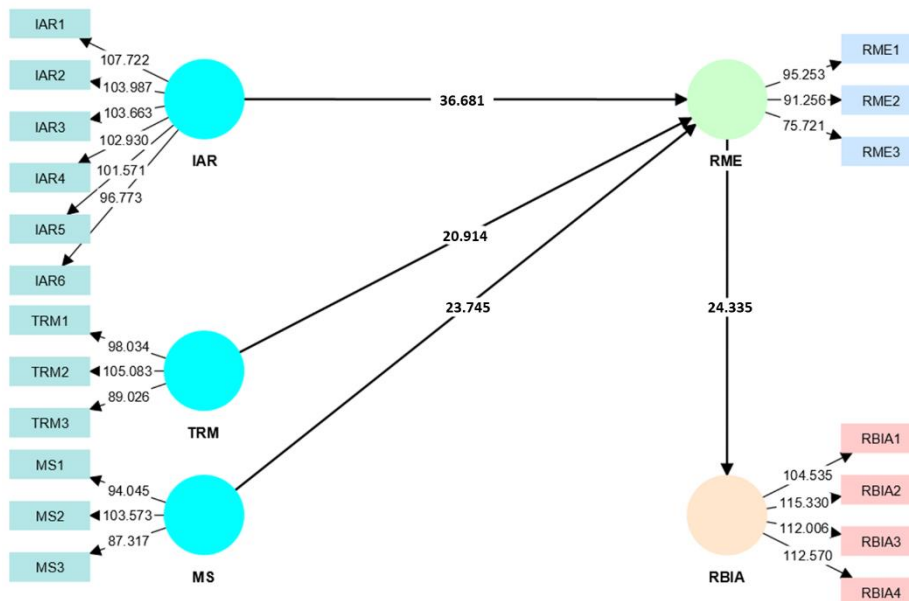**Figure (3) Measurement Model with Path Coefficients**

Figure (4) Measurement Model with t-values (Significance of Paths)

After validating the measurement model, the structural model was evaluated to test the proposed hypotheses. The significance and strength of the relationships between constructs were examined using path coefficients and t-values obtained through Smart PLS.

Table 6 summarizes the results of the hypothesis testing, indicating whether each hypothesized relationship is supported based on the significance level and direction of the path coefficients.

Table (6) Results of the Hypotheses Testing

No	Hypothesis	Path Coefficient	t-values	p-values	Result
1	IAR → RME	0.761	36.681	0.000	Hypothesis confirmation
2	TRM → RME	0.702	20.914	0.000	Hypothesis confirmation
3	MS → RME	0.729	23.745	0.003	Hypothesis confirmation
4	RME → RBIA	0.732	24.335	0.000	Hypothesis confirmation
5	IAR → RME → RBIA	0.746	30.508	0.014	Hypothesis confirmation
6	TRM → RME → RBIA	0.717	22.624	0.219	Hypothesis Rejection
7	MS → RME → RBIA	0.731	24.040	0.001	Hypothesis confirmation

Table 6 presents the results of the hypotheses testing based on path coefficients, t-values, and p-values. All direct relationships between the independent variables and the mediating variable IAR → RME ($\beta = 0.761$, t = 36.681, $p < 0.001$), TRM → RME ($\beta = 0.702$, t = 20.914, $p < 0.001$) and MS → RME ($\beta = 0.729$, t = 23.745, $p < 0.01$) are statistically significant, confirming hypotheses 1-3. The mediating effect of RME on RBIA is also significant for most paths: RME → RBIA ($\beta = 0.732$, t = 24.335, $p < 0.001$), IAR → RME → RBIA ($\beta = 0.746$, t = 30.508, $p < 0.05$), and MS → RME → RBIA ($\beta = 0.731$, t = 24.040, $p < 0.01$), confirming hypotheses 4, 5, and 7. However, the indirect effect of TRM → RME → RBIA ($\beta = 0.717$, t = 22.624, p = 0.219) is not statistically significant, leading to the rejection of hypothesis 6. Overall, these results indicate that while most proposed relationships are supported, the mediating role of RME in the case of TRM on RBIA is not confirmed.

The coefficient of determination (R^2) was calculated to assess the explanatory power of the structural model. R^2 represents the proportion of variance in the dependent or mediating variables explained by the independent variables. Higher R^2 values indicate a stronger predictive ability of the model. Table 7 presents the R^2 values for the mediating variable RME and the dependent variable

RBIA, providing an overview of the model's explanatory strength.

Table (7) Coefficient of Determination (R^2)

Constructs	R^2	R^2 adjusted
RME	0.510	0.506
RBIA	0.474	0.472

Table 7 presents the coefficient of determination (R^2) for the mediating variable RME and the dependent variable RBIA. The R^2 value for RME is 0.510 (adjusted $R^2 = 0.506$), indicating that 51% of the variance in risk management is explained by the independent variables IAR, TRM and MS. For RBIA, the R^2 value is 0.474 (adjusted $R^2 = 0.472$), suggesting that approximately 47% of the variance in risk-based internal audit is explained by the model, including the mediating effect of RME. These values reflect a moderate to substantial explanatory power, demonstrating that the structural model effectively captures the key determinants of the constructs.

To evaluate the overall fit of the structural model, the Goodness-of-Fit (GoF) index was calculated. The GoF provides a global measure of how well the model reproduces the observed data by combining the quality of both the measurement and structural models. Higher GoF values indicate a better fit, with recommended thresholds suggesting small, medium, and large effect

sizes. Table 8 presents the GoF values for the model, reflecting the adequacy of the proposed framework in capturing the relationships among constructs.

Table (8) GoF Index for the Structural Model

Indicator	Value
GoF	0.626

Table 8 presents the GoF index for the structural model, which is calculated as 0.626. According to conventional thresholds for PLS-SEM, a GoF value above 0.36 is considered large, indicating that the model has a strong overall fit. This result confirms that the proposed structural model effectively represents the relationships among the constructs and that both the measurement and structural components of the model adequately capture the underlying theoretical framework.

In summary, the measurement model demonstrated strong reliability and validity, with all constructs exhibiting satisfactory Cronbach's Alpha, Composite Reliability, AVE, and discriminant validity based on the Fornell-Larcker criterion. The structural model results indicate that most hypothesized relationships are supported, with significant path coefficients and t-values, while one indirect effect (TRM → RME → RBIA) was not confirmed. The coefficients of determination (R^2) for RME and RBIA suggest moderate to substantial explanatory power, and the Goodness-of-Fit (GoF) index of 0.626 indicates a strong overall fit of the model. Overall, these results confirm that the proposed framework is both reliable and robust for explaining the determinants of risk-based internal audit within the studied context.

5. Discussion and Conclusion

The primary objective of this study was to examine the impact of risk management process effectiveness on risk-based internal audit (RBIA) practices. Risk is one of the most critical issues faced by all business entities, regardless of their economic conditions. In essence, risk arises when the outcome of an event is uncertain; in financial terms, risk is defined as the degree of uncertainty surrounding a specific matter. This uncertainty represents the potential adverse effects that may result in loss or damage. According to the International Organization for Standardization (ISO 31000: 2018), risk is a significant factor that can affect an organization's objectives. However, over time, research has demonstrated that risk should not merely be viewed as a negative element; rather, when properly managed, it can be transformed into an opportunity.

Within business entities, the responsibility for effectively evaluating and managing risk primarily lies with internal auditors. Through their insights and recommendations, internal auditors assist managers in managing risks more efficiently. Internal auditors play a vital role in organizations, ensuring compliance with essential requirements during the supervision of managerial performance. They also assess the effectiveness of methods and procedures employed within business operations. Recently, the adoption of risk-based internal auditing has become recognized as an ideal and strategic approach for internal audit functions. Moreover, top management support enhances the effectiveness of internal auditors' responsibilities in implementing risk-based practices.

The findings of this study revealed significant relationships among the role of internal auditor in risk management (IAR), training in risk management (TRM), management support (MS), and risk management effectiveness (RME). Consistent with Lois *et al*. (2021) and Mujalli (2024), internal auditors should prioritize the adequacy and effectiveness of risk management mechanisms within business entities. Similarly, Rae and Subramaniam (2008) found that risk management training improves the quality of internal control systems. Moreover, as Mujalli (2024) noted, management support plays a crucial and influential role in the accurate and effective implementation of risk management methods.

The results also indicated a significant relationship between risk management (RME) and risk-based internal audit (RBIA). Researchers such as Zainal Abidin (2017), Goodwin-Stewart and Kent (2006), Mujalli (2024), and Coetzee and Lubbe (2014)

emphasized that aligning risk management practices with organizational structures is a managerial responsibility, requiring the establishment and implementation of appropriate frameworks and processes.

Furthermore, the results showed that risk management (RME), as a mediating variable, significantly affects the relationships among the role of internal auditor (IAR), management support (MS), and risk-based internal audit (RBIA), but does not have a mediating effect on training in risk management (TRM).

The responsibilities of internal auditors within organizations are vital and indispensable, as they are accountable for detecting, assessing, and minimizing risks and fraud that may hinder organizational objectives (Lois *et al.*, 2021). In addition, Drogalas *et al.* (2014) emphasized that managerial commitment to risk management practices and techniques is of utmost importance. Establishing a risk awareness culture and allocating sufficient resources to effective and efficient risk mitigation methods are essential components of a successful risk management framework.

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