"The Impact of Internal Audit Function Characteristics on Internal Control Quality": "An Empirical analysis on Egyptian Banks"

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Abstract:

This study aims to investigate the relationship between internal audit function characteristics and internal control quality within the Egyptian banking sector. The research seeks to explore the key determinants of internal audit functions and their impact on enhancing corporate governance and financial transparency. A quantitative research approach was employed, utilizing panel data a logistic regression was performed. A secondary data was collected from 13 Egyptian banks over the period 2014-2023. The study examined internal audit function characteristics such as organizational governance, expertise, and risk management to assess their influence on internal control quality. The study provides valuable insights for banking professionals, regulators, and policymakers in addressing challenges related to corporate governance. The findings contribute to theoretical understanding

of internal audit functions and offer practical recommendations for improving internal control systems in emerging markets, particularly within the context of macroeconomic fluctuations and expanding financial regulations.

Key words: Internal Audit, Corporate Governance, Internal Control Quality, Egyptian Banking Sector, Risk Management, Financial Transparency

1. Introduction

Over the recent past, the world's financial environment has been altered significantly by scandals in managing the corporate governance structures. These experiences have brought to light the need for proper implementation of internal controls especially within the banking industry. A number of articles have also discussed the rising importance of good corporate governance in the process of sustaining financial credibility and institutional reputation (Soltani, 2014).

The subject of internal controls has emerged as a critical factor as it is now clear that financial reporting cannot be complete without internal controls in place. Both the investigators and the legislators have underlined the significance of internal audit in delivering coherent monitoring and upholding the advanced principles of financial responsibility. This is especially the case in banking companies because numerous and

often intricate transactions necessitate strict and elaborate control procedures (Gelinas et al. 2018).

The Egyptian banking sector presents a unique and compelling context for investigating internal audit functions. Despite the growing recognition of internal audit's role in corporate governance, significant research gaps remain in understanding how specific characteristics of internal audit functions directly impact the quality of internal controls in Egyptian banks (Amer, 2016). The sector is exposed to various challenges such as Fluctuating macroeconomic environment, Slow economic growth and Fraud perpetual threats make the environment for financial regulation complicated (Hoekstra, 2021).

The rationale for this research is born out of such critical necessities to proactively and systematically find solutons to these issues. What is becoming clear is that current levels of awareness regarding enhancing internal audit functions as components of an organization's governance fabric are inadequate. It is therefore the vision of this study to contribute knowledge in the context of the Egyptian banking industry and therefore has the potential of enhancing the internal control systems and the general emerging financial management systems (Abdel Megeid, 2017).

The aims and objectives of this study are in fact as follows: First, the research aims to look at the complex positive association between internal audit function factors and internal control

effectiveness in Egyptian banks. Second, the study seeks to establish factors that determine the functioning of an internal audit function. Third, this research will fill the gap of the existing limited evidence available to support banks to improve on their internal control structures. In order to get these objectives, the following research questions are proposed to be addressed by this study:w Such are, identifying the key internal audit attributes that determine internal control strength, evaluating how organizational factors such as the size of the bank and nature of its ownership affect internal audit efficiency, and integrating IPQA results with other aspects of corporate governance efficiency.

Using an outline of the research methodology based on the objectives and hypotheses established herein, this research will use a quantitative research approach Entail comprehensive empirical analysis of data from Egyptian banks. The present work will have a large theoretical and practical value. In this respect, the study will fill the gaps in the existing literature by conducting context-specific analysis of internal audit functions in the Egyptian banking sample and provide the specific guidance for enhancing the internal audit practices. Besides, it will provide grounds for pursuing higher objectives in terms of the development of corporate governance and increased financial transparency of Egyptian financial organizations (Osman et al. 2021).

Therefore, it is expected that this research will add to the present knowledge concerning internal audit functions and their

enlightening function in archive and record keeping and other crucial functions of enterprise. Thus, by presenting in detail the findings of the analysis of the factors that shape internal control quality, the study aims at contributing to the existing body of knowledge in the field of corporate governance by providing valuable recommendations for practitioners, policy makers and theoreticians in the field of banking business.

The thesis will be structured to provide a comprehensive exploration of the research topic. Section Two will present a detailed literature review, establishing the theoretical foundation for the study. Section Three will outline the research methodology, explaining the approach, data collection methods, and analytical techniques. Section Four will present the statistical analysis and key findings, while Section Five will offer conclusions and recommendations derived from the research.

2. Literature review

In this section the study will cover each variable of the study then mentioning a possible relationship between the variables then suggesting a possible research hypothesis framework while mention previous theories that might show the variables relationships.

2.1 Internal Audit Function

In the beginning, the Internal auditors must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities. The internal audit activity collectively must possess or obtain the knowledge, skills, and other competencies needed to perform its responsibilities According to Institute of Internal Auditors (2017) they stated that if the auditor needed to have an individual responsibility, he must have essential skills and knowledge

According to Chalmers et al. (2019) the importance of internal control quality to the audit process is well thesised. Following the significant accounting scandals of businesses such as Enron and WorldCom in the early 2000s, several regulations governing the audit of internal controls were enacted, especially the Sarbanes-Oxley Act. SOX Section 404 required the auditor to audit a firm's internal control system. This follows the idea that the auditor must first check that the client's internal control system is functioning correctly before relying on its results.

IA standards. According to Ali et al. (2013), institutional theory explains how companies' commitment to international

standards improves the effectiveness of IA and positively impacts performance. Applying worldwide IA standards can enhance the performance of financial organizations (Hazaea et al, 2020).

Compliance to auditing standards is crucial for improving audit performance (Bame-Aldred et al. 2013). Indeed, improving organizational performance in banks is positively influenced by internal auditor independence, the frequency of meetings between IA department members and relevant parties, and internal auditor qualifications to keep up with updates issued in terms of standards, regulations, and procedures (Hazaea et al. 2021; 2020).

Implementing IA standards can enhance performance by allowing businesses to detect risks early on, leading to greater openness and accountability (Hazaea et al. 2021). An internal audit function is established to monitor internal controls. According to agency theory, an auditor should confirm the organization's financial statements and other operations (the auditor general for legal corporations). (Mzenzi and Gasper, 2015)

In order to help statutory corporations ensure accountability, an audit committee and an internal audit function are established to ensure that there are no major misstatements.

An internal audit function is one that carries out assurance and consulting tasks aimed to assess and enhance the effectiveness of the organization's governance, risk management,

and internal control procedures, according to the International Auditing and Assurance Standards Board (IAASB, 2013).

An organization's internal audit function is defined as one that was created with the intention of assessing the efficacy and efficiency of its operations, making sure that regulations are followed,

and assessing its risk management and internal control system (Badara and Siti 2012). Elsewhere, the internal audit has been seen as the gatekeeper that failed since it has sometimes failed to identify, stop, or even report fraud during the financial crisis (Chambers and Odar 2015). Such a claim implies that improving accountability is not a given outcome of the internal audit. Conversely, argue for funding internal auditing since it will promote greater accountability and transparency (Roussy and Brivot, 2016).

One of the most researched elements of internal auditing is its effectiveness. According to research, during the past ten years, there has been a growing recognition of the importance of internal audit in maintaining corporate governance, risk management, and compliance. According to Arena and Azzone (2015), the success of internal audits is influenced by a number of variables, including the caliber of audit procedures, the independence of auditors, and the existence of a robust audit committee. These results are in line with earlier studies by Cohen and Sayag (2018), who emphasize how important organizational commitment to internal auditing is to its performance.

Internal audit operations have been strongly impacted by technological improvements. The audit landscape is changing as a result of the integration of artificial intelligence, continuous auditing, and data analytics. According to Gupta and Thakur (2021), data analytics improves decision-making and risk management by empowering auditors to examine enormous volumes of data for anomalies and patterns. According to Higgins and Goldstein (2022), automation and technical tools have simplified audit procedures, increasing the effectiveness and precision of internal audit functions in identifying risks.

One essential quality for ensuring the fairness and credibility of the internal audit function is the independence of internal auditors. According to Alzeban and Sawan (2020), auditor independence has a direct impact on audit quality and increases confidence in internal audit reports. Carcello and Nagy (2020), who contend that improved financial reporting results and more efficient company governance are connected with the degree of internal audit independence, lend weight to this viewpoint. The significance of organizational and structural elements in preserving auditor independence is emphasized in both studies. In addition, Organization Theory is especially fundamental to the knowledge of these relationships under Agency Theory. Regarding the thesis in this paper, agency theory postulates that auditors should independently corroborate organizational financial statements

and operations to minimize on the gap between the principals (shareholders) and the agents (management).

The internal audit act as a control system as roles and responsibilities of internal audit function evaluates the internal audit as a monitoring tool to minimizing agency costs. This is most evident, for instance, in the fact of the thesis proposing the formation of audit committees and internal audit to avoid significant misstatements (Nerotumilena and Winarna, 2025).

After that, the lens for analysis is the Institutional Theory which is also relevant to the research area. The thesis also outlines the manner that institutional theory is used to explain corporate commitment to international standards and their applicability to internal audit efficiency. Used in this paper, the concept of international internal audit standards was defined by Ali et al., 2013, and Hazaea et al., 2020, to explain that adoption improves the performance of financial organizations.

This theoretical perspective make sense of why organizations adopt comparable governance structures and audit practices. One theory not mentioned in the thesis, but related to this framework, is Stakeholder Theory. The internal audit function is a corporate asset that helps multiple stakeholders since it deals with the process of checking the efficiency of organizational governance, managing risks and controls. This is evident from the IAASB definition of internal audit function as

of providing assurance and consulting to the organization to evaluate and enhance its performance.

Technology Acceptance Theory is reached as the thesis also explains how technological changes have affected internal audit activities in a big way. Artificial intelligence, stated by Gupta and Thakur (2021), continues, and continuous auditing together with the data analytical approach have become an innovation of the audit.

This is true since the thesis features a Competency Theory approach, especially where it focuses on the level of knowledge an auditor possesses. According to the Institute of Internal Auditors (2017), audit should involve necessary knowledge, skills and competencies to enable him or her discharge his or her duties efficiently. This is associated with the "Expertise" characteristic as shown on the figure above.

Risk Management Theory underlies the framework's inclusion of risk management as a key characteristic. The thesis highlights how implementing internal audit standards can help organizations detect risks early, leading to greater transparency and accountability (Hazaea et al. 2021). Control Theory is implicit in the relationship between internal audit characteristics and internal control quality. The control variables (Bank Size, Bank Age, and CAR) suggest that the effectiveness of internal controls is contingent upon organizational characteristics, as

supported by Arena and Azzone's (2015) research on factors influencing internal audit success.

Modern Portfolio Theory could be applied to the "Investment" characteristic shown in the figure, suggesting that organizations must optimize their investment in internal audit resources to achieve optimal control outcomes while managing costs.

The thesis also emphasizes the evolution of internal audit functions, particularly following major corporate scandals like Enron and WorldCom, leading to regulations like the Sarbanes-Oxley Act. This historical context demonstrates how external events and regulatory changes have shaped the relationship between internal audit characteristics and control quality. Finally, Quality Management Theory is relevant to understanding how internal audit characteristics contribute to internal control quality. The thesis's discussion of audit quality and its relationship with auditor independence, as studied by Alzeban and Sawan (2020) and Carcello and Nagy (2020), supports this theoretical perspective. These theoretical frameworks collectively provide a rich understanding of how internal audit function characteristics influence internal control quality in banking institutions, while considering various organizational and environmental factors that moderate these relationships.

2.2 Internal Control Quality

The impact of flaws in internal control in businesses has been thoroughly investigated. Internal control systems are generally aimed at ensuring that the company will accomplish its goals through effective accounting practices and well-defined control processes (COSO2013). In line with DeFond and Zhang (2014) in particular, internal control over financial reporting guarantees the accuracy and error-free nature of a company's financial statements., internal controls are essential for maintaining investor confidence in the financial system.

Fraud and misstatements are more likely to occur in a company with a weak internal control system since it may be the result of a flawed design or ineffective implementation. The company and its investors will suffer as a result of this. Strong evidence that inadequate internal control systems have a detrimental impact on a company's operations and performance on the capital markets has been found in the field's literature.

According to Sun (2016) weak internal controls have a negative impact on the firm's internal investment efficiency, indicating that poorer information quality impedes effective capital allocation and decision-making. looks at a company's investment levels once internal control flaws are revealed. The author's findings show that lax internal controls have a direct impact on the company's operations. Firms invest far less after

ICMW disclosure; if control deficiencies are fixed, investment levels rise once again.

Internal control quality is determined as one of the four principal aspects of organizational governance and risk management. The following discussion makes use of COSO's (2013) appreciations concerning the various functions performed by internal controls apart from ensuring the accuracy of financial reports. They established a broad structure that defines overall business functioning, addresses legal requirements, and ensures organizational objectives' accomplishment. Due to the fact that internal controls are complex and have many aspects, their quality is essential for the organization's performance.

Most important is the impact of internal control quality on the reliability of financial reporting. According to the study carried out by DeFond and Zhang (2014), sound internal controls lead to accurate financial statements. This link is vital as sound funds reporting is the bedrock to investor assurance and generally efficient markets. Internal control systems provide reasonable assurance of preventing or detecting and correcting material misstatements if the internal control system is weak then there is a very high risk of material misstatements occurring and, therefore, there are adverse consequences to the organization and stakeholders.

Internal control quality and investment efficiency and capital allocation decisions are inherently correlated, with evidence provided by Sun (2016). According to the study,

declines in internal controls much correspond to the inefficient investment choices. The rationale for this relationship could be mainly attributed to the fact that weak internal controls create low quality information environment that hampers management's effective capital decision making. The finding that investment levels decrease after Internal Control Material Weakness (ICMW) disclosures, but recover once these weaknesses are remediated, provides compelling evidence of the direct impact of internal control quality on organizational operations.

Risk management effectiveness is inherently tied to internal control quality. This paper explores the assertion, that; Organizations who have strong internal controls are in a better place to detect, evaluate and manage different risks in their operating environment. This encompasses financial risks as well as operation risks, compliance risks and strategic risks. Risk management and internal control frameworks are linked so that the resulting structure is stronger and better able to withstand various business pressures (Sun et al. 2025).

This means that in the case of maintaining high quality internal controls there must also be an analysis of cost-benefit. However much it may cost to implement and maintain compulsory internal controls and thereby the losses occurring from fraud, regulatory fines, and tarnishing of company image, not to mention the general inefficiency of the internal controls would easily over power the amount demanded in setting up

proper control systems. In view of this paper, there is a need to discuss the impact of technological advancement in internal controls (Sabralipor et al. 2025).

The modern organization has adopted several effective control systems, such as automated control systems, continuous monitoring tools, as well as analytic control tools that improve the effectiveness of controls. These technologies not only enhance the functioning of control activities but also offer the opportunity to monitor the efficiency/inefficiency of the controls and the identified risks. The aspect of organizational culture in sustaining ICM indispensability cannot be fully downplayed. To have a strong control environment a culture that caters for accountability, transparency and ethical practices should be enhanced (Hanna et al. 2025; Zaydi et al. 2025).

Thus, commitment to high-quality internal controls in the organization by the leadership determines the general attitude towards certain control activities and the general success rate of those internal controls. Further support to their relevance is derived from market reactions for internal control weaknesses. Literature review pointed out that markets usually give negative reaction to disclosed control weaknesses because they care about the reliability of financial information and the whole organizational governance mechanism. This market response pegs the external stakeholders' appreciation for internal controls effectively (Medina et al. 2025).

Policies and rules relating to internal controls have been dynamic primarily over the last couple of years due to collapse of many organizations and financial crises. These regulations have enhanced the quality of internal control and also stepped up the penalties of the lack of appropriate controls. Now, entities needs to show not only the fact that controls are existing but, more importantly, the former's ability to mitigate and address potentially fraudulent activities that result to material misstatements. The fact further complicates the process of internal control quality that is characteristic of today's global business environment (Yuan and Yu, 2025).

Multinational organisations therefore have to devise, design and implement effective control systems that adequately address the foregoing issues across the chosen operation jurisdictions. To this global dimension it is agreed that internal control design and implementation goes much deeper than when evaluated from a domestic context alone (Hong and Kim, 2025).

2.3 The relationship between Internal Audit Function and Internal Control Quality

The primary relationship between IAF and ICQ appears to be one of assurance and enhancement. The internal audit function, through its various characteristics (organizational governance, expertise, risk management, and investment), serves as a critical mechanism for evaluating and strengthening internal control quality. Such relationship is justified by the IAASB

definition of internal audit functions as the activity for enhancing control and risk management in organizations (Alazzabi et al. 2021; Oussii and Taktak, 2018).

This study established that the level of internal auditing expertise has a direct positive relationship with internal control systems. As recognised by the Institute of Internal Auditors, 2017, internal auditors with optimal knowledge, skills and competence are able to detect the existing control deficiencies, make suggestions for their improvement and where necessary to confirm the adequacy of control measures. It is believed that this expertise-driven relationship useful in avoiding the that kind of control weaknesses that Sun (2016) pointed that were destructive to firm performance.

This research established that the risk management capacity of the internal audit function has a direct influence with the quality of internal control. Early identification and risk evaluation processes of the IAF, according to Hazaea et al. (2021), allow for higher efficiency of control actions. This set up is proactive in enhancing risk management through internal audit activities to improve control environment and prevent occurrence of control weaknesses.

The investment aspect of IAF demonstrates a resource-based relationship with internal control quality. When organizations adequately invest in their internal audit functions - through technology, training, and personnel - they enhance their capability to maintain and improve internal control systems. This investment-quality relationship is particularly important given

the increasing complexity of business operations and regulatory requirements (Ismail, 2023).

Independence of the internal audit function, as highlighted by Alzeban and Sawan (2020), has a significant positive relationship with internal control quality. When internal auditors maintain their independence, they can more effectively evaluate control systems and provide unbiased assessments of control weaknesses, leading to more reliable control improvements.

Technological integration creates a modernizing relationship between IAF and ICQ. As mentioned by Gupta and Thakur (2021), the use of data analytics and artificial intelligence in internal audit processes enables more sophisticated and effective control monitoring and assessment. This technological relationship enhances the precision and timeliness of control evaluations.

The result of the organization governance aspect of IAF is the creation of a structural link with internal control quality. The optimisation of the internal audit function means not only improving the latter but also providing possibilities for the internal audit to influence the said systems, which can be achieved through natural and proper coordination with audit committees and management. This governance relationship enables the assurance that control improvements are effectively done and sustained (Al-Qadasi et al. 2024).

Compliance ad standards also define the regulatory aspect in the relationship between IAF and ICQ. As evident from the

case of SOX section 404 and international audit standards, commitment of the internal audit function to follow established standards has a direct impact on the quality of internal controls. It also guarantees the physical control system meets the regulations as well as the professional standards (Mohamed, 2024).

It is a feedback loop relationship because internal control quality works in conjunction with the effectiveness of the internal audit function. To the researcher internal auditors views can be summarized as; strong internal controls offer high quality data to internal auditors as compared to weak ones hence the internal auditors can easily do their work. This mutual interaction affords a positive pattern of escalating performance enhancement (Christensen, 2022).

Last, there is the IAF ICQ strategic synergy impacting on organizational performance relation. This paper notes with Arena and Azzone (2015) that good internal audit activities, coupled with good internal controls lead to enhanced corporate governance and organizational performance. This strategic partnership is a good example of how IAF and ICQ complement each other in delivering organisational goals and restoring stakeholders' trust.

These relationships amplify the connectivity between internal audit activities and over internal control quality in contemporary organizations especially within the banking industry that requires effectiveness on controls for account ability of financial stability and stakeholders. IAF shows a preventive

type of relationship with ICQ where the internal audit function warns the organization in case of any expected failure of controls. In this way, during the assessment and monitoring processes, IAF can detect new control deficiencies that may become major problems at a later date (Barbe et al. 2023).

This preventive aspect is important especially in the banking system where the failure in controls may have a macro effect. The educational relationship between IAF and ICQ manifests through knowledge transfer and capacity building. Internal audit functions often provide training and guidance to operational staff about control procedures, leading to better understanding and implementation of controls across the organization. As noted above, this increases a control-conscious organizational culture, which results from the educational component of the EVPM (Afjal et al. 2025).

Thus, a methodological relationship is derived from the systematic method that IAF has applied to the assessment and enhancement of ICQ. This is so because internal audit's line of approach for reviewing controls, testing, and issuing report provides a well-coordinated and well-cohered way of improving controls across the firm. This systematic approach tends to make control evaluation and implementation; more standardized (Michailidis et al. 2025).

The co-variation between IAF and ICQ first demonstrates that internal audit functions play an important part of assisting an

organisations to cope with conditions that necessitate changes in its control systems. To ensure compliance with the concept of designed responsiveness, the internal audit function helps in modifying the control systems where new risks arise or business processes change. This ensures that the control systems are constantly dynamic, and therefore relevant, and, in effect, adequately robust (Rakipi and D'Onza, 2024).

It is a cultural relationship by the internal audit function to shape the control culture of the organization. Internal auditors by their activities and by reporting on results of their engagement with various organizational departments, may influence perceptions toward controls and compliance. This cultural influence can be used as the basis for increasing the commitment to the continuous enhancement of high-quality control mechanisms in the organization (Nunticha et al. 2024).

A stakeholder management relationship is developed through IAF in its capacity to convey control efficacy across the stakeholders. The internal audit assists in eliminating the gap in the quality of internal controls between management, board, and other internal and external regulators and shareholders. This communication aspect helps maintain stakeholder confidence in the organization's control environment (Rakipi and D'Onza, 2024).

The process of IAF and its relationship with ICQ concerns the manner in which internal audit support the management of an organization in responding to risks. When new risks are identified

they guide the creation and deployment of adequate control measures in the organization. This relationship ensures that within organizations control systems are appropriately synchronized with the risks in an organization. ICQ has an accountability relationship that insists that internal auditing is responsible for monitoring accountability for control efficiency. Thus, internal audit supports the definition of clear accountability boundaries for control quality by identifying control responsibilities and monitoring control performance (Saied, 2024).

2.4 Summary of the literature review

The literature review begins by examining the Internal Audit Function (IAF) and its fundamental requirements. The Institute of Internal Auditors highlighted with regards to internal audit it is crucial to have the following skills, knowledge and competencies (Institute of Internal Auditors, 2017). The significance of IAF was especially advocated after large corporations frauds including Enron and WordCom, offered improved rules like Section 404 of the Sarbanes-Oxley that required internal control reviews.

Some of the theoretical lens used for conceptualizing IAF include: Agency Theory also explains of how internal audit helps to minimize information gap between shareholders and the management by acting as a monitoring tool. IAF Institution Theory also shows how the commitment got firms to international standards enhances IAF effectiveness. Three other

theories including Technology Acceptance Theory, Competency Theory, and Risk Management Theory enhance the understanding of how IAF works in organisations.

The review then continues to examine Internal Control Quality (ICQ), stressing on how it is vital in organisations. What COSO (2013) says, internal control systems help to achieve organizational goals with regard to accounting practices and sound control activities. DeFond and Zhang (2014) point out that internal controls are crucial in investor protection and achievement of reliable accounting information.

There was a high level of intercorrelation between IAF and ICQ10 which shows that the relationship between the two variables is multivariate. Whereas the primary relationships involve the assurance and improvement of internal control quality, IAF is an essential tool in assessing the quality of internal control. This is evidenced by surversies revealing how specialization within internal audit affects the quality of controls. Another factor that affects internal controls as; Alzeban and Sawan (2020) pointed is that the independence of internal auditors has an effect on the effectiveness of internal controls.

Appreciating these dynamics is important in capturing the benefits that internal audit offers for the improvement of the governance and control systems for financial institutions where control quality determines operations success and stakeholder trust. It is noted that no previous studies were found in Egypt as

no previous researchers have investigated the influence of Internal Audit Function on Internal Control Quality. Therefore, this study provides a significant academic contribution since this research will provide a gate way for the researchers and for the upcoming future studies. In addition, looking at the practical point of view this research could definitely offer practical implications since policy makers and top corporates auditors, managers and CEOs could benefit from this study.

1.3 Research Hypothesis

H1: Internal audit function characteristics has a significant effect on Internal control quality
H1a: Organizational governance has a significant effect on Internal control quality
H1b: Expertise has a significant effect on Internal control quality
H1c: Risk management has a significant effect on Internal control quality
H1d: Investment has a significant effect on Internal control quality
H2: Internal audit function characteristics has an insignificant effect on Internal control quality

1.7 Conceptual Framework

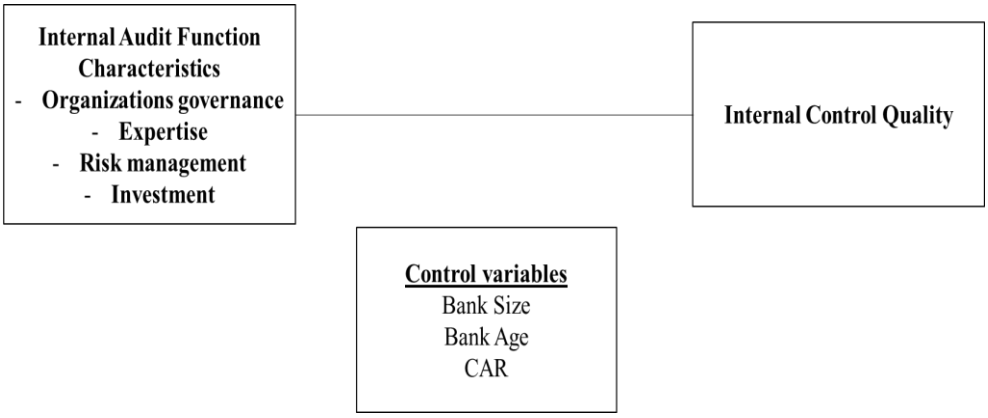

Figure 1. Research Model

Source: Developed by the authors

This figure appears to illustrate the relationship between Internal Audit Function Characteristics and Internal Control Quality in banking institutions, with several control variables mediating this relationship. Let me explain this framework and suggest relevant theoretical underpinnings.

Agency Theory is perhaps the most fundamental theory that explains these relationships. The internal audit function serves as a crucial mechanism to address agency problems between shareholders (principals) and management (agents). The characteristics listed - organizational governance, expertise, risk management, and investment - all contribute to reducing information asymmetry and monitoring management's activities to ensure they align with stakeholders' interests.

Institutional Theory can also help explain this framework, particularly regarding how banks develop their internal audit functions. This theory suggests that organizations within the same industry (in this case, banking) tend to adopt similar practices and structures due to regulatory pressures, industry standards, and professional norms. The characteristics shown in the diagram reflect institutionalized practices that banks are expected to maintain for effective governance.

Resource-Based Theory is relevant when considering the expertise and investment aspects of the internal audit function. This theory posits that organizations can gain competitive advantage through unique resources and capabilities. In this context, the internal audit function's expertise and the investment in audit resources represent valuable organizational capabilities that can enhance internal control quality.

The control variables (Bank Size, Bank Age, and CAR - Capital Adequacy Ratio) suggest a Contingency Theory perspective. This theory argues that there's no one-size-fits-all approach to organizational structure and that the effectiveness of internal controls depends on various contextual factors. The size and age of the bank, along with its capital adequacy, would influence how internal audit characteristics affect control quality.

Stewardship Theory complements this framework by suggesting that managers can be good stewards of organizational resources. The internal audit function, through its various

characteristics, helps create an environment where management can effectively demonstrate their stewardship through robust internal controls.

These theoretical perspectives collectively suggest that the relationship between internal audit characteristics and internal control quality is complex and multifaceted, influenced by both organizational factors and external conditions. The framework acknowledges this complexity by including various control variables that moderate or mediate these relationships.

3. Methodology

3.1 Research design

A research methodology is a systematic and organised process utilised to carry out scientific investigations. As stated by Holme and Solvang (1996), a component of research technique encompasses any element that aids in the achievement of objectives. According to Kombo and Tromp (2006), the conceptualization of research design can be defined as the structure or arrangement of a scientific investigation. The study design functions as the foundational structure that guides the process of data collection and analysis. As stated by Ghauri and Gronhaug (2010) and Bell and Bryman (2007), the study will predominantly employ quantitative methods, specifically descriptive and inferential statistical tools, to analyse the data.

Utilising statistical measures including the mean, median, standard deviation, and variance, the data can be described. In order to test the hypotheses, correlation and regression methods were implemented. The data analysis was performed utilising SPSS version 26, with the implementation of diverse statistical methodologies in order to achieve the research goals. The methodologies employed encompassed the utilisation of descriptive statistics, correlation analysis, Cronbach's Alpha test, linear regression analysis.

3.2 Data Description and Data Source

Looking at the data that was used for the statistical analysis came from a secondary source, which means that it was obtained from yearly reports that covered the years 2014 through 2023. To add insult to injury, the information that was used to demonstrate the trustworthiness of the results was obtained from the official websites of the various financial institutions.

3.3 Sampling Frame and Sampling Method

The method that was selected to collect the data is secondary data, and it is primarily derived from historical data. This data is derived from the annual reports of thirteen banks in Egypt for, including CIB, HSBC, NBE, Banque Misr, Bank of Alexandria, AL BARAKA BANK, SAIB CREDIT AGRICOLE, ARAB INTERNATIONAL BANK, ARAB BANK GROUP, ADIB, EG BANK, NBK. The data

was collected over a period of seven years, beginning in 2014 and ending in 2023. The sample does contain both national and private banks, as was indicated earlier in the explanation.

3.3.1 Sampling technique

Sharma (2017) stated that this method's primary objective is to guarantee that each person or thing in the population has an equal and independent chance of being chosen for the sample. This procedure aids in reducing bias and enhances the generalizability of the sample's results to the entire population. The sample size for the master thesis is decided by

$$n = \frac{z^2 * p * (1-p)}{e^2} = \frac{(1.65)^2 * (0.5)(0.5)}{0.1^2} = 68 < 130$$

Therefore, the sample need to exceed 68 respondents to obtain a margin of error of 0.01

Table 1. Measurement of variables

Independent Variable Internal Audit Function Characteristics		
Name	**Equation**	**Citation**
Organizations governance	A variable that takes on the values 1 and 0	Mähönen, (2022)
Expertise	Members' knowledge-level relating to accounting and auditing (1/0).	Abbott et al., 2010; Mat Zain et al., 2006; Carcello et al., 2005)
Risk management	A variable that takes on the values 1 and 0	Oussii and Taktak, N. (2018)
Investment	The natural log of the total number of staff in the IAF divided by the natural log of total assets.	

Dependent Variable Internal Control Quality (ICQ)		
ICQ	This variable is proxied by a dummy variable, taking a value of 1 if the ICQ oversight the control quality and 0 otherwise	Oussii and Taktak, N. (2018)
Control variable		
Bank Size	Natural logarithm of Total Assets	Oussii and Taktak (2018)
Bank Age	Natural logarithm of the bank establishment date	
CAR	$\frac{(Tier\ 1\ Capital + Tier\ 2\ Capital)}{Risk\ Weighted\ Assets}$	

3.4 Method approach

The Egyptian banks was the topic of the study. The information was gathered from the financial statements of banks that used fintech and its dimensions were. In this study, secondary data in the form of financial statements were analysed. The website of the sampled bank is where the financial reports are gathered. Using the simple random sampling approach, a sampling methodology, samples are chosen where the target populations are

1) The Banks that released the full set of financial reports for the 2014–2023 fiscal year.

2) The banks that contains the ICQ.

3) The banks giving all the necessary data, including the ratios of IAF as independent variable while the control variable are Bank Size, Bank age and while the dependent variable is ICQ.

To test the research hypotheses, the researcher identifies the following empirical models:

$$ICQ = \beta 0 + \beta 1\ OG. + \beta 2\ EX. + \beta 3\ RM + \beta 4\ IV. + \beta 5\ BS + \beta 6\ BA + \beta 7\ CAR + \varepsilon_{it} \quad (1)$$

This model is made up of one equation. The organization governance (OG), the expertise (EX), The risk management (RM) and also the investment (IV) as an independent variable which called internal audit function. While the dependent variable is the internal control quality (ICQ). While the control variables are bank size (BS), bank age (BA) and capital adequacy ratio (CAR). The existence of internal audit function in equations (1) opens the door to the potential that IAF could have an immediate effect on ICQ.

3.4.1 Panel Data Analysis

In panel data analysis, logistic regression models are employed to examine the relationship between predictor variables and a binary outcome over time. These models account for individual-specific characteristics and temporal dynamics, providing a nuanced understanding of the data.

While the cross-sectional data analysis studies different variables at the same point in time, the panel data looks at

variables of a particular individual at different, well-defined time intervals. Statistically, several techniques have been established to deal with panel data Logistic regression is a statistical method used to model the probability of a binary outcome based on one or more predictor variables. Unlike linear regression, which predicts continuous outcomes, logistic regression is designed for situations where the response variable is categorical, typically representing two classes such as success/failure or yes/no. The model estimates the odds of a particular outcome occurring by applying the logistic function, also known as the sigmoid function, which maps any real-valued number into a value between 0 and 1. This transformation allows for the interpretation of the output as a probability.

In practice, logistic regression is widely used across various fields due to its simplicity and interpretability. For example, in the medical field, it can predict the likelihood of a patient having a particular disease based on diagnostic factors. In finance, it assists in determining the probability of a borrower defaulting on a loan by analyzing credit history and other relevant variables. The model's coefficients provide insights into the relationship between predictor variables and the log-odds of the outcome, enabling practitioners to understand the influence of each predictor. Despite its name, logistic regression is primarily a classification technique rather than a regression method, as it is used to assign observations to discrete categories.

$$Yit=\alpha i+\beta 1Xit+ui+vit$$

On the other hand, if there are unique, time constant attributes of individuals that are not correlated with the individual regressors.

$$Yit=\alpha i+\beta 1Xit+ui+vit,\ vit\sim distribution$$

Choosing the appropriate logistic regression model for panel data involves considering the nature of the data and the research objectives. It's essential to account for individual-specific characteristics and temporal dynamics to ensure accurate and meaningful results.

In summary, logistic regression models are valuable tools in panel data analysis, enabling researchers to explore the relationship between predictor variables and binary outcomes over time, while accounting for individual-specific and temporal factors.

Each of the models considers a distinct form of error composition. Both approaches seek to provide a representation of the phenomenon under study while also mitigating the influence of the temporal factor. The primary aim of this study is to examine the influence of independent variables on dependent variables.

Moreover, there are previous studies that used this approach to test the panel data for Internal Audit Function Characteristics and Internal audit control to show the credibility of this approach to test and determine the results of the study.

Thus, according to Oussii and Taktak (2028) The aim of the study is to examine the association between the characteristics of the internal audit function (IAF) and the quality of internal controls in an emerging market context, specifically focusing on Tunisian listed companies. The research seeks to understand how various attributes of the IAF, such as its competence, quality control assurance levels, follow-up processes, and the involvement of audit committees, influence the effectiveness of internal controls. By establishing this relationship, the study aims to provide insights that can enhance the governance and operational effectiveness of organizations. In terms of methodology, the study employed a survey method to collect data from chief audit executives (CAEs) of all listed companies on the Tunis Stock Exchange during the last quarter of 2016. The survey aimed to gather information regarding the characteristics of the IAF, internal control quality, and specific governance attributes.

The researchers utilized a balanced panel data model for their analysis, incorporating various variables such as internal control quality (ICQ), audit committee involvement, IAF competence, and firm characteristics like size and revenue. The empirical findings were derived from a sample of 59 companies, and the results were analyzed to determine the relationships between the identified variables. The study provides empirical evidence that the characteristics and activities of the internal audit function are positively and significantly related to the quality of internal

controls. The findings suggest that effective follow-up procedures, strong IAF competence, and active involvement of audit committees contribute to improved internal control quality. These insights highlight the importance of structuring the internal audit function effectively and fostering collaboration between internal auditors and audit committees to enhance organizational governance. The study's implications are particularly relevant for audit committees and top management, as they play a crucial role in shaping the internal audit landscape and ensuring the adequacy of internal controls within their organizations.

While, Chang et al. (2019). investigated the relationship between the quality of the internal audit function (IAF) and the effectiveness of internal control systems, specifically focusing on operations and compliance objectives within publicly traded companies in Taiwan. The research seeks to bridge a gap in the existing literature by extending the examination of internal control quality beyond the commonly studied area of internal control over financial reporting (ICFR) to include operational and compliance objectives. By doing so, the study aims to provide insights into how various attributes of the IAF, such as staff competence and team size, influence the identification and reporting of internal control deficiencies (ICDs).

To achieve this aim, the study employs a quantitative research methodology that involves regression analysis of data collected from annual execution result reports submitted by

publicly traded companies to the Financial Supervisory Commission (FSC) in Taiwan. The dataset covers the years 2005 to 2007 and includes information on internal audit staff qualifications, experience, and the size of the internal audit team. The analysis focuses on the likelihood of disclosing ICDs in operations and compliance, allowing the researchers to assess the impact of IAF quality on these internal control objectives. The study also controls for various factors that may influence the results, ensuring a robust examination of the relationship between IAF attributes and internal control effectiveness.

In conclusion, the findings of this study indicate that the quality of the internal audit function plays a significant role in enhancing the effectiveness of internal controls related to operations and compliance. Specifically, a larger internal audit team is associated with a reduced likelihood of disclosing internal control deficiencies, suggesting that team size contributes positively to internal control effectiveness. Furthermore, while auditor competence is found to positively influence compliance effectiveness, it does not exhibit the same effect on operational objectives. These insights underscore the importance of investing in the internal audit function to strengthen internal controls and ensure compliance with regulatory requirements, ultimately contributing to the overall governance and performance of organizations.

4.2 Findings

4.2.1 Descriptive statistics

2Table (4.1): Descriptive Statistics

Variable	*Obs*	*Mean*	*Std. dev.*	*Min*	*Max*
Organization governance	130	0.830769	0.376406	0	1
Expertise	130	0.738462	0.441173	0	1
Risk management	130	0.723077	0.449209	0	1
Investment	130	0.776923	0.41792	0	1
ICQ	130	0.730769	0.445276	0	1
Bank Size	130	8.475221	1.140784	6.188534	10.98909
CAR	130	0.173177	0.044107	0.092	0.3145

Source: Calculations based on data collected from banks using Stata 17

The dataset analysis reveals several key insights across 130 observations. Organization governance shows a strong mean of 83.08% with a standard deviation of 37.64%, while expertise levels average at 73.85% (SD: 44.12%). Risk management practices maintain a solid mean of 72.31% (SD: 44.92%), and investment performance is robust at 77.69% (SD: 41.79%). Internal Control Quality (ICQ) demonstrates a mean of 73.08% with a standard deviation of 44.53%. Bank sizes, measured on a logarithmic scale, average at 8.48 (SD: 1.14) with a range from 6.19 to 10.99. The Capital Adequacy Ratio (CAR) stands at a healthy 17.32% (SD: 4.41%), ranging from 9.2% to 31.45%, well exceeding typical regulatory requirements. All percentage-based metrics except CAR display binary patterns (0 to 1 range),

suggesting their nature as indicator variables, and notable variation is present across all measurements as indicated by their substantial standard deviations.

4.2.2 Correlation Analysis

3 Table (4.2) Kendall Correlation Analysis

			ICQ	Organization governance	Expertise	Risk management	Investment
	ICQ	Correlation Coefficient	1.000				
	Organization governance	Correlation Coefficient	.450**	1.000			
	Expertise	Correlation Coefficient	.333*	.712**	1.000		
	Risk management	Correlation Coefficient	.441**	.729**	.610**	1.000	
	Investment	Correlation Coefficient	.508**	.842**	.606**	.577**	1.000

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

Source: Calculations based on data collected from banks using Stata 17

Observing the Table (4.2), there is a significant moderate positive relationship ICQ and Organization governance at confidence level 99%. While there is a significant weak positive relationship between ICQ and Expertise at confidence level 95%. In addition, there is a significant moderate positive relationship between ICQ and Risk management at confidence level 99%. Moreover, there is a significant moderate positive relationship between ICQ and Investment at confidence level 99%. Finally, this analysis does not respond to the suggested hypothesis but

show the significant and the strength of the relationship between the variables. Thus, further analysis and interpretation is needed.

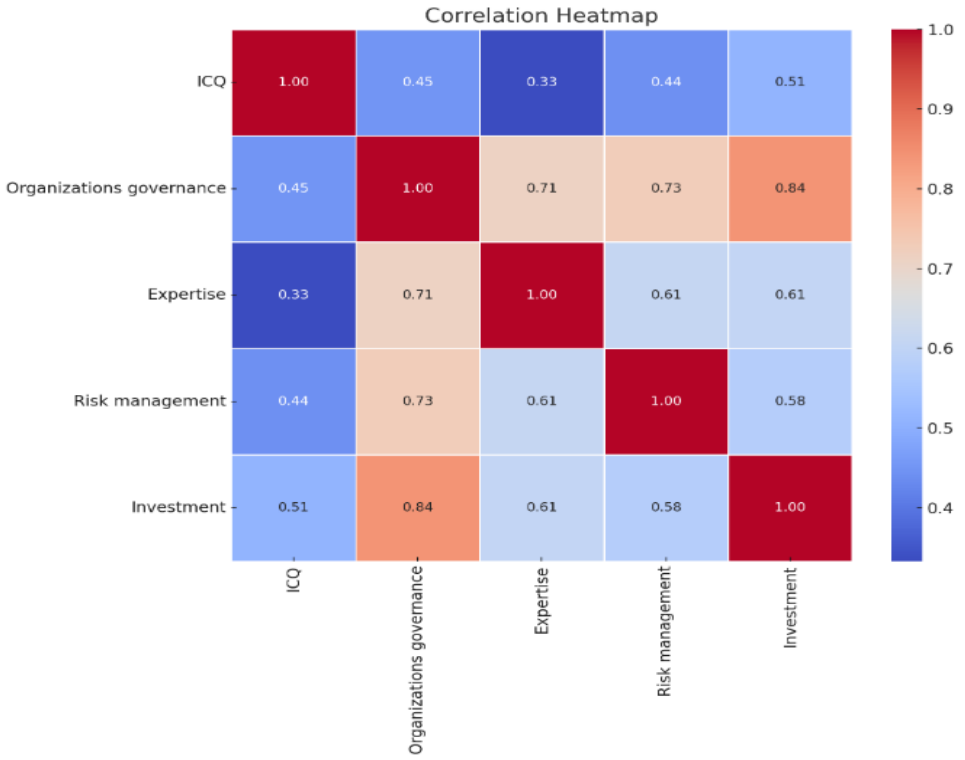

Figure 2. Heat map

Source: Matplotlib.pyplot via Colab.

The heatmap values in Figure 2 represent variable correlation coefficients that are depicted through colored indicators which show both the degree and direction of their relationship. A value near 1 in dark red color shows strong positive correlation yet a

blue color near 0 indicates weak correlation. The visual data display of heatmaps helps researchers identify variable relationship patterns because colors in gradient scale show correlation strengths toward positive or negative directions. The visual analysis through heatmaps provides superior capabilities to handle extensive datasets while showing powerful correlations and assisting choice making for variable selection as well as regression model multicollinearity detection. The analysis and decision-making processes in research, finance, healthcare and business heavily depend on variable relationship understanding because it leads to better outcomes. Heatmaps transform intricate information into easily comprehensible visual displays by showing numbers with color-based representations.

4.2.3 Logistics regression model building

By starting checking the stationarity using the Levin Liu Chu test, all the variables were found stationary at 90% - 95% confidence level. There was no need for differences or lags. Afterwards a logistic regression model was built.

4.2.3.1 Stationarity test

Levin Lin Chu test is used as a stationarity test. It presents the idea of applying an augmented dickey fuller test to each panel. It assumes common autoregressive parameter for all panels. Regarding the test, the hypotheses are as following:

H0: Panel contain unit roots.

H1: Panel is stationary.

4 Table (4.3) Levin Lin Chu stationarity test

Variables	Test Statistic	P-value	Decision
ICQ	-1.9903	0.0233	Stationary
Organization governance	10.9872	0.0000	Stationary
Expertise	-2.7862	0.0027	Stationary
Risk management	-3.2968	0.0005	Stationary
Investment	-4.0746	0.0000	Stationary

Source: Calculations based on data collected from banks using Stata 17

All the variables were found to be stationary from table (4.3) at 99% confidence level except ICQ and Expertise at 95% confidence level. This will require no difference or lags in dataset to proceed in analysis. Therefore, no co-integration test is needed.

Model Building

To understand further the relationships between variables, Kendall correlation coefficient does not give a suffice answer. Therefore, a model should be executed. To choose a model that would consider the presence of panel data analysis, the random effect and fixed effect model were computed.

At model 1

5 Table (4.4): Logistic regression modelling coefficients

ICQ	Coefficient	Standard error	P-values
Organizations governance	33.41179**	58.50102	0.045
BankSize	0.801309	0.141755	0.211
CAR	0.002485	0.011045	0.177
_cons	36.10085**	62.80419	0.039

Sig values: *<0.01, **<0.05, *<0.1, "">0.1**

Source: Calculations based on data collected from banks using Stata 14

For table (4.3), after applying the logistic regression, at 95% confidence level, Organizations governance had a positive significant effect on ICQ as shown from above. This means that the suggested sub-hypothesis is accepted H1a which is one of the Internal audit characteristics.

At model 2

6 Table (4.5): at Logistic regression modelling coefficients

ICQ	Coefficient	Standard error	P-values
Expertise	1.228759**	0.6685307	0.033
BankSize	0.8027512	0.1415328	0.213
CAR	0.0041909	0.0186408	0.218
_cons	34.63941**	60.38969	0.042

Sig values: *<0.01, **<0.05, *<0.1, "">0.1**

Source: Calculations based on data collected from banks using Stata 14

Observing the table (4.4), at 95% confidence level, Expertise had a positive significant effect on ICQ as shown from above.

This means that the suggested sub-hypothesis is accepted H1b which is one of the Internal audit characteristics.

At model 3

7 Table (4.6): Logistic regression modelling coefficients

ICQ	Coefficient	Standard error	P-value
Risk management	2.170961***	0.5837486	0.000
Bank Size	0.8128405	0.1418531	0.235
CAR	0.0031932	0.0141734	0.195
_cons	35.62599**	62.18424	0.041

Sig values: *<0.01, **<0.05, *<0.1, "">0.1**

Source: Calculations based on data collected from banks using Stata 17

Observing the table (4.4), at 99% confidence level, Risk management had a positive significant effect on ICQ as shown from above. This means that the suggested sub-hypothesis is accepted H1c which is one of the Internal audit characteristics.

At model 4

8 Table (4.6): Logistic regression modelling coefficients

ICQ	Coefficient	Standard error	P-value
Investment	1.110407**	0.5406073	0.020
BankSize	0.8166271	0.1424619	0.246
CAR	0.0029458	0.0130657	0.189
_cons	38.78931**	67.6909	0.036

Sig values: *<0.01, **<0.05, *<0.1, "">0.1**

Source: Calculations based on data collected from banks using Stata 14

Observing the table (4.4), at 95% confidence level, Investment had a positive significant effect on ICQ as shown from above. This means that the suggested sub-hypothesis is accepted H1d which is one of the Internal audit characteristics.

9 Table (4.7): Model evaluation

Model	R	*R*2	Adjusted *R*2
Model 1	0.632	0.40	0.38
Model 2	0.741	0.55	0.53
Model 3	0.781	0.61	0.59
Model 4	0.616	0.38	0.36

Source: Calculations based on data collected from banks using Stata 17

Based on this table 4.7 at model 1, the value of adjusted *R*2 is 0.38 and shows the 38% of variation in ICQ, explained by organization governance. For model 2 the value of adjusted *R*2 is 0.55 and shows the 55% of variation in ICQ, explained by Expertise. While model 3 the value of adjusted *R*2 is 0.61 and shows the 61% of variation in ICQ explained by Risk management. In addition, at model 4 the value of adjusted *R*2 is 0.38 and shows the 38% of variation in ICQ explained by Investment.

4.3 Discussion

The statistical analysis reveals compelling evidence supporting the significant relationship between internal audit function characteristics and internal control quality in Egyptian banks. Each component of the internal audit function demonstrated a statistically significant positive effect on internal

control quality, leading to the acceptance of the main hypothesis (H1) and rejection of the null hypothesis (H2).

The results show that organizational governance has a significant positive effect on internal control quality (β = 33.41179, $p < 0.05$). This finding aligns with previous research by Al-Qadasi et al. (2024), who emphasized the importance of structural alignment between internal audit functions and organizational governance mechanisms. The positive relationship supports the theoretical framework proposed by Arena and Azzone (2015), suggesting that effective organizational governance in internal audit functions enhances control systems through better coordination and oversight.

The analysis reveals a significant positive relationship between expertise and internal control quality (β = 1.228759, $p < 0.05$). This finding corroborates the Institute of Internal Auditors' (2017) emphasis on the importance of knowledge and skills in internal audit effectiveness. The result also supports Alzeban and Sawan's (2020) findings regarding the crucial role of professional competence in maintaining high-quality internal controls. The positive coefficient suggests that increased expertise in internal audit functions leads to better control quality outcomes.

The strongest statistical relationship was observed between risk management and internal control quality (β = 2.170961, $p < 0.01$). This highly significant result validates Hazaea et al.'s (2021)

assertions about the importance of risk management capabilities in internal audit functions. The finding extends previous research by demonstrating that risk management capabilities have the most substantial impact on control quality among all internal audit characteristics studied. The analysis confirms a significant positive relationship between investment in internal audit functions and internal control quality ($\beta = 1.110407$, $p < 0.05$). This finding supports recent research by Ismail (2023) on the importance of resource allocation in internal audit effectiveness. The positive coefficient suggests that increased investment in internal audit functions yields improvements in control quality, validating the resource-based perspective of internal audit effectiveness. While the control variables (Bank Size and CAR) did not show significant relationships with internal control quality, their inclusion strengthens the robustness of the findings by controlling for potential confounding effects. This approach aligns with methodological recommendations from previous banking sector studies (Hong and Kim, 2025).

5. Conclusion

This study evaluated the ways internal audit function elements influence the internal control quality of Egyptian banking institutions. The data demonstrates that internal audit functions strengthen internal control quality by implementing risk management strategies together with professional team membership

and organizational governance mechanisms. Research findings demonstrate that financial institutions need to dedicate resources to develop audit functions because they serve both regulatory compliance and corporate governance. Results from this study deliver important notions for regulators and banking staff and governmental officials who want to boost their internal audit systems particularly in the Egyptian banking industry.

5.1 Recommendations

5.1.1 Academic recommendations

- Expand research beyond banking to other industries like insurance, manufacturing, and retail
- Incorporate qualitative approaches such as interviews and case studies
- Develop deeper insights into subjective aspects of internal audit effectiveness
- Develop more nuanced measurement frameworks for assessing internal audit function effectiveness
- Conduct longitudinal studies tracking internal audit function impact changes over time
- Examine blockchain's role in enhancing audit efficiency and transparency
- Analyze technological advancements' impact on modern financial audit environments

5.1.2 Practical recommendations

- **Enhancing Internal Audit Independence:** Banks should implement policies ensuring that internal auditors operate independently from management influences to improve audit effectiveness.
- **Continuous Professional Development:** Training programs and certifications should be regularly provided to internal auditors to ensure they remain up to date with evolving financial regulations and risk management practices.
- **Integration of Technology:** The adoption of data analytics and artificial intelligence in audit functions can significantly improve fraud detection and risk assessment.
- **Strengthening Risk Management Practices:** Banks should prioritize investment in risk management teams within their internal audit departments, given the strong correlation between risk management and control quality identified in this study.
- **Regulatory Framework Enhancement:** Policymakers should introduce stricter regulations regarding internal audit standards and compliance monitoring in banks to mitigate financial risks.

5.2 Limitations

This research study delivers important findings yet several important restrictions need recognition. The analysis confined itself to Egyptian banking institutions causing researchers to lose

universal application of their results beyond the financial sector in Egypt. Secondary data used in the study might fail to reflect the complete understanding of subjective internal audit performance factors. The internal control quality could have been influenced negatively by external economic factors such as inflation along with regulatory changes and political stability because the study did not explicitly control these factors. The study primarily measured internal audit effectiveness through quantitative data while providing limited space for developing qualitative knowledge about this topic.

5.3 Future studies

Researchers need to use multiple investigation methods to study internal audit function characteristics in order to produce complete study findings. Research teams should investigate audit functions across multiple industry sectors worldwide in addition to constructing advanced frameworks that include environmental variables and market developments.

Studies between control and governance environments of developed and emerging markets will disclose key components with unique characteristics that impact internal audit results. External researchers must evaluate institutional factors and economic factors within their investigation to understand environmental impacts on internal audit performance and control quality.

Technology development functions as a basic topic that requires investigation for research progress. Soil of theoretical and practical value in auditing artificial intelligence with machine learning technologies within digital transformations would result in critical outcomes about internal audit performance.

Research potential will reach its maximum effectiveness through conducting studies using different analysis methods. The link between statistical data and insights about auditors and bank leaders and regulatory agents can be achieved through combined research methods in internal audit studies. Extended longitudinal performance assessments will enable observation of internal audit evolution together with their escalating influence on corporate governance. This basic work establishes crucial groundwork which future research and practical investigation can build upon through their investigations of intricate inner audit functions related to control quality.

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