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The Impact of Risk-Based Internal Audit Approach on Improving Risk Management Processes: A Field Study in Yemeni Islamic Banks (Aden)

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Abstract. This study explores the impact of the Risk-Based Internal Audit approach on improving risk management processes in Yemeni Islamic banks in Aden. The study focuses on four core RBIA functions: early identification, risk assessment, control evaluation, and monitoring and reporting. Data from eight banks were analyzed using SPSS, linear regression, and ANOVA. In light of the study's results, there is a statistically significant impact of the risk-based internal audit approach in improving risk management processes in Islamic banks operating in Aden by 51.3%. According to the results, the control evaluation function ranked first in influencing the improvement of risk management processes with a rate of 45.2%, followed by risk assessment at 39.9%, and early detection at 32.2%. The study suggests that the management of Yemeni Islamic banks should take into account the recommendations and reports submitted by the Internal Audit Department regarding risk management activities and processes and proposals for improvement, in addition to the need for the management of Yemeni Islamic banks to support and develop communication systems between them and the Internal Audit Department to facilitate the exchange of necessary information on time, to support the monitoring and reporting function, which had the lowest impact rate of 24.3%.

Keywords: Internal Audit, Islamic Banks, Risk Management.

1. INTRODUCTION

The banking system is important in stimulating economic growth, as it is the foundation of any economy. Among its components, Islamic banks are significant in the banking scene. Islamic banks operate in light of the provisions of Islamic Sharia, which prohibit resorting to usurious interest (Abbas et al., 2022. Javaria & Masood, 2020. Al-Beltagy, 2005. Bourqaba, 2013). The Qur'an clearly states that usury is prohibited in any commercial transaction. Islamic law allows trade, and therefore all Islamic banking and finance products and services are based either on profit-sharing or risk-sharing joint ventures (Al Rahahleh et al., 2019).

Moreover, Islamic banks share a set of risks with conventional banks and differ from them in some risks due to their different principles and activities, which causes a set of additional risks. As a result of the risks and challenges that Islamic banks face, they are required to continuously innovate and effectively manage the risks they face to continue and compete. Thus, risk management has become a crucial internal system for any banking institution to succeed in the present time. As per the guidelines provided by IFSB (2005), all Islamic financial services institutions must establish comprehensive risk management and reporting procedures. The procedures should involve appropriate oversight by the board of directors and senior management. Their objective should be identifying, measuring, monitoring, reporting, and controlling relevant risk categories.

As a result of rapid changes and increased focus on risks, internal audits have expanded their traditional oversight role into a modern risk-based role to support management's efforts in risk management. It is important to realize that risks have become more complex recently, and as a result, the role of internal audit has evolved significantly. Its scope has expanded to include various areas such as risk management, culture, behavior, sustainability, non-financial reporting procedures, and other related areas (IIA, 2018). In this context, a study conducted by Ayagre (2014) indicated that there is a significant involvement of internal audit in risk management, which translates into the use of risk-based methods in planning annual audits. The primary factor that motivated the adoption of risk-based internal audit was its help in directing these organizations towards high-priority risk areas.

The IIA's (2009) research involving a cohort of board members and internal auditors has revealed that internal audits, when integrated with risk management, have the potential to enhance organizational value. This is achieved by offering objective assurance regarding the proper management of crucial business risks. Furthermore, it provides confidence in the effectiveness of both the risk management and internal control frameworks. In the same direction, Schulien & Bates (2006) emphasized that by focusing on areas with high risks and high interests, the internal audit function contributes to adding value to organizations and improving processes and controls related to compliance, in addition to enhancing credibility. The study by Droglas & Stiliani (2017) confirms that the strong relationship between internal audit and value addition leads to increased risk management efficiency.

As part of assisting banks ins achieving their objectives, internal auditing plays a vital role by adopting a Risk-Based Internal Auditing approach. It assesses and enhances the effectiveness of governance, risk management, and control processes. By prioritizing the most critical and significant activities for the bank, internal auditing can direct its efforts toward areas that require greater attention (SAMA,2024). The Risk-Based Internal Auditing approach also helps precisely define the scope of the audit, and the scope of an internal audit

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indicates the extent to which internal controls should be tested. For example, as a general principle, high-risk audit units such as a bank's treasury department should undergo 100% transaction testing (ICAI,2005); Nevertheless, the goals and extent of an internal audit are contingent on various factors, including the bank's size, organizational structure, inherent risks, and the level of control over daily operations. Additionally, considerations such as centralization and dependence on information technology further influence the objectives and scope of the internal audit (FSC,2002).

Islamic banks operate in alignment with the principles of Islamic Sharia, which govern their activities and transactions. Consequently, achieving compliance with Sharia principles while maintaining operational efficiency and effectiveness is of paramount importance. The risk-based internal audit approach offers a framework that aligns with these principles by concentrating on identifying and managing the risks inherent in Islamic banking operations. However, despite its potential advantages, there remains a gap in the literature regarding the application and effectiveness of the approach in Yemeni Islamic banks. This research aims to address this gap by examining the feasibility of employing the risk-based internal audit approach to enhance risk management practices within Yemeni Islamic banks.

2. LITERATURE REVIEW

Internal Audit is a profession that has emerged over the years. Internal audits initially focused on accounting problems, but it has now become a powerful tool for detecting the main risks facing organizations (Munteanu et al., 2014). The risk-based internal audit, as defined by the Institute of Internal Auditors, aligns internal audit with the organization's broader risk management framework (IIA, 2023). He also plays a pivotal role in risk management by helping to identify and prioritize risks, in line with Board directives (ICMAI, 2020). Furthermore, the internal audit function is an important function that has proven to provide added value. The aim is to improve the effectiveness of risk management, oversight and governance (Susilawati et al.,2023).

In addition, the RBIA approach is considered the most effective way to ensure that the objectives of the internal audit activity are consistent with the organization's objectives. This approach also allows internal auditors to gain a deep understanding of the organization's risk appetite and tolerance. As a result, they can focus on high-impact functions and allocate resources appropriately (IIA, 2019). Moreover, the RBIA approach is a valuable tool to increase profits and reduce losses through its activities and functions. The scope of early identification of potential risks includes setting and adhering to goals, early identification of risks, and communicating them to management. Risk assessment focuses on risks that may negatively impact an organization's objectives. The field of control evaluation aims to monitor and evaluate the controls in place to determine their adequacy. The field of monitoring and reporting seeks to monitor responses to identified risks, identify deviations and their causes, and provide regular reports on them (RSM, 2008). In contrast, Radhakrishnan (2019) emphasizes the importance of banks using risk-based internal audit approaches, which focus on evaluating the risk management system and control procedures in various areas of the bank's operations, in addition to selective testing of transactions and other currently adopted methods.

In this context, the internal audit function adds value to Islamic banks by providing senior management and risk management with information and data that help them define the main risks. It assists in identifying the most important risks based on the internal auditor's experience and knowledge of the main risks facing the bank. The function also helps management choose the appropriate methods for rapid response to risks and evaluates risk management processes and response methods for their effectiveness in reducing risks (Attaf & Bensbahou,2021). The importance of the internal audit function according to the RBIA approach is highlighted by its objectives. According to Al-Mutairi (2010), there are two basic goals for the internal audit function in Islamic banks and financial institutions. The first is a preventive goal by working to protect assets and preserve the established plans from deviation and inappropriate modification during implementation. The second goal is structural, which ensures the accuracy of the data and information provided to the administration, develops general plans, and introduces the necessary improvements to these plans and various means of control. Nassar (2005) advocates for a structured internal audit approach in Islamic banks, emphasizing alignment with specific objectives and addressing technical challenges. This includes evaluating operations and systems based on Islamic banking principles, considering stakeholders' interests, and proposing practical solutions for enhancing internal systems.

Based on the information provided, it is evident that the internal audit function holds significant importance in traditional or Islamic banks. This is due to its objectives, risk-based activities, and tasks. The effectiveness of the internal audit function is directly related to the Board of Directors and senior management's awareness of its importance in these banks. The internal audit function must also adhere to international standards and keep pace with modern trends. The following Figure 1 shows the position of the internal audit function among the control systems in Islamic banks and institutions:

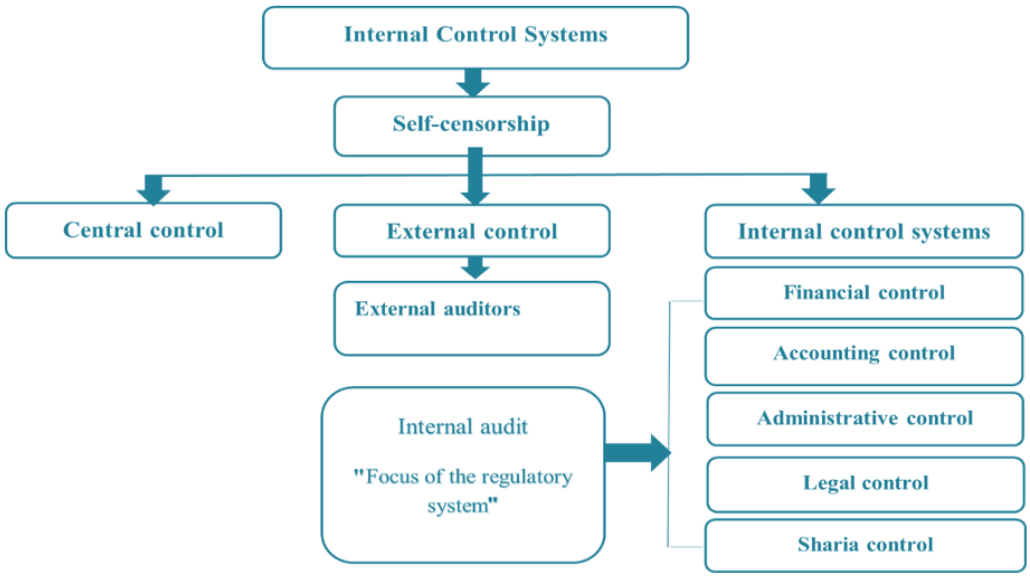


Figure 1: Control systems in Islamic banks and financial institutions.
Source: Al-Mutairi. 2010.

Based on the previous Figure 1, we can conclude that internal audit plays a crucial role within the internal control mechanisms of Islamic banks. Its main focus is to examine and evaluate internal procedures, systems, and supervisory controls to ensure their security and effectiveness. This examination helps in risk management and ensures overall operational security. Additionally, internal audits ensure that internal operations adhere to the principles of Islamic Sharia, which are fundamental to Islamic banks.

On the other hand, the financial collapses witnessed by major global financial institutions led to increased interest in risk management, and it became seen as an essential element of corporate strategy, one of the basic pillars of corporate governance, and an essential element of internal control (Al-Qudah,2023). According to IRM (2002), risk management is crucial to an organization's strategic management. It involves a systematic approach to identifying, assessing, and addressing risks associated with various activities to achieve long-term benefits for the organization. This process applies to each activity individually and across the entire portfolio of activities.

Moreover, risk management is important because of the benefits achieved through its operations and activities. The most important is reducing the bank's sensitivity to risks through flexibility and the ability to recover from realized risks quickly, and identifying potential risks and evaluating their probability and impact (Elahi,2013). In contrast, there is an urgent need to use a risk management system in Islamic banking. Whether to reduce the potential for risk-related losses or to enhance institutional structures, such as capital adequacy, to increase capacity, bargaining power, and reputation in attracting clients (Priyanti et al.,2022). According to Greuning & Bratanovic (2020), the primary aim of risk management in banks is to maintain an appropriate balance between risks and returns.

The IIA (2009) defines risk management as "a process across an organization to identify, evaluate, decide on responses, and report on opportunities and threats that affect the achievement of its objectives" The risk management standard (2120) clarifies that an internal audit is responsible for assessing the effectiveness of risk management and contributing to its improvement (IIA,2017). In the same context, the COSO 2004 Committee presented an integrated risk management framework, that addressed the role of internal auditors in business risk management, which is to assist management, the Board of Directors, and the Audit Committee in evaluating the effectiveness of risk management. This is done by examining and assessing the adequacy and effectiveness of the organization's risk management processes and submitting reports. and recommendations thereon. Furthermore, the Basel Committee on Banking Supervision also issued a paper containing a set of principles for the internal audit function in banking institutions. Principle 11 and Principle 14 state that the activities of the internal audit department should include developing a risk-based audit plan, examining and evaluating available information, and communicating findings and recommendations. It also emphasizes the importance of periodic consultations and discussions with management regarding identified risk areas and the actions that should be taken to prevent or reduce them (BCBS, 2001).

Based on the above, the basic function of internal audit according to the risk-based internal audit approach to risk management is to help discover and analyze risks, determine their causes, and understand their relationship with other activities and risks in the organization. Assess risks and measure their probability of occurrence and degree of seriousness. In addition to helping choose the best way to confront risks by providing information and data to senior management and risk management. Internal audit tasks extend to coordination with all the organization's functions and control systems to provide a comprehensive risk assessment and a unified file for all risks facing the organization.

Accordingly, this study seeks to know the role played by the risk-based internal audit approach in improving

risk management processes in Yemeni Islamic banks through four functions (early identification, risk assessment, controls evaluation, monitoring and reporting). Therefore, the study relied on a main hypothesis and four sub-hypotheses to answer the study problem. The study hypotheses state that:

H_{01}: There is a statistically significant impact between the risk-based internal audit approach and improving risk management processes in Yemeni Islamic banks operating in Aden.

H_{01-1}: There is a statistically significant impact between early identification and improving risk management processes in Yemeni Islamic banks operating in Aden.

H_{01-2}: There is a statistically significant impact between risk assessment and improving risk management processes in Yemeni Islamic banks operating in Aden.

H_{01-3}: There is a statistically significant impact between evaluating controls and improving risk management processes in Yemeni Islamic banks operating in Aden.

H_{01-4}: There is a statistically significant impact between monitoring, reporting, and improving risk management processes in Yemeni Islamic banks operating in Aden.

The following Figure 2 illustrates the study model:

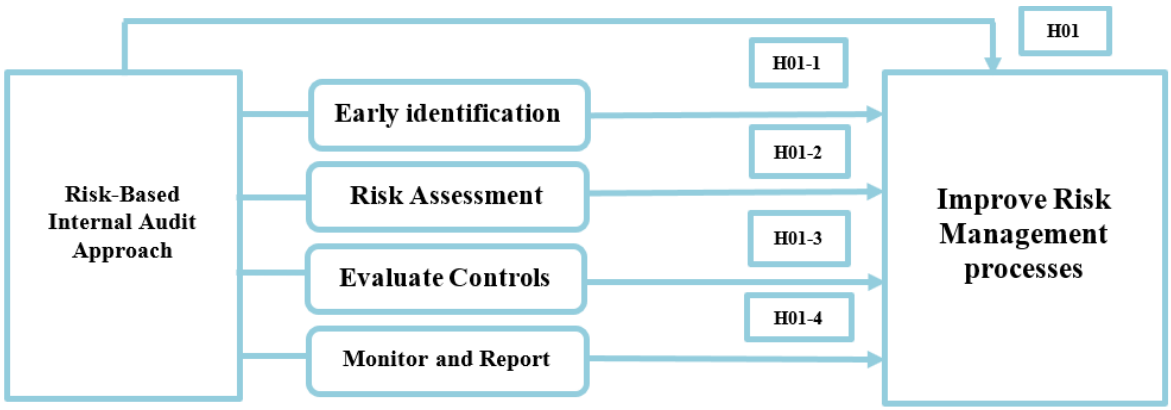


Figure 2: Study model.

3. RESEARCH METHODOLOGY

3.1. The Method Used and the Tool

The descriptive approach was used, which aims to describe the nature of the relationship between the variables of the study represented by the risk-based internal audit approach (the independent variable) and improving risk management processes (the dependent variable), then collecting data on the variables and analyzing them to arrive at results, by reviewing previous studies and references Specialization related to the subject of study. The researchers also designed a questionnaire to collect data and information related to the practical aspect after reviewing a group of references related to the subject of the study. The analytical approach will be used to conduct a statistical analysis of the data obtained through the field study of Yemeni Islamic banks operating in Aden to obtain the desired results. Based on the theoretical framework, the questionnaire contained 16 statements related to the first axis, "the risk-based internal audit approach" and 12 statements related to the second axis, "Improving risk management processes".

3.2. Study Population and Sample

The study includes all Islamic banks operating in the temporary capital of Aden, reflecting the Sharia-compliant segment of Yemen's banking system. The selected banks include Tadhamon Islamic Bank, Saba Islamic Bank, CAC Islamic Bank, Bahrain Islamic Bank, Al-Kuraimi Islamic Bank, Al-Kuraimi Islamic Bank KiB, Al-Qutaibi Islamic Bank, and Aden Islamic Bank. Each bank offers distinct services that reflect the operational realities of Islamic finance in Yemen. By including these specific banks, the study ensures that the findings are both relevant and applicable to the unique challenges faced by Sharia-compliant institutions. Knowing that the Al-Amal Islamic Bank was excluded due to its non-profit status focusing on microfinance for low-income households, as well as Alinma Islamic Bank because it had only recently been established at the time of the field visit, limiting the availability of relevant data.

Primary data for this study were collected through a structured questionnaire designed to explore the impact of the risk-based internal audit approach functions: early identification, risk assessment, control evaluation, and monitoring and reporting on competitive advantage. The questionnaire targeted key personnel in Islamic banks, specifically general directors, deputy directors, financial directors, risk management directors, risk management staff, internal audit managers, internal auditors, and accountants. To ensure a comprehensive and representative sample, the researchers conducted field visits to Islamic banks in Aden, including both main branches and sub-branches. They consulted with bank managers to identify suitable participants. The fieldwork occurred between August 1 and October 31, 2023, during which 100 questionnaires were distributed, yielding 94 valid responses. This 94% response rate surpasses the 70% threshold for excellence in academic research, as Baruch and Holtom

(2008) recommended, enhancing the reliability and robustness of the collected data.

3.3. Statistical Methods Used

For statistical analysis, the Statistical Program for Social Sciences (SPSS) was utilized to ensure precision and enable detailed statistical analysis due to its reliability in managing large datasets and conducting advanced statistical tests. The field data were coded using a five-point Likert scale, converting qualitative responses into quantitative values ranging from 1 (strongly disagree) to 5 (strongly agree). A significance level of 0.05 was adopted, indicating a 5% probability that findings are due to chance, thus ensuring high confidence in the results. As Creswell (2014) noted, this threshold balances detecting true effects with minimizing false positives, reinforcing the study's methodological rigor.

The validity of the questionnaire's constructive statements was determined using Pearson's correlation coefficient, and the reliability of the study tool was assessed using Cronbach's alpha coefficient. The study hypotheses were tested using a linear regression equation. According to studies such as Field (2018), linear regression is one of the most common methods for determining relationships between variables, especially when the goal is to measure the effect of an independent variable on a dependent variable. According to the regression equation:

$$\hat{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 X_i + \varepsilon$$

Where:

Y: Dependent Variable.

X: Independent Variable.

β_0: The intercept or Y-intercept is the value of Y when X = 0.

β_1: Regression Coefficient, which represents the change in Y for each unit change in X.

ϵ: Random Error or Residual.

ANOVA test was also used to evaluate the significance of the model as a whole. According to Hair et al. (2019), ANOVA helps compare the variance explained by the statistical model (MSR) with the unexplained variance (MSE), by calculating the F-statistic value:

F = MSR (Mean Square Regression) / MSE (Mean Square Error/Residual)

The coefficient of determination R^2 was used, which expresses the proportion of variance in the dependent variable that the model explains. According to Cohen et al. (2003), high values of R^2 indicate that the model can explain a large portion of the variance in the dependent variable:

$$R2 = 1 - SSR / SST$$

Where:

SSR: the sum of squared residuals (the residual sum of squares representing the unexplained variance).

SST: the total sum of squares (representing the total variance in the dependent variable).

The adjusted coefficient of determination has also been used as a more accurate way to assess the fit of a statistical model, especially when dealing with small samples or multiple variables. According to Tabachnick and Fidell (2019), $\bar{R}^2$ is a more reliable indicator when a large number of independent variables are included compared to the sample size.

$$\bar{R}^2 = 1 - (1 - R2)(N - 1) / N - k - 1$$

Where:

R^2: Coefficient of determination.

N: number of observations (or sample).

K: number of independent variables in the model.

4. TESTS RESULTS

4.1. Stability Coefficient

The reliability of the study tool was verified using (Cronbach's Alpha) coefficient, the results were as follows in Table 1.

Table 1: Cronbach's Alpha Test.

Study Axes	Coefficient Cronbach's Alpha
The modern internal audit approach	0.896
Improve risk management	0.962

The results in Table 1 shows that all the stability coefficients using Cronbach's alpha for the study variables were high, as the coefficient of the first axis "the risk-based internal audit approach" reached (0.896), and the coefficient of the second axis "improving risk management processes" reached (0.962), which indicates the strength of the stability, and this high value indicates the suitability of the tool for collecting data related to the study and instilling confidence in its results.

4.2. Testing The Validity of the Tool (The Pearson Correlation Coefficient)

The validity of the study tool was verified using Pearson's coefficient, the results were as follows in Table 2:

Table 2: Pearson coefficient test.

The first axis The risk-based internal audit approach						**The second axis** Improve risk management processes		
No	**Correlation coefficient R**	**Sig**	**No**	**Correlation coefficient R**	**Sig**	**No**	**Correlation coefficient R**	**Sig**
Early identification			Evaluation of controls			1	0.732	0.000
1	0.675	0.000	9	0.672	0.005	2	0.716	0.000
2	0.720	0.003	10	0.641	0.000	3	0.842	0.000
3	0.734	0.000	11	0.658	0.000	4	0.780	0.000
4	0.699	0.000	12	0.686	0.000	5	0.842	0.005
Risk assessment			Monitoring and reporting			6	0.841	0.000
5	0.688	0.003	13	0.781	0.000	7	0.754	0.000
6	0.701	0.000	14	0.722	0.005	8	0.843	0.000
7	0.720	0.000	15	0.684	0.000	9	0.757	0.003
8	0.647	0.000	16	0.795	0.000	10	0.601	0.000
-	-	-	-	-	-	11	0.811	0.000
-	-	-	-	-	-	12	0.781	0.005

It is clear from Table 2 that the construct validity of the questionnaire statements is high according to the Pearson correlation coefficient, where its value ranged between (0.601 and 0.843), Sig's value is (0.000), and is significant at the significance level (0.05). Thus, the questionnaire items are honest and reflect the goal for which they were developed.

4.3.Hypothesis testing

The study's main hypothesis and its sub-hypotheses were tested using linear regression. linear regression measures the relationship between two variables, one independent and the other dependent, the results are as follows in Table 3.

Table 3: Linear regression model parameters for the main hypothesis and its sub-hypotheses.

Hypothesis Testing Results	**Parameters**	**Coefficient**	**Std.Error**	**T-test**	**P-value**
H01	$\hat{\beta}_0$	-0.232	0.467	-0.496	0.621
	$\hat{\beta}_1$	1.027	0.104	9.851	0.000
H01-1	$\hat{\beta}_0$	1.799	0.390	4.617	0.000
	$\hat{\beta}_1$	0.580	0.088	6.611	0.000
H01-2	$\hat{\beta}_0$	2.103	0.461	4.562	0.000
	$\hat{\beta}_1$	0.500	0.102	4.917	0.000
H01-3	$\hat{\beta}_0$	0.562	0.437	1.284	0.202
	$\hat{\beta}_1$	0.840	0.096	8.716	0.000
H01-4	$\hat{\beta}_0$	2.057	0.426	4.827	0.000
	$\hat{\beta}_1$	0.521	0.096	5.433	0.000

The results are presented in Table 3 highlight several key findings. Regarding the main hypothesis, the linear regression coefficient "β1" was statistically significant, with a p-value of 0.000, lower than the study threshold of 0.05. This suggests that the independent variable (the risk-based internal audit approach) has a statistically significant impact on the dependent variable (improving risk management processes).

For the first sub-hypothesis, the linear regression coefficient "β1" also proved statistically significant, with a p-value of 0.000. This indicates that early identification, as an independent variable, significantly impacts, the dependent variable (improving risk management processes). Testing the second sub-hypothesis yielded similar results, as the linear regression coefficient "β1" was statistically significant with a p-value of 0.000, indicating that risk assessment positively impacts improving risk management processes.

In the third sub-hypothesis, the coefficient "β1" was again significant, with a p-value of 0.000, indicating that the assessment of controls has a significant impact on improving risk management processes. Finally, the test of

the fourth sub-hypothesis showed that the coefficient "β1" was significant, with a p-value of 0.000, confirming that monitoring and reporting also have an impact on improving risk management processes.

To test the significance of the overall estimated simple linear regression model, the One-Way ANOVA test is used, and the results are shown in the following Table 4.

Table 4: Results of one-way ANOVA for the linear regression model.

Hypothesis testing results	Source of Variation	Degree of Freedom	Sum of Squares	Mean Square	F test value	P-value
H01	Regression	K-1 =1	16.069	16.069	97.033	0.000
	Residual	n-k =92	15.235	0.166		
	Total	93	30.649			
H01-1	Regression	K-1 =1	10.081	10.081	43.704	0.000
	Residual	n-k =92	21.222	0.231		
	Total	93	31.304			
H01-2	Regression	K-1 =1	6.514	6.514	24.175	0.000
	Residual	n-k =92	24.790	0.269		
	Total	93	31.304			
H01-3	Regression	K-1 =1	14.157	14.157	75.962	0.000
	Residual	n-k =92	17.146	0.186		
	Total	93	31.304			
H01-4	Regression	K-1 =1	7.603	7.603	29.513	0.000
	Residual	n-k =92	23.701	0.258		
	Total	93	31.304			

The analysis of the variance Table No. (4) indicates that the F test for the main hypothesis yielded a value of 97.033, with a significance level of 0.000, which is below the threshold of 0.05. This confirms the existence of a linear relationship between the risk-based internal audit approach (independent variable) and improving risk management processes (dependent variable), suggesting that changes in the audit approach significantly impact risk management.

For the first sub-hypothesis, the F test resulted in a value of 43.704, with a significance level of 0.000, again supporting the assumption of a linear relationship. This implies that early identification significantly impacts improvements in risk management processes.

The second sub-hypothesis, with an F test value of 24.175 and a significance level of 0.000, reinforces the conclusion that risk assessment has a meaningful influence on risk management improvements, confirming the linear relationship between these two variables.

In the third sub-hypothesis, the F test result of 75.962 and a significance level of 0.000 indicate that evaluating controls significantly impacts risk management. The strength of this relationship further supports the importance of internal control evaluations in managing risk.

For the fourth sub-hypothesis, the F test value was 29.513, with a significance level of 0.000, confirming a linear relationship between monitoring and reporting and improvements in risk management processes. Although the impact is slightly lower, it still remains statistically significant.

Finally, the coefficient of determination and adjusted coefficient of determination were calculated to assess the explanatory power of the model, with the results provided in the subsequent Table 5.

Table 5: Coefficients of determination of the linear regression model.

Hypothesis testing results	R2	$\bar{R}^2$
H01	0.513	0.508
H01-1	0.322	0.315
H01-2	0.399	0.392
H01-3	0.452	0.446
H01-4	0.243	0.235

The analysis of Table 5 reveals the following results regarding the model's explanatory power:

For the main hypothesis (H01), the coefficient of determination (R^2) is 0.513, and the adjusted R^2 is 0.508. This means that the risk-based internal audit approach explains 51.3% of the variation in improving risk management processes, while the remaining 48.7% is attributed to factors not included in the model.

For the first sub-hypothesis (Ho1-1), the R^2 value is 0.322, with an adjusted R^2 of 0.315. This indicates that early identification accounts for 32.2% of the changes in improving risk management processes, leaving 67.8% of the variation unexplained by this model.

Regarding the second sub-hypothesis (Ho1-2), the R^2 value is 0.399, and the adjusted R^2 is 0.392, showing that risk assessment explains 39.9% of the changes in improving risk management processes, while 60.1% of the changes are due to other factors.

For the third sub-hypothesis (Ho1-3), the R^2 is 0.452, and the adjusted R^2 is 0.446. This means that the evaluation of controls explains 45.2% of the changes in improving risk management processes, with 54.8% attributed to factors not considered in the model.

Lastly, for the fourth sub-hypothesis (Ho1-4), the R^2 value is 0.243, and the adjusted R^2 is 0.235, suggesting that monitoring and reporting explain 24.3% of the variation in improving risk management processes, while 75.7% of the variation is due to other factors outside the model. Figure 3 below illustrates the ranking of the impact of risk-based internal audit functions on improving risk management processes, presented in descending order.

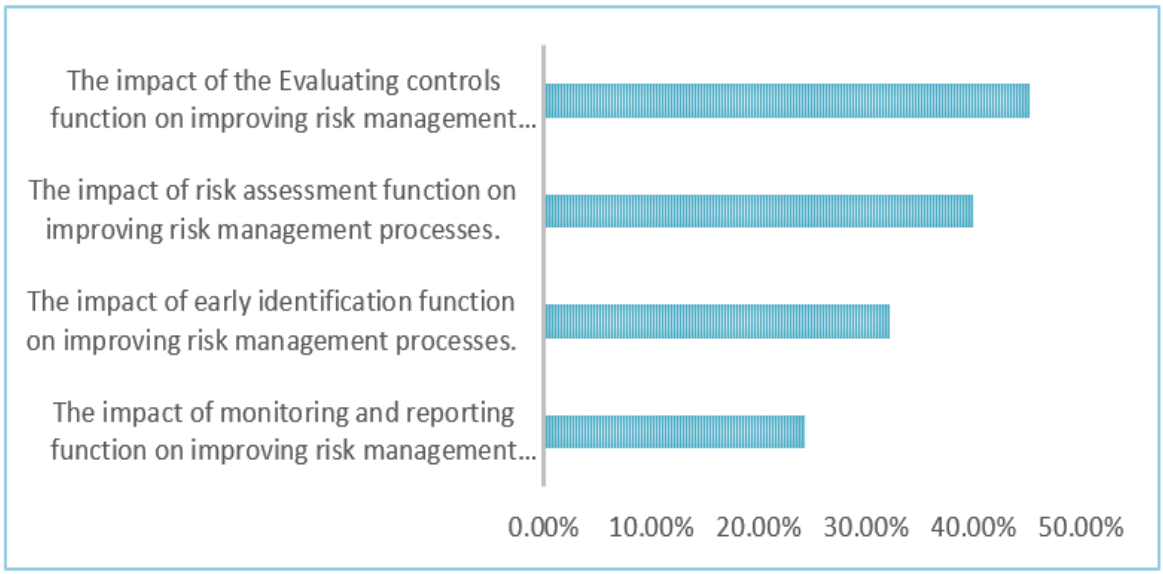


Figure 3: The impact of the functions of the risk-based internal audit approach on improving risk management processes.

Figure 3 illustrates the descending order of the impact of risk-based internal audit (RBIA) functions on improving risk management processes in Islamic banks. While the analysis highlights the significant contributions of these functions, a considerable portion of the variance remains unexplained within the model, indicating the presence of additional factors not accounted for in the current framework. This underscores the need for further research to identify these unmeasured variables and their role in enhancing risk management.

Potential factors for exploration could include communication systems, corporate governance practices, regulatory compliance mechanisms, and advanced risk assessment methodologies, which may interact with RBIA functions but are not explicitly captured in the existing model. Identifying and integrating these elements could provide a more comprehensive understanding of the factors influencing risk management processes.

Such insights would advance academic knowledge and offer practical guidance for practitioners and policymakers in designing more effective risk mitigation strategies, ultimately strengthening the banking sector's resilience and efficiency.

5. DISCUSSION

The results of the field study confirmed the validity of the basic hypothesis that there is a statistically significant effect between the risk-based internal audit approach and improving risk management processes. The study revealed that the approach to internal audit (risk-based) contributes to improving risk management processes in Yemeni Islamic banks operating in Aden by 51.3%. This was confirmed by a study conducted by Abdel-Mughni & Al-Shuaibi (2021) in Yemeni telecommunications companies, which indicated that there is a strong relationship between applying the modern approach to risk-based internal auditing and improving the effectiveness of risk management. This result also confirms the Attaf & Bensbahou 2023 study at the Yemen National Cement Company, which indicated the clear contribution of internal audit governance in identifying and evaluating risks and response procedures and providing value-added recommendations to management regarding risk management. Al Tamimi (2021) emphasized in his study that one of the important factors in risk management is the focus of the internal audit department on evaluating risk management and ensuring the efficiency of its practices in dealing with these risks.

In the same context, the study by Attaf & Bensbahou (2022) indicated that internal audit is an effective tool to support the competitive advantage through its focus on risk assessment and improving risk management processes. The (Beasley et al. 2006) study emphasizes the importance of senior management and board support for internal audit's effective engagement in risk management. In addition, CAEs with more seniority may be in a better position to transition the internal audit function quickly to areas related to risk management. In contrast, the Sarens & De Beelde (2006) study confirmed that the specific responsibilities of internal auditors in risk management vary depending on time and country. It has become evident that moving towards a more advanced level of risk-based auditing is essential if internal auditors want to have a significant impact on risk management.

When measuring the sub-hypotheses emanating from the main hypothesis, the results showed that the function of evaluating controls ranked first in influencing the improvement of risk management processes by

45.2%. This indicates that the approach to internal audit (risk-based) contributes to improving risk management practices, through its evaluation of control activities and tools to judge the efficiency of control systems in the field of risk management. In addition to evaluating risk management policies and procedures to ensure their effectiveness.

The results show that the function of risk assessment has ranked second in terms of improving risk management processes with a rate of 39.9%. This indicates that the approach to internal audit (risk-based) plays a significant role in enhancing risk management practices through its evaluation of the likelihood of risks occurring and their impact. Additionally, it identifies risks discovered during the audit process and reports them to management. It also evaluates the effectiveness of the appropriate responses taken by the management to mitigate the risks.

According to the results of the study, the function of early identification ranked third in improving risk management processes by 32.2%. This indicates that the approach to internal audit (risk-based) contributes to improving risk management practices by contributing to setting goals and identifying risks and indicators of their occurrence. Then determine audit priorities for all units of the organization to reflect the risks to which the bank is exposed. Thus, the scope of the audit and the units subject to audit within the bank are precisely determined.

As for the function of monitoring and reporting, it ranked fourth in improving risk management processes by 24.3%. This indicates that the approach to internal audit (risk-based) contributes to improving risk management practices by monitoring the results reported to management and the extent of their response. In addition to providing appropriate assurances to the Board of Directors and senior management that the risk management and responses used are appropriate to manage risks in the bank.

6. CONCLUSIONS

With the increasing complexity of financial markets and the unique risk-sharing principles inherent in Islamic finance, effective risk management is critical to the stability and success of Islamic banking institutions. This study sought to know and determine the extent to which risk management processes can be improved through the risk-based internal audit approach in Yemeni Islamic banks. This study relied on primary data collected through a survey (questionnaires) distributed to 8 Yemeni Islamic banks operating in Aden. The focus was on the functions of the modern approach to internal auditing (early identification, risk assessment, evaluating controls, monitoring and reporting). And knowing the impact of each function on risk management.

The main study hypothesis and the four sub-hypotheses were examined using the linear regression method to measure the relationship between the study variables and the ANOVA test to determine the importance of the linear regression model. The coefficient of determination and the adjusted coefficient of determination were used to clarify the relationship between the study variables and the effect size. The result in Figure No. (3) shows that the four functions of the risk-based internal audit approach had a clear positive impact in improving risk management processes in Yemeni Islamic banks operating in Aden. The study suggests that the management of Yemeni Islamic banks should consider the recommendations and reports provided by the internal audit department regarding risk management activities and practices. Additionally, they should support and develop communication systems between the management and the internal audit department to facilitate the exchange of necessary information at the specified time, this is to support the function of monitoring and reporting, which received the lowest impact rate of 24.3%.

On the other hand, the quality of internal audit management plays an important role in increasing the effectiveness of risk management (Al-Safi, 2023). Among the factors that contribute to increasing the effectiveness of the internal audit department are frequent internal audit meetings with the audit committee, the use of big data analytics, and risk-based planning. These factors are taken into account by internal auditors when conducting their audits (Joshi,2020) in contrast, Internal auditors gain comprehensive knowledge of operations and improvement opportunities by collecting data to understand and evaluate risks. Therefore, they can provide valuable information in the form of advice, written communications, or other forms, which can be extremely beneficial to their organization (Munteanu & Zaharia, 2014). Internal auditors therefore devote most of their attention to processes with the highest risk exposure, which are usually the core activities in the value chain to ensure maximum value addition (Karagiorgos et al., 2009).

In a nutshell, to ensure that the management of Islamic banks benefits more from the internal audit function, there must be a comprehensive guide that defines the duties, tasks, objectives, and professional standards that govern the internal audit function. This will help improve the quality of its performance and enable it to direct its activities towards risk management. A comprehensive guide for risk management must be developed that explains its tasks, powers, and methods consistent with Islamic Sharia, to improve cooperation and integration between the internal audit department, risk management, and other control systems (Attaf & Bensbahou,2024). A study conducted by Al Alrjoub & Ahmed (2017) recommends that Islamic banks evaluate their internal audit systems regularly to enhance the efficiency of the internal audit function and improve its positive impact on risk management.

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