ISSN: 2658-8455
Volume 5, Issue 11 (2024), pp. 490-507.

Internal Control Practices in Moroccan Banks: A Quantitative Study of Effectiveness, Compliance, and Risk Management

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Disclosure Statement :	Authors are not aware of any findings that might be perceived as affecting the objectivity of this study and they are responsible for any plagiarism in this paper.
Conflict of Interest :	The authors report no conflicts of interest.
Cite this article :	HERTOUCH, A., & ACHIBANE, M. (2024). Internal Control Practices in Moroccan Banks: A Quantitative Study of Effectiveness, Compliance, and Risk Management. *International Journal of Accounting, Finance, Auditing, Management and Economics*, *5*(11), 490-507. https://doi.org/10.5281/zenodo.14116158
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Received: August 01, 2024 *Accepted: November 11, 2024*

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Abstract

Setting up a strong and efficient framework is therefore of paramount importance to ensure that these objectives are achieved in strengthening the internal control systems and risk management. This study will therefore dwell on one of these frameworks within the context of Moroccan banks, with a view to assessing the effectiveness of internal control systems and risk management they allow. It addresses the following main question: To what extent is the implementation of the COSO framework effective in improving the efficiency of the internal control and risk management processes within Moroccan banks?

This research adopted a quantitative approach that included an exploratory study with bank managers and executives. The main objectives of the study were to establish whether the COSO framework is applied among the Moroccan banks, and it has an impact on internal control within a certain context. The results provide insights into how the application of the COSO framework brings about improved internal control effectiveness and risk management over these banks. This research confirms not only the topicality of the COSO framework but also opens new avenues for further research. This also helps extend the preliminary scope of the study, further investigating how framework implementation variations may impact individual banking operations. Hence, the present study contributes not only to an understanding of internal control systems in Moroccan banks but also lays a foundation for further future research into the optimization of risk management practices in the banking sector.

Keywords: Internal control, Accounting, COSO, Bank Sector**.**
JEL Classification:M41
Paper type: Empirical research

ISSN: 2658-8455
Volume 5, Issue 11 (2024), pp. 490-507.

1. Introduction

The global banking sector has consistently faced crises and significant institutional failures, underscoring the need for effective internal control systems (ICS). These failures, often rooted in operational risk and insufficient internal controls, highlight systemic vulnerabilities that can destabilize economies. Consequently, regulatory bodies emphasize robust internal controls within banks to mitigate these risks and ensure operational resilience. As Bouquin (2004) asserts, ICSs are critical operational risk management tools, essential for establishing prudential standards in daily banking operations.

Traditional theories of banking governance, including the principal-agent theory, risk management frameworks, and the Committee of Sponsoring Organizations of the Treadway Commission (COSO) internal control framework (Jensen & Meckling, 1976; COSO, 2013; Basel Committee on Banking Supervision, 2015), posit that banking institutions operate under conditions of complete rationality, whereby all stakeholders are presumed to act in alignment with their best interests. However, empirical studies of internal control systems reveal that organizations frequently encounter challenges arising from behavioral factors and misaligned incentives, which can lead to insufficient risk management practices (Rezaee & Riley, 2010; Nkundabanyanga et al., 2014). The critical role of internal control mechanisms is further emphasized by findings indicating that their effectiveness is often compromised by a general lack of awareness regarding the significance of these controls among employees (Bhasin, 2015). Additionally, cognitive biases, such as overconfidence and confirmation bias, can substantially influence decision-making processes within banks, resulting in suboptimal outcomes (Karanja & Muturi, 2018).

Furthermore, research demonstrates that banks that prioritize the implementation of robust internal controls typically achieve higher operational efficiency and improved compliance with regulatory standards (Bawany, 2019; Otalor & Oloyede, 2021). These studies collectively reinforce the premise that proactive internal control frameworks not only mitigate potential financial losses but also enhance stakeholder value by fostering greater organizational transparency and accountability (Adil et al., 2021). Thus, the integration of effective internal control systems is imperative for sustaining operational integrity and resilience in the increasingly complex banking environment. This study aims to rigorously examine the impact of specific internal control components on the overall effectiveness of internal control systems (ICS) within Moroccan banks. By utilizing comprehensive survey data collected from five prominent financial institutions—ATTIJARI WAFABANK, BANK OF AFRICA, LA BANQUE CENTRALE POPULAIRE, CREDIT AGRICOLE DU MAROC, and CIH—this research seeks to evaluate how these internal controls influence both risk management practices and operational stability.

In pursuing this objective, the study is guided by a series of focused research questions designed to uncover the intricate relationships between various facets of internal control and their outcomes. These questions are as follows:

- How do individual components of internal control contribute to the overall effectiveness of ICS in Moroccan banks? This question aims to dissect the specific roles played by elements such as control environment, risk assessment, control activities, information and communication, and monitoring in bolstering the effectiveness of ICS.
- To what extent do internal control systems in Moroccan banks align with regulatory requirements and stakeholder expectations? This inquiry seeks to explore the degree to which these systems meet the established legal and regulatory frameworks, as well as the expectations of stakeholders, including investors, customers, and regulatory bodies.

- What role do internal control systems play in enhancing operational resilience and mitigating operational risks within these banks? This question aims to identify how robust ICS can fortify the banks' ability to withstand economic fluctuations and operational disruptions, thereby maintaining stability and compliance.

The current study is meticulously structured into several key sections, each crafted to elucidate the complexities of internal control systems within the Moroccan banking context. The data for this empirical investigation was systematically collected from the banks, which serve as critical pillars of the financial landscape in Morocco. By employing robust quantitative analysis methodologies, this research explores the effectiveness of ICS in these institutions, thereby contributing valuable insights into the banking sector's risk management and operational strategies. The findings of this study are anticipated to have significant implications for both academic research and practical applications in enhancing internal control frameworks within Moroccan banks.

The Literature Review section serves as a foundational overview, examining critical theoretical frameworks that underpin the concept of internal controls. It delves into Agency Theory (Jensen & Meckling, 1976), which explains the dynamics between principals and agents within organizations, and Stakeholder Theory (Freeman, 1984), which emphasizes the importance of considering various stakeholder interests in corporate governance. This section further summarizes recent empirical studies that demonstrate the significance of effective ICS in mitigating risks and enhancing accountability within the banking sector.

Subsequently, the Research Design section provides a comprehensive account of the methodological approach taken in this study. It details the development of the survey instrument utilized to gather data, elucidates the processes employed for data collection, and outlines the analytical methods used to assess the influence of different components of ICS on operational resilience and risk management practices. The rigor of this design is paramount in ensuring the reliability and validity of the findings.

Following this, the Results and Discussion section presents a thorough analysis and interpretation of the survey findings. It focuses on identifying which specific aspects of internal control are most effective in mitigating operational risks and enhancing regulatory compliance. By linking the data back to the theoretical frameworks discussed earlier, this section highlights the practical implications of the findings and offers insights into best practices for implementing robust ICS.

The paper concludes with a concise summary of the major findings, reflecting on the implications for both theory and practice. It acknowledges the limitations of the research, which may include sample size constraints or the specific context of Moroccan banks and proposes future directions for inquiry into ICS within the banking sector. By examining the intricate relationship between the effectiveness of internal controls and regulatory compliance, this study extends the existing literature on ICS, significantly enhancing our understanding of how effective controls contribute to the overall stability of banking operations. Furthermore, the research aims to provide practical recommendations for improving internal control frameworks, thereby guiding banks in safeguarding against financial uncertainties and enhancing stakeholder trust.

2. Literature Review

2.1 Theoretical Framework and Effectiveness of Internal Control

The concept of internal control has significantly evolved over time. Various schools of thought and theorists have addressed the issue of internal control in banks, offering a comprehensive framework for understanding how organizations design, implement, and monitor internal

ISSN: 2658-8455
Volume 5, Issue 11 (2024), pp. 490-507.

control systems so that operations become efficient and effective, the financial statement shows a fair presentation and relevant regulatory standards are complied with.
The idea of improving internal control became a major focus in 1985, following several high-profile scandals. This led to the creation of the Treadway Commission by the U.S. Senate, which aimed to establish a clear and consistent framework for internal control. This effort resulted in the COSO framework, officially known as the Committee of Sponsoring Organizations of the Treadway Commission. Published in 1992 as The Internal Control - Integrated Framework, it was later translated into French as “La pratique du contrôle interne”.
The COSO framework defines internal control as a process designed to provide reasonable assurance regarding the achievement of organizational objectives related to operations, reporting, and compliance. It consists of the five major components of internal control: the control environment, risk assessment, control activities, information and communication, and monitoring. Such components are critical for ensuring good governance and effective risk management of organizations. The definition provided by the globally recognized COSO framework became the standard definition adopted by American companies. This definition was further refined in 1995 by the Committee on Control Criteria of the Canadian Institute of Chartered Accountants (ICCA). Since 1992, subsequent definitions have primarily served to complement, refine, and emphasize the initial concepts established by COSO and CoCo.
In 1997, the ICCA expanded upon the COSO (1992) definition of internal control by emphasizing the importance of defining objectives, strategic planning, and risk management (Gosselin & Bédard, 2000).
According to ISA 315 (Revised), internal control is defined as "a process designed, implemented, and overseen by an entity’s governance, management, and other personnel to provide reasonable assurance regarding the achievement of the entity's objectives concerning the reliability of financial reporting, the effectiveness and efficiency of operations, and compliance with applicable laws and regulations" (ISA 315 Revised).
According to ISA 400, which deals with risk assessment and internal control, the internal control system is described as "a set of policies and procedures implemented by an organization's management to ensure, as much as possible, the effective and rigorous management of its operations. This includes adhering to management policies, protecting assets, preventing and detecting fraud and errors, ensuring the accuracy and completeness of accounting records, and providing timely and reliable financial or accounting information" (ISA 400: Risk Assessment and Internal Control, n.d.).
In simpler terms, this means that the internal control system involves the rules and processes put in place by management to make sure that the company's activities are handled properly. It covers following management policies, safeguarding assets, spotting and preventing fraud and mistakes, keeping accurate records, and delivering reliable financial information on time.
The effectiveness of internal control systems (ICS) within banking institutions is fundamentally supported by various theoretical frameworks that elucidate their operational dynamics and impact on organizational performance. Among these frameworks, Agency Theory and Stakeholder Theory stand out as critical lenses through which the significance of ICS can be understood.
Agency Theory, developed in the 1970s based on fundamental concepts that redefine organizational dynamics. This theory was formulated by Jensen and Meckling (1976), who established the basis for this forward-thinking framework. This theory underscores the necessity of ICS as mechanisms designed to align the interests of agents with those of principals. The theory illustrates how internal controls can help make sure that managers act in the best interest of shareholders and lower costs related to managing these relationships. Jensen and Meckling (1976), argue that internal control plays a crucial role in aligning managerial actions with shareholder interests which helps reduce agency costs and improves overall

organizational performance. Thus, ICS are pivotal in reducing information asymmetry, enhancing organizational performance, and ultimately safeguarding shareholder value.

Stakeholder Theory, introduced by Freeman (1984), extends the focus beyond shareholders to include a wider array of stakeholders, such as employees, customers, regulators, and the community. This framework posits that organizations have a responsibility to consider the interests and welfare of all stakeholders not just those of shareholders. Effective ICS contribute significantly to this stakeholder orientation by promoting ethical conduct, accountability, and transparency. So that, by establishing robust internal controls, organizations can better manage risks, address stakeholder concerns, and enhance trust among various parties. This trust is essential for long-term organizational sustainability and competitive advantage, as it fosters stronger relationships with stakeholders and supports the organization's reputation.

In addition, the role of organizational culture is paramount in the effectiveness of ICS because a positive culture that prioritizes ethical behavior, open communication, and accountability creates an environment conducive to the successful implementation of internal controls. When employees recognize the importance of ICS and are encouraged to adhere to them, the overall effectiveness of these controls is significantly enhanced. Research has shown that organizations with strong ethical cultures are more likely to successfully implement internal controls, leading to improved risk management outcomes and greater operational resilience.

Furthermore, theoretical understanding of ICS effectiveness must also consider Contingency Theory which posits that the effectiveness of internal controls may vary depending on contextual factors, such as the organization's size, complexity, and external environment. This theory suggests that a one-size-fits-all approach to ICS may not be effective, rather, organizations must tailor their internal control mechanisms to align with their specific operational contexts and risk profiles. This adaptability is crucial in an ever-evolving banking landscape, where regulatory requirements and risk exposures can change rapidly.

Moreover, Risk Management Theory emphasizes the importance of identifying, assessing, and mitigating risks that could hinder the achievement of organizational objectives. According to Kaplan and Mikes (2012), effective risk management is critical for safeguarding organizational assets and ensuring financial reliability, with internal controls playing a central role in managing and mitigating risks (Kaplan & Mikes, 2012).

These theories collectively form a comprehensive theoretical framework that supports the development, implementation, and evaluation of internal control systems. This framework aids organizations in achieving effective governance, risk management, and compliance, thereby enhancing operational efficiency and financial integrity.

In summary, the theoretical frameworks provide a comprehensive understanding of the effectiveness of internal control systems in banking institutions by aligning the interests of diverse stakeholders, fostering a culture of accountability, and integrating adaptable control mechanisms, ICS play a pivotal role in enhancing organizational performance and mitigating risks. Understanding these theoretical underpinnings is essential for the development and implementation of effective internal control mechanisms that support the long-term sustainability and resilience of banking operations.

2.2 Empirical Literature

As previously stated, internal control is an essential component of an organization's management and a foundation for its safe and sound operations (Drogalas et al., 2005; Karagiorgos et al., 2010). Recent studies have explored various aspects of internal control systems, emphasizing their significance in enhancing organizational effectiveness and mitigating risks.

Several studies have explored various facets of internal control and risk management in the banking sector using different analytical frameworks.

ISSN: 2658-8455
Volume 5, Issue 11 (2024), pp. 490-507.

In 2013, Ondieki conducted a study on the effect of internal control on the financial performance indicators of commercial banks. It looked closely at multiple independent variables, among which were control environment, risk assessment models, control activities, and monitoring. The dependent variable was the financial performance against these various factors. Internal control systems can be designed with inherent features that can detect or hinder fraudulent transactions, making it extremely hard, if not totally impossible, to perform. The result is that, although internal control audits provide some assurance about the functioning of these controls, they are not specifically designed to discover fraud or corruption. The overall objectives of internal control audits are organically linked to the strategic plans, methodologies, and procedural frameworks which management uses to bring into being the organization's mission, aspirations, and objectives.

Zhang et al. (2018) used a structural simultaneous equations model to test the influence of macroeconomic variables on internal control quality within banks. The results from this study concluded that changes in interest rates and economic stability affect internal control. From these results, it can be deduced that to ensure operation stability and compliance, banks need to adjust their control systems with respect to the dynamics of these economic factors.

Chen et al. (2019) utilized a logistic regression model with a view to examining the drivers of operational risks in banks. They documented that advanced risk management practices and sound governance arrangements reduce operational risks. This has brought out the need for an effective internal control system to ensure that such threats are kept at bay.

At the same time, in their study, Liu et al. (2020) estimated the contagion effects of cyberattacks on the financial stability of banks using a rare events model. Their results showed that banks with all-inclusive measures in place regarding cybersecurity are more resilient to severe disruptions and thus pointed out the rising need to incorporate advanced technological solution findings into the internal control system in pursuit of cyber threat resilience.

Wang et al. (2021), Using an autoregressive design with autoregressive error terms, estimated the temporality of internal control practices within banks. Results of this research showed that banks more readily adjusting internal control practices to these changes in the regulatory environment attain better compliance, proving a need for control systems that are dynamic and responsive amidst continuous changes in the regulatory environment.

Hence, Wang et al. (2021) used the dynamic panel data analysis to examine the combined effect of bank size and business diversification on operational risk. The findings prove that the higher the size of the banks and the more cautious the diversification strategy is, the more significantly reduced the operational risks will be. This may be the case because usually large banks with diversified business activities set up well-structured internal control systems capable of mitigating potential complexity-related problems. Furthermore, research conducted by Otalor and Oloyede (2021) highlighted the significance of internal controls in ensuring compliance with regulatory requirements. Their study, which analyzed several Nigerian banks, revealed that institutions with strong internal control frameworks were better positioned to meet regulatory standards, reporting a compliance rate of 85% compared to 60% for those with weaker controls. This reinforces the notion that proactive internal controls are essential for maintaining regulatory compliance and protecting stakeholder interests.

Liu et al. (2022) adopted a fixed effects model to test the influence of regulatory change on the practices of risk management within banks. Their findings showed that banks do adjust their risk management strategies in response to changes in regulation, and this has long-term effects in terms of survival over time. This underlines the presence of a very important adaptive internal control system for continuous compliance with the regulations and effective risk management.

In 2023, a comprehensive analysis by Ali and Khan focused on the implementation of digital internal control systems in Moroccan banks. The study revealed that digital transformation enhances the effectiveness of ICS by facilitating real-time monitoring and faster responses to

potential risks. Their findings indicated that banks adopting digital ICS reported fewer instances of fraud (a decrease of 35%) and improved compliance with regulatory guidelines, with compliance rates rising to 90% from 70%. This emphasizes the importance of integrating technology into internal control practices.
Building on this, a pivotal study by Zaki and Farah (2024) evaluated the effectiveness of compliance training on internal control adherence in banks across North Africa. Their research indicated that regular compliance training significantly improved employees' understanding of internal controls, leading to increased adherence (up by 50%) and reduced instances of non-compliance (decreased by 30%). Additionally, they found that banks implementing training programs tailored to the unique challenges of the region were better equipped to navigate complex regulatory environments and maintain effective internal controls. This underscores the importance of continuous education and training to bolster the effectiveness of ICS.
Overall, empirical literature reveals that effective internal control systems are integral to the stability and success of banking institutions by safeguarding assets, ensuring regulatory compliance, and fostering a culture of accountability, ICS contribute significantly to the mitigation of risks and the enhancement of organizational performance. The insights garnered from these studies provide a robust foundation for further research and the development of practical recommendations aimed at improving internal control frameworks within the banking sector.

3. Research method

3.1 Study Context and Data

The quantitative approach employed in this research aims to examine internal control practices within the banking sector using structured questionnaires for data collection. This approach is particularly well-suited for exploring the subjective aspects, individual perceptions, and experiences of key stakeholders within banking institutions, thereby enriching our understanding of internal control systems. The study builds upon existing literature that emphasizes the crucial role of internal control systems in enhancing organizational effectiveness and mitigating operational risks (Drogalas et al., 2005; Karagiorgos et al., 2010; Otalor & Oloyede, 2021).
Participants were selected using purposive sampling to ensure a diverse representation of roles within the banks, including senior executives, risk managers, and professionals involved in internal control. To capture a wide range of perspectives pertinent to the research, the selected participants were met individually and provided with questionnaires to complete.
To meet its objectives, this study employs a structured questionnaire as the primary instrument for data collection. This choice is justified by the lack of available information in public domains and the designation of internal auditors as key informants capable of offering valuable insights into the effectiveness of internal controls.
A total of 292 bank employees from various roles within the organizations participated in the study.The effectiveness of internal control systems (ICS) is significantly influenced by various factors within banking institutions. A strong control environment fosters an organizational culture that prioritizes accountability and integrity, which are essential for effective internal controls (Karagiorgos et al., 2010). Existing literature suggests that banks with robust control environments are more likely to implement effective risk management practices (Otalor & Oloyede, 2021). Additionally, studies conducted by Ondieki (2013) indicate that components of internal control, such as risk assessment and monitoring activities, play a vital role in enhancing financial performance.
The relationship between risk assessment practices and the effectiveness of internal control systems has also been extensively explored. Research by Zhang et al. (2018) found that adaptive

risk assessment methodologies positively influence the quality of internal control, underscoring the necessity for banks to align their control mechanisms with evolving economic conditions. This suggests that banks that proactively assess risks are better positioned to mitigate operational threats.

Furthermore, the implementation of monitoring activities is critical for sustaining effective ICS. Chen et al. (2019) highlight that systematic monitoring enables organizations to detect potential weaknesses in their internal controls and address them promptly, thereby reducing operational risks. Moreover, Liu et al. (2020) emphasize that integrating cybersecurity measures into internal control frameworks enhances resilience against external disruptions, illustrating the increasing importance of technological solutions in effective ICS.

Building on these insights, the following hypotheses are proposed:

- H1: A strong control environment significantly influences the effectiveness of internal control systems in banking institutions.
- H2: Effective risk assessment practices have a positive impact on the overall effectiveness of internal control systems.
- H3: Regular monitoring activities significantly enhance the effectiveness of internal control systems.
- H4: The incorporation of advanced technological solutions into internal control frameworks positively affects the resilience and operational efficiency of banks.

These hypotheses aim to investigate the interplay between different components of internal control and their collective impact on the effectiveness of ICS. By examining these relationships, the study seeks to contribute to a deeper understanding of how internal control systems can mitigate risks and enhance compliance in the banking sector. The findings are expected to enrich the ongoing discourse regarding the critical role of internal controls in promoting financial stability and safeguarding stakeholder interests.

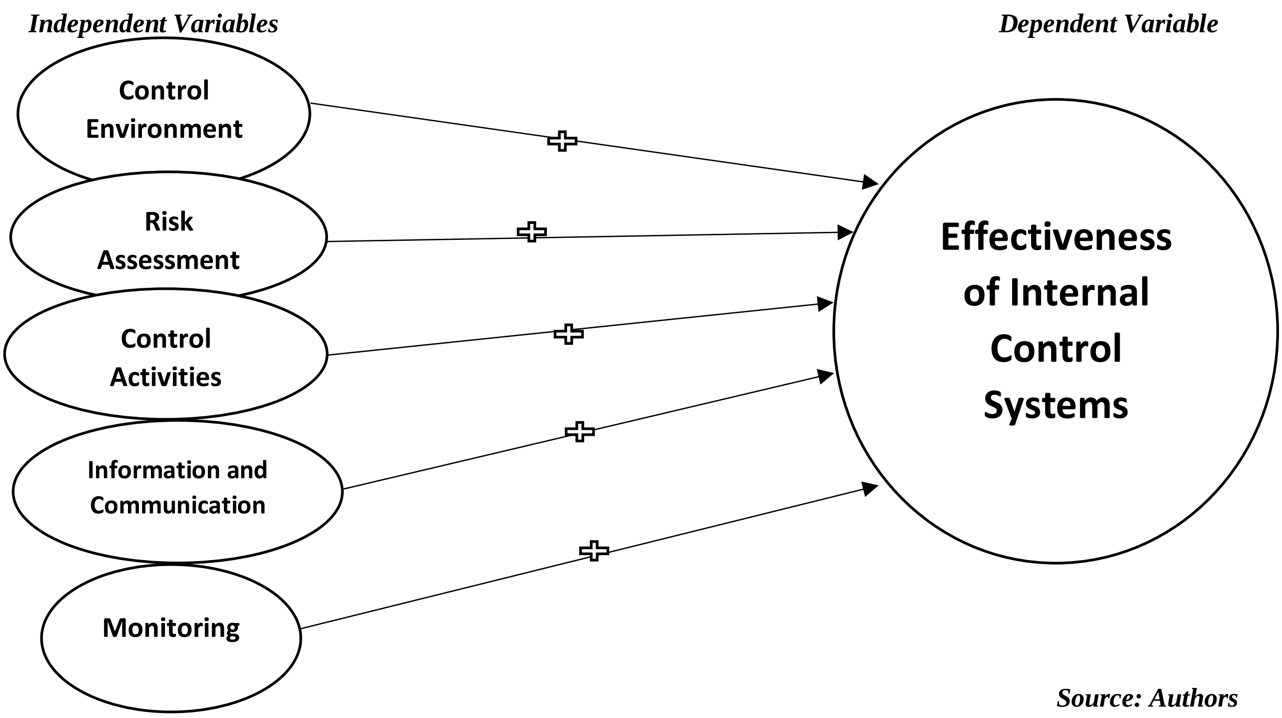
3.2 Research Model

The theoretical research model for this study is depicted in Figure 1, illustrating the hypothesized relationships between internal control components and their effectiveness in mitigating operational risks. Below, we define the key variables included in the model:

- **Control Environment:**
  - **Definition**: This variable reflects the overall attitude, awareness, and actions of the board of directors and management regarding the importance of internal controls within the organization. It establishes the foundation for all other components of internal control.
  - **Importance**: A strong control environment fosters ethical behavior, promotes accountability, and sets the tone for effective internal control practices.
- **Risk Assessment:**
  - **Definition:** This variable involves identifying and analyzing potential risks that could impede the organization’s ability to achieve its objectives. It includes assessing both internal and external factors that could pose risks to operational efficiency.
  - **Importance:** Effective risk assessment enables organizations to proactively address vulnerabilities and strengthen their control mechanisms.
- **Control Activities:**
  - **Definition:** These are the specific policies and procedures implemented to ensure that management directives are carried out effectively. Control activities can include approvals, authorizations, verifications, reconciliations, and segregation of duties.
  - **Importance:** Well-designed control activities help mitigate risks and ensure the accuracy and reliability of financial reporting.

- **Information and Communication:**
  - **Definition:** This variable pertains to the systems and processes used to capture, process, and disseminate relevant information to stakeholders within the organization. It ensures that information flows effectively across all levels of the organization.
  - **Importance:** Effective communication channels are essential for facilitating timely decision-making and ensuring that all employees are aware of their roles in the internal control process.
- **Monitoring:**
  - **Definition:** Monitoring refers to the ongoing evaluations of the effectiveness of internal controls. It includes both continuous monitoring activities and periodic evaluations to ensure that controls are functioning as intended.
  - **Importance:** Regular monitoring helps identify deficiencies in internal controls and ensures that corrective actions are taken promptly to maintain the effectiveness of the control system.
- **Effectiveness of Internal Controls:**
  - **Definition:** this variable measures the degree to which internal control systems achieve their intended objectives, including ensuring the reliability of financial reporting, compliance with laws and regulations, and the safeguarding of assets.
  - **Importance:** The effectiveness of internal controls is crucial for organizational success, as it directly influences operational efficiency and risk management.

Figure 1: Theoretical Research Model



Source: Authors

3.3 Data Processing

The data collected from Moroccan bank employees using structured questionnaires was processed carefully to ensure reliability and provide meaningful insights. The first step involved cleaning the data to fix any incomplete responses or inconsistencies. This initial phase is crucial for producing trustworthy results, as noted by Field (2013) and Cohen, Manion, & Morrison (2007). Cleaning the data helps prevent incorrect interpretations and lays a strong foundation for further analysis.

ISSN: 2658-8455
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After cleaning the data, we used descriptive statistics to examine general trends and perceptions among the respondents. This statistical approach allowed us to summarize demographic information, such as age, gender, education, and job roles. By analyzing these demographics along with key trends in the responses, we could identify patterns among different roles in the banks, including senior executives, risk managers, and internal control staff (Trochim & Donnelly, 2006). Understanding these demographics provides an important context for interpreting the results.

The structured Likert scale used in the questionnaire ranged from "strongly agree" to "strongly disagree," which helped us quantify the respondents' attitudes effectively. Each response was scored to clarify the participants' views on different aspects of internal control systems (Likert, 1932). We set an average score of 2.5 as a threshold, meaning that the responses above indicated a positive impact on internal control, while scores below 2.5 suggested a negative influence. This method is consistent with common practices in survey analysis (Nunnally, 1978; Creswell & Creswell, 2017) and provides a clear way to evaluate how effective the internal controls are as perceived by the respondents.

To avoid highlighting individual answers, we combined responses from all participants to capture overall trends. This approach allowed us to identify key themes by grouping responses, making it easier to see which elements of internal control had the strongest effects. By categorizing the average scores, we determined whether the impact of various components was positive, negative, or neutral. This aggregated analysis reveals broad patterns and provides insights into specific areas where internal controls are seen as effective or needing improvement.

Finally, to ensure the data's consistency and reliability, we performed checks using established methods for verifying internal consistency (Nunnally & Bernstein, 1994; Cronbach, 1951). This involved calculating Cronbach's alpha to assess how well the items in the Likert scale measure the same concept. A Cronbach's alpha value of 0.70 or higher is generally accepted as a sign of good consistency. These checks confirmed that the structured Likert responses effectively captured the key aspects of internal control we were examining. By reinforcing the reliability of our findings, we strengthen the conclusions about internal control practices in Moroccan banks.

In summary, the careful processing of the data—through cleaning, descriptive analysis, and reliability checks establishes a strong foundation for understanding internal control practices in the banking sector. This thorough methodology not only enhances the reliability of the findings but also provides valuable insights that can guide future improvements in internal control frameworks, ultimately strengthening the operational resilience and compliance of Moroccan banks.

4. Results and discussion

This section discusses the study's results on internal control practices within Moroccan banking institutions, comparing them to findings from previous research to provide context and insight into the observed outcomes. Of the 292 questionnaires distributed, 215 were completed and deemed usable, resulting in a response rate of 73.63%. As previously indicated, the effectiveness of internal control is assessed according to the five components specified in the COSO framework. Therefore, the evaluation of each component is based on responses to five corresponding questions.

- **Control Environment**

Our study underscores the importance of a robust control environment in enhancing compliance and promoting ethical standards within financial institutions. This finding aligns with the work of Drogalas et al. (2005) and Otalor & Oloyede (2021), who emphasize the positive impact of well-structured control frameworks on institutional integrity. Unlike regions with more stringent regulatory standards, such as the U.S. and the EU, where internal controls are rigorously enforced (Brown & Caylor, 2006), Moroccan banks may encounter greater variability in regulatory oversight and resource allocation. This disparity may contribute to the heightened emphasis observed among participants, on reinforcing foundational control practices as a strategy to boost operational efficiency and mitigate risk.

In assessing the "control environment" within a Moroccan banking context, five aspects were examined: ethical standards, ethical value dissemination, employee competency, qualified personnel involvement, and resource availability. The descriptive statistics for these five questions are detailed in Table 1, offering a comprehensive view of responses across each area. The results reveal strong perceptions of ethical standards, with 29.76% of employees agreeing and 60% strongly agreeing that these standards are upheld within the institution. However, when asked about the instillation of ethical values across the organization, responses were more varied; while 31% of respondents strongly agreed and 51% agreed, 11% remained neutral, indicating areas where ethical values may not be fully internalized.

Regarding employee competency, a substantial majority of respondents—47%, strongly agreed and 37% agreed affirmed the adequacy of personnel to fulfill their assigned functions. Additionally, the involvement of qualified staff in managing internal controls received strong support, with 41.4% strongly agreeing and 41.9% agreeing, suggesting a well-equipped workforce committed to effective governance practices. The final question addressed resource availability for maintaining internal controls; 44.2% strongly agreed and 37.7% agreed that sufficient resources are allocated, though responses indicate some potential variability in support.

These findings collectively suggest that while Moroccan banks maintain a generally favorable control environment, there remains a perceived need for enhanced consistency in resource allocation and ethical value dissemination. Addressing these areas may further strengthen internal control systems, aligning Moroccan institutions more closely with international standards of operational efficiency and risk management.

Table 1: Descriptive statistics (Questions 1–5)

Questions	N	Mean	Standard Deviation
Q1	215	4.43	0.91
Q2	215	4.07	0.87
Q3	215	4.20	1.01
Q4	215	4.14	0.97
Q5	215	4.14	1.03

Source: authors

- **Risk Assessment**

Like the studies by Karagiorgos et al. (2010) and Chen et al. (2019), our findings confirm that proactive risk assessment is essential for managing vulnerabilities within the banking sector. However, while risk assessment models in larger financial markets often benefit from automation, our study indicates that Moroccan banks still rely heavily on manual assessment practices, likely due to constraints on technology and budget. This reliance on manual processes may pose challenges in scaling risk management efforts, explaining the strong participant support for reinforcing risk assessment as a critical area for improvement.

Risk assessment represents the second element of internal control examined in this study. The questionnaire primarily investigates the existence of a risk management department within the banks. Results reveal that 55.8% of respondents "strongly agree" that their bank has such a department, while 30.2% "agree," and 6% indicate "neither agree nor disagree." In contrast,

ISSN: 2658-8455
Volume 5, Issue 11 (2024), pp. 490-507.

only 4.7% and 3.3% "disagree" and "strongly disagree," respectively, reflecting a consensus on the presence of a dedicated risk management function.
Subsequent questions explore the collaboration between the risk management department and the internal audit department, with 47.9% strongly agreeing and 38.6% agreeing on this partnership. When assessing the identification of inherent risks, 48.4% strongly agreed, and 33.5% agreed that such identification occurs within their banks.
The ninth question addresses the assessment of identified risks, with 50.7% strongly agreeing and 32.1% agreeing that this assessment process is in place. Finally, the tenth question focuses on the effectiveness of responses to assessed risks; here, 48.4% strongly agree that internal control mechanisms are tailored to different levels of risk severity, while 30.2% agree with this assertion. To provide a more comprehensive overview, Table 2 presents the descriptive statistics for questions 6-10.
Overall, these findings underscore the necessity for Moroccan banks to enhance their risk assessment practices, particularly by integrating more automated solutions and fostering collaboration between departments, to improve overall risk management efficacy.

Table 2: Descriptive statistics (Questions 6–10)

Questions	N	Mean	Standard Deviation
Q6	215	4.31	1.00
Q7	215	4.22	1.01
Q8	215	4.19	1.02
Q9	215	4.23	1.00
Q10	215	4.14	1.07

Source: authors

- **Control Activities**

The "Control Activities" component of internal control is explored through questions 11-15 in our study. Question 11 inquired whether management procedures are documented, such as in a procedural manual. An overwhelming majority of participants, 87%, either "strongly agreed" or "agreed" that such documentation exists. This finding is consistent with the best practices in literature, which emphasize the importance of documented procedures for effective internal controls (Otalor & Oloyede, 2021).
The subsequent questions assess the reliability of information provided by the bank's services and the correlation between this reliability and the bank's information systems. A significant majority of respondents, 78.6% and 83.2%, respectively agreed that the internal information system is well supported by management. This supports earlier findings by Drogalas et al. (2005), who highlighted the necessity of reliable information systems as a cornerstone of effective control activities in financial institutions.
Question 14 probed whether the established internal control system can detect illegal activities within the bank. Here, 79.5% of employees either "strongly agreed" or "agreed," indicating a strong belief in the effectiveness of the internal control system in identifying potential illegal actions. This finding aligns with previous research emphasizing the role of robust internal controls in fraud detection and risk mitigation (Brown & Caylor, 2006).
Finally, Question 15 sought to ascertain whether staff members are clearly informed about their functions, responsibilities, and obligations. Results show that 46% of respondents "strongly agree," while 34.4% "agree," suggesting that most employees perceive effective communication regarding their roles. This result echoes findings from other studies that highlight the importance of clear communication in fostering accountability and effectiveness within organizations (Chen et al., 2019).
The results of these questions are further detailed in Table 3. Overall, the findings concerning the "Control Activities" component underscore the significance of well-documented

procedures, reliable information systems, effective detection mechanisms, and clear communication in enhancing the internal control framework within Moroccan banks.

Table 3: Descriptive statistics (Questions 11–15)

Questions	N	Mean	Standard Deviation
Q11	215	4.32	0.98
Q12	215	4.04	0.98
Q13	215	4.15	1.06
Q14	215	4.11	0.99
Q15	215	4.15	1.02

Source: authors

- **Information and Communication**

The fourth element of internal control, "Information and Communication," is evaluated through questions 16-20 in our study. Question 16 assesses the effectiveness of information flow across various departments within the bank. An impressive 85.9% of respondents agreed that staff members contribute significantly to the effective dissemination of information. This finding supports existing literature that emphasizes the critical role of effective communication in ensuring organizational coherence and operational efficiency (Karagiorgos et al., 2010).
Question 17 investigates whether the bank's financial systems capture all relevant financial information, to which 83.7% of participants responded affirmatively. This aligns with the perspective of Chen et al. (2019), who assert that comprehensive financial information capture is vital for sound decision-making and internal control effectiveness. In Question 18, the study expands the inquiry to encompass both financial and non-financial information captured by the bank's systems. Here, 40.9% of respondents "strongly agreed," and 40% "agreed," indicating a strong belief in the bank's ability to capture a holistic view of its operations. This dual focus on information types is increasingly recognized as essential for effective risk management and operational transparency (Drogalas et al., 2005). Question 19 examines the appropriateness of the bank's communication channels. Results are notably positive, with 83.2% of employees confirming the effectiveness of these channels. This result reflects the importance of well-structured communication systems in fostering accountability and ensuring that vital information reaches relevant stakeholders promptly. The final question (Question 20) investigates staff confidence in reporting suspicions of resource misapplication. Findings indicate that 44.2% of respondents "strongly agreed," 38.6% "agreed," while 9.8% remained neutral. This highlights a generally supportive environment for whistleblowing, which is crucial for identifying and addressing potential misconduct within the organization. Descriptive statistics for questions 16-20 are presented in Table 4. Overall, these findings reinforce the importance of effective information flow, comprehensive data capture, suitable communication channels, and a supportive environment for reporting concerns as integral components of the internal control framework within Moroccan banks.

Table 4: Descriptive statistics (Questions 16–20)

Questions	N	Mean	Standard Deviation
Q16	215	4,27	0,95
Q17	215	4,17	0,95
Q18	215	4,10	1,00
Q19	215	4,19	0,99
Q20	215	4,17	0,98

Source: authors

- **Monitoring**

The final component of internal control, "Monitoring," is evaluated through questions 21-25 in our study. When asked how frequently internal controls are assessed for quality, a significant

ISSN: 2658-8455
Volume 5, Issue 11 (2024), pp. 490-507.

IJAFAME
International Journal of Accounting, Finance, Auditing, Management & Economics

majority of respondents indicated agreement, with 59.1% "strongly agreeing" and 26.5% "agreeing" with the statement. This finding is consistent with the literature that underscores the importance of regular monitoring in maintaining effective internal controls (Otalor & Oloyede, 2021). The subsequent question investigated whether the effectiveness of internal control systems is checked regularly. Here, 48.8% of participants agreed, while 33.5% strongly agreed, indicating a generally positive perception of the regularity of effectiveness assessments. This aligns with research suggesting that ongoing evaluations are crucial for identifying weaknesses and ensuring that internal controls remain relevant and effective over time (Chen et al., 2019).

In Question 23, we explored whether monitoring is conducted by competent personnel. An encouraging 81.9% of respondents expressed confidence in the capability of the monitoring staff, reinforcing findings from previous studies that highlight the need for qualified personnel in executing effective monitoring functions (Drogalas et al., 2005).

The questionnaire further sought to determine if monitoring processes ensure the security of the systems in place. Results showed that 42.8% of respondents agreed, while 37.2% strongly agreed with this statement, indicating a positive but perhaps cautious perception of the security assurances provided by monitoring activities. This is particularly relevant considering the increasing focus on cybersecurity and system integrity within financial institutions (Brown & Caylor, 2006). Finally, we examined whether improvement reports are generated at the conclusion of the monitoring process. The results revealed that 50.7% of respondents "strongly agreed," and 30.7% "agreed," suggesting a systematic approach to utilizing monitoring results for continuous improvement. This practice is essential for fostering a culture of accountability and proactive risk management within organizations. All the results mentioned above are summarized in Table 5, which presents the descriptive statistics for questions 21-25. Overall, these findings underscore the significance of regular monitoring, competent personnel, effective security measures, and continuous improvement reporting as critical components of the internal control framework in Moroccan banks.

Table 5: Descriptive statistics (Questions 21–25)

Questions	N	Mean	Standard Deviation
Q21	215	4,3581	0,9653
Q22	215	4,0279	0,9855
Q23	215	4,1814	1,0320
Q24	215	4,0372	1,0360
Q25	215	4,2	1,0421

Source: authors

5. Conclusions

In conclusion, it is perceived that Moroccan banks have an effective internal control system with respect to good ethical environments, competent personnel, reliable information systems, effective communication channels, and good monitoring processes. Again, continuous improvement and adaptability to emerging risks are necessities for the enhancement and maintenance of effectiveness. This study has underlined the need for a well-structured internal control framework as essential to ensure the sound financial performance and stability of the banks. The findings provide a comprehensive understanding of how these controls are implemented and perceived, contributing to the broader discourse on internal control effectiveness in the banking sector.

The control environment forms the foundation of an effective internal control system. The high level of agreement among respondents regarding the existence of ethical standards and a code of conduct suggests that Moroccan banks prioritize establishing a strong ethical framework. This is consistent with the theoretical perspectives that emphasize the importance of an ethical

culture in mitigating risks and ensuring compliance with regulatory requirements (COSO, 2013). The competence of personnel, as perceived by most respondents, further reinforces the strength of the control environment. Competence in executing assigned functions is crucial, as it ensures that employees are adequately equipped to perform their roles effectively and uphold the bank's ethical standards.
Hence, the findings highlight a robust risk assessment framework within the banks, characterized by established risk management departments and significant collaboration between risk management and internal audit functions. This alignment is critical, as it facilitates a comprehensive approach to identifying, assessing, and managing risks (Savcuk, 2007). The effective identification and evaluation of inherent risks, as perceived by the respondents, indicates that banks are proactive in addressing potential threats.
Then, control activities are the policies and procedures that help ensure management directives are carried out. The positive responses regarding the formalization of management procedures and the reliability of information systems suggest that Moroccan banks have well-defined processes in place. These processes are integral to the operational effectiveness of banks, as they ensure that controls are consistently applied, and that reliable information is available for decision-making. The ability of internal control systems to detect illegal activities, as affirmed by the respondents, underscores the effectiveness of these control activities in safeguarding the bank's assets and ensuring regulatory compliance.
At the same time effective information and communication are pivotal to the success of internal control systems. The high level of agreement on the efficient circulation of information within the banks indicates that employees have access to the necessary information to perform their duties effectively. This is aligned with the principles outlined by COSO (2013), which emphasize the importance of relevant and timely information in supporting internal control processes. The findings also suggest that financial and non-financial information is accurately captured by the bank's systems, which is crucial for transparency and accountability.
However continuous monitoring of internal control systems is vital for ensuring their effectiveness over time. The positive responses regarding regular quality control checks and evaluations of the internal control systems' effectiveness suggest that Moroccan banks are diligent in monitoring their control processes. The competence of personnel involved in monitoring, as perceived by the respondents, further enhances the reliability of these processes. Effective monitoring ensures that any deficiencies in the internal control system are identified and addressed promptly, thereby maintaining the overall integrity of the control environment.
In conclusion, this study provides valuable insights into the effectiveness of internal control systems within Moroccan banks. The findings indicate that these banks have robust control environments, effective risk assessment processes, reliable control activities, efficient information and communication channels, and diligent monitoring practices. These elements collectively contribute to the overall effectiveness of the internal control systems, ensuring the banks' sound financial performance and stability. Future research could explore the impact of emerging technologies and regulatory changes on the internal control systems in the banking sector, providing a more comprehensive understanding of their evolving effectiveness

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