

Internal Auditor Competence and Financial Performance of Listed Companies: Evidence from the Casablanca Stock Exchange

Bouteina EL GHARBAOUI, (Associate Professor)
Management and Innovation Research Laboratory (MIRL)
National School of Business and Management (ENCG)
Moulay Ismail University (UMI) – Meknes.

Sara CHELH, (Associate Professor)
Management and Innovation Research Laboratory (MIRL)
National School of Business and Management (ENCG)
Moulay Ismail University (UMI) – Meknes.

Sara GRIGUER, (Associate Professor)
Engineering and Sustainable Development Research Group (IDD)
Higher School of Technology (EST)
Ibn Zohr University (UIZ) – Dakhla.

Najla SRAIDI, (Associate Professor)
Management, Innovation and Governance of Organizations Research Group (MIGO)
Polydisciplinary Faculty of Larache (FPL)
Abdelmalek Essaâdi University (UAE) – Larache.

Correspondence address:	National School of Business and Management (ENCG) Moulay Ismail University (UMI) B.P. 3102 Toulal, Meknes, Morocco.
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Abstract:

Internal auditor competence is widely recognized as a key driver of internal audit quality. However, research in the Moroccan context has largely conceptualized competence as a unidimensional or aggregate construct, leaving the specific effects of its underlying dimensions on financial performance underexplored. This study addresses this gap by examining whether five dimensions of internal auditor competence, namely academic and professional training, professional experience, technical knowledge, analytical skills, and professional ethics and integrity, are positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange. Specifically, the study asks: Is internal auditor competence, through its distinct dimensions, positively associated with the perceived financial performance of CSE listed companies? A quantitative survey was conducted among 108 internal auditors representing 77 listed companies. Financial performance was measured perceptually through questionnaire items referring to return on assets (ROA), return on equity (ROE), return on capital employed (ROCE), and return on sales (ROS), rather than through accounting ratios extracted from financial statements. The proposed relationships were tested using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 3. The findings show that all five competence dimensions are positively and significantly associated with perceived financial performance. Academic and professional training exhibits the strongest relationship ($\beta = 0.401$, $p < 0.001$), followed by professional ethics and integrity ($\beta = 0.370$, $p = 0.005$), professional experience ($\beta = 0.297$, $p = 0.002$), analytical skills ($\beta = 0.232$, $p = 0.007$), and technical knowledge ($\beta = 0.216$, $p = 0.048$). The five competence dimensions explain 49% of the variance in perceived financial performance. These findings support a multidimensional conceptualization of internal auditor competence and extend existing evidence from the Moroccan context by demonstrating that its individual dimensions differ in the strength of their association with perceived financial performance.

Keywords: Internal audit, Internal auditor competence, financial performance, Casablanca Stock Exchange; PLS-SEM.

Classification JEL: M42; M41; G34.

Paper type: Empirical Research

1. Introduction

Over time, internal auditing has evolved from a traditional focus on compliance into a key component of corporate governance, risk management, and organizational control. As part of the broader governance architecture, the internal audit function (IAF) provides assurance on the effectiveness of internal controls and risk management processes while also supplying boards and management with information that can support organizational decision making (Gramling et al., 2004; Arena & Azzone, 2009). Its relevance is particularly evident in the financial reporting environment. Higher quality internal audit functions have been associated with lower levels of earnings management (Prawitt et al., 2009), while the effectiveness of internal audit in monitoring financial reporting depends substantially on the quality of the function itself (Abbott et al., 2016). Information about the internal audit function may also influence investors' perceptions of oversight effectiveness and the reliability of financial reporting (Holt & DeZoort, 2009).

The contribution of internal auditing, however, cannot be inferred merely from the formal existence of an internal audit department. Its effectiveness depends on a combination of organizational, functional, and individual characteristics. Arena and Azzone (2009), for example, show that internal audit effectiveness is influenced by the characteristics of the internal audit team, the audit processes performed, and the function's organizational relationships. Similarly, Alzeban and Gwilliam (2014) identify internal auditor competence, organizational independence, management support, relationships with external auditors, and the size of the internal audit department as important factors associated with internal audit effectiveness. A broader review of the literature confirms that internal audit effectiveness results from multiple interacting organizational and professional factors rather than from the presence of the function alone (Türetken et al., 2020).

Among these determinants, internal auditor competence deserves particular attention because the quality of an audit engagement depends substantially on the knowledge, skills, judgment, and professional capabilities of the individuals performing it. Competent internal auditors are better equipped to understand organizational processes, assess the adequacy of controls, identify significant risks, interpret evidence, and communicate relevant findings to decision makers. Abbott et al. (2016) identify competence as a fundamental component of internal audit quality, while the Global Internal Audit Standards require internal auditors to possess or develop the knowledge, skills, and abilities necessary to perform their responsibilities effectively (IIA, 2024). Competence can therefore be viewed not merely as an individual attribute, but as a professional resource through which internal auditing can generate useful assurance and contribute to organizational value creation.

The potential contribution of internal auditing also extends beyond financial reporting quality to broader organizational and financial outcomes. When audit findings lead to corrective action, internal auditing may help organizations strengthen controls, improve processes, manage risks more effectively, and protect organizational resources. Alzeban (2023), for instance, finds that greater implementation of internal audit recommendations is associated with higher firm performance. These findings suggest a plausible mechanism through which internal auditor competence may be related to financial outcomes: stronger professional capabilities can improve the identification and assessment of organizational weaknesses, enhance the quality of audit recommendations, and increase the likelihood that internal audit activities contribute to effective managerial action.

Whether this relationship operates in the same manner across institutional settings remains an important empirical question, particularly in emerging capital markets where governance structures and internal audit practices may differ from those documented in developed economies. The Moroccan capital market provides a relevant setting for such an investigation.

Morocco has progressively strengthened its corporate governance framework since the introduction of the Moroccan Code of Good Corporate Governance Practices in 2008, followed by the development of more specific governance frameworks for different categories of organizations (CNGE, 2008). More recently, governance expectations for companies making public offerings have been further formalized through a specific governance code applicable to such entities (AMMC, 2025). These developments reinforce the importance of effective monitoring, internal control, transparency, and governance mechanisms among companies operating in the Moroccan capital market.

Despite the growing international literature on internal audit effectiveness and quality, competence has frequently been examined as one component of broader models combining several characteristics of the internal audit function. Prawitt et al. (2009), for example, operationalize internal audit quality through a composite measure incorporating several attributes, while Abbott et al. (2016) examine competence jointly with independence. Other studies similarly consider competence alongside organizational independence, management support, audit resources, and other institutional characteristics (Alzeban & Gwilliam, 2014; Türetken et al., 2020). Consequently, although the importance of competence is widely recognized, less is known about whether its individual dimensions exhibit distinct relationships with organizational outcomes.

Existing Moroccan evidence points in the same direction but leaves this issue unresolved. Prior studies have documented positive relationships between internal audit characteristics and organizational or financial performance in Moroccan organizations (El Gharbaoui & Chraïbi, 2021; El Kotbi & Achour, 2024; Benkirane & Benazzi, 2024). However, internal auditor competence has generally been examined either as an aggregate construct or as one component of a broader internal audit quality framework. In particular, El Gharbaoui et al. (2021), in an empirical study of companies listed on the Casablanca Stock Exchange, examined competence as an overall construct together with auditor independence. The specific contribution of the individual dimensions underlying internal auditor competence therefore remains insufficiently examined in the Moroccan listed company context.

Against this background, the present study investigates the relationship between internal auditor competence and the perceived financial performance of companies listed on the Casablanca Stock Exchange. More specifically, it addresses the following research question: Is internal auditor competence, through its distinct dimensions, positively associated with the perceived financial performance of CSE listed companies? This overarching research question is addressed through five hypotheses examining the specific effects of academic and professional training, professional experience, technical knowledge, analytical skills, and professional ethics and integrity.

To address this question, the study uses survey data collected from 108 internal auditors representing 77 companies listed on the Casablanca Stock Exchange. Financial performance is examined as a perceptual construct based on respondents' assessments of performance with reference to return on assets, return on equity, return on capital employed, and return on sales. The relationships between the five dimensions of internal auditor competence and perceived financial performance are examined using partial least squares structural equation modeling (PLS-SEM).

The study is designed to contribute to the literature in three respects. First, it places internal auditor competence at the center of the analysis rather than treating it merely as one component of a broader internal audit quality construct. Second, it adopts a multidimensional conceptualization of competence that distinguishes academic and professional training, professional experience, technical knowledge, analytical skills, and professional ethics and integrity, thereby allowing the relationships associated with each dimension to be examined separately. Third, it extends empirical research on internal auditing in emerging capital markets

by examining a cross-industry sample of companies listed on the Casablanca Stock Exchange. By doing so, the study provides a more granular framework for investigating the human capital foundations of internal audit quality and their relationship with perceived financial performance.

The remainder of the article is structured as follows. The next section reviews the literature on internal auditor competence and financial performance. The subsequent section presents the theoretical foundations, conceptual model, and research hypotheses. The research methodology is then described, followed by the empirical results and their discussion. The final section presents the main conclusions, implications, limitations, and avenues for future research.

2. Literature review

This literature review establishes the conceptual and empirical foundations of the relationship between internal auditor competence and financial performance. It first distinguishes internal audit effectiveness from internal audit quality and examines the role of competence within these concepts. It then discusses internal auditor competence as a multidimensional construct and explains the selection of the five dimensions retained in this study. Finally, it examines financial performance indicators used as reference dimensions for the perceptual performance construct.

2.1. From internal audit to internal audit quality

Internal auditing has evolved from a function primarily concerned with compliance and control verification into a broader assurance and advisory activity supporting governance, risk management, and organizational control. The Global Internal Audit Standards emphasize the contribution of internal auditing to effective governance, risk management, control, decision making, and organizational oversight (IIA, 2024). Academic research similarly indicates that the effectiveness of an internal audit function depends on more than its formal existence. Based on evidence from 153 Italian companies, Arena and Azzone (2009) identify three broad groups of determinants: the characteristics of the internal audit team, the audit processes and activities performed, and the function's organizational relationships. Türetken et al. (2020) likewise conclude that internal audit effectiveness is shaped by a combination of individual, organizational, and relational factors.

Internal audit effectiveness should nevertheless be distinguished from internal audit quality. Effectiveness refers to the extent to which the internal audit function achieves its intended objectives, whereas quality concerns the characteristics of the function and its work that enable those objectives to be achieved reliably. Within the financial reporting literature, competence and independence have emerged as particularly important dimensions of internal audit quality. Abbott et al. (2016), for example, conceptualize internal audit quality through these two attributes and show that the effectiveness of internal audit monitoring depends on their joint presence. Similarly, Prawitt et al. (2009) report that stronger internal audit quality is associated with lower levels of earnings management, suggesting that the characteristics of the internal audit function can influence the reliability of financial reporting.

Evidence also indicates that competence may have implications beyond financial reporting. Chang et al. (2019), using regulatory data from Taiwanese listed companies, operationalize internal audit competence through educational attainment, professional certification, and external audit experience and find that higher staff competence is associated with more effective internal control over operations and compliance. Chen et al. (2020), studying Chinese listed companies, similarly report that internal audit function quality contributes to operational efficiency and that competence plays an important role in this relationship. These findings support the argument that the human capabilities embedded within the internal audit function

can affect its ability to identify weaknesses, evaluate risks, and contribute to organizational outcomes.

However, the relationship between internal auditing and firm performance is neither automatic nor uniform. D'Onza et al. (2015) show that the perceived ability of internal auditing to add value depends on several characteristics, including independence and objectivity, adherence to professional ethics, and contributions to internal control and risk management. Alzeban (2023) provides more direct evidence by showing that greater implementation of internal audit recommendations is associated with higher firm performance. Yet Alzeban (2020) also demonstrates that governance mechanisms do not necessarily affect all internal audit attributes in the same way. In particular, the mediating role identified for some internal audit characteristics does not extend equivalently to internal auditor competence. This divergence suggests that competence should not simply be assumed to influence organizational outcomes through the same mechanisms as other internal audit attributes. Rather, its contribution should be examined as a distinct and potentially multidimensional phenomenon.

In the Moroccan context, previous research has also linked internal audit characteristics to organizational outcomes (El Gharbaoui & Chraibi, 2022; Loukili & Mokhtari, 2026). El Kotbi and Achour (2024) identify positive associations between organizational performance and competence related characteristics of internal audit personnel, while Benkirane and Benazzi (2024) report a positive relationship between internal audit effectiveness and organizational performance in Moroccan public enterprises. Focusing specifically on listed companies, El Gharbaoui et al. (2021) find that internal auditor competence and independence are associated with financial performance. However, competence is treated as an overall construct rather than decomposed into its underlying dimensions. Consequently, existing Moroccan evidence supports the relevance of competence but provides limited insight into whether its constituent dimensions are differently associated with financial performance.

2.2. Internal auditor competence

Competence represents a fundamental condition for the effective performance of internal audit responsibilities. Under the Global Internal Audit Standards, internal auditors are expected to possess or acquire the knowledge, skills, and abilities appropriate to their responsibilities and level of experience and to maintain these competencies through continuous professional development (IIA, 2024). This perspective implies that competence should be understood as a multidimensional capability rather than as a single technical attribute.

Table 1: Selected Operationalizations of Internal Auditor Competence in Prior Research

Study	Main Competence Dimensions	Relevance to the present study
Seol & Sarkis (2005)	Multiple professional attributes used in internal auditor selection	Supports a multidimensional view of auditor competence
Plant et al. (2013)	General competencies, technical skills, behavioral skills	Supports the distinction between technical and broader professional capabilities
Chang et al. (2019)	Educational attainment, professional certification, prior audit experience	Supports academic/professional training and professional experience
El Kotbi & Achour (2024)	Qualifications and experience of internal audit personnel	Provides Moroccan evidence supporting training and experience
Vitalis et al. (2024)	Accounting/auditing knowledge, IT, data analytics, critical thinking, communication, business acumen	Supports technical knowledge and analytical skills
D'Onza et al. (2015)	Professional ethics, independence/objectivity and value adding characteristics	Supports professional ethics and integrity

Source: Authors.

Prior empirical research supports this multidimensional view, although studies differ considerably in the way competence is operationalized. Chang et al. (2019) emphasize

educational attainment, professional certification, and prior auditing experience. Plant et al. (2013) distinguish between general competencies, technical skills, and behavioral skills, while Seol and Sarkis (2005) approach auditor competence through multiple attributes relevant to auditor selection. More recently, Vitalis et al. (2024) show that contemporary internal audit professionals require a broad combination of accounting and auditing knowledge, information technology, data analytics, critical and analytical thinking, communication, and business acumen. Taken together, these studies indicate that competence encompasses educational, experiential, technical, analytical, and behavioral components rather than a single homogeneous capability.

Academic and professional training

Academic and professional training represents the formal knowledge base on which internal audit practice is built. It encompasses educational preparation and professional qualifications that provide auditors with knowledge of accounting, auditing, governance, risk management, and internal control. Prior research has incorporated educational attainment and professional certification into measures of internal auditor competence (Arena & Azzone, 2009; Chang et al., 2019). In the present study, this dimension therefore captures the formal preparation that enables auditors to understand and apply recognized professional concepts and methodologies.

Professional experience

Professional experience captures the practical knowledge accumulated through audit engagements and related professional activities. Experience enables auditors to apply formal knowledge to complex organizational situations, recognize recurring control weaknesses, interpret ambiguous evidence, and exercise professional judgment when standardized procedures are insufficient. Chang et al. (2019) explicitly include previous audit experience in their competence measure, while El Kotbi and Achour (2024) identify auditor experience as significantly associated with organizational performance in the Moroccan context.

Technical knowledge

Technical knowledge refers to the auditor's command of auditing methodologies and standards as well as accounting, finance, risk management, regulatory, information system, and technological knowledge. The increasing digitalization of organizations has broadened the technical knowledge expected of internal auditors beyond traditional accounting expertise. Vitalis et al. (2024), for example, identify data analytics, information systems, and information security among the competencies increasingly required in contemporary internal audit practice.

Analytical skills

Analytical skills concern the ability to interpret evidence, detect patterns and anomalies, assess the significance of risks and control deficiencies, and develop conclusions from complex or incomplete information. These capabilities are particularly important in risk based auditing, where auditors are expected to go beyond procedural verification and assess both the underlying causes and the potential consequences of identified weaknesses. Vitalis et al. (2024) explicitly identify critical and analytical thinking, together with data analytic capabilities, as important competencies for internal audit professionals.

Professional ethics and integrity

Professional ethics and integrity concern the manner in which auditors exercise their knowledge and professional judgment. Integrity supports objective assessment, credible reporting, and trust in audit conclusions. The Global Internal Audit Standards place integrity among the core principles governing internal audit practice (IIA, 2024). D'Onza et al. (2015) further show that

adherence to professional ethical principles is positively associated with internal auditors' perceptions of their function's ability to add value. Ethical conduct can therefore be considered an essential condition for translating professional competence into credible audit outcomes. These five dimensions are complementary but conceptually distinct. Academic and professional training provides the formal knowledge base, professional experience develops the capacity to apply that knowledge in organizational settings, technical knowledge supports the assessment of increasingly complex processes and systems, analytical skills enable auditors to transform evidence into professional judgments, and ethics and integrity govern the responsible exercise of these capabilities. Their separation therefore provides a more granular basis for examining whether particular forms of competence are differently associated with financial performance.

2.3.Financial Performance

Financial performance represents the economic dimension of the broader concept of organizational performance. Venkatraman and Ramanujam (1986) distinguish financial performance from broader operational measures and emphasize that the choice of performance indicators should remain consistent with the objective and level of analysis of the research. Richard et al. (2009) similarly describe organizational performance as a multidimensional construct and caution against relying on a single measure when several dimensions of organizational outcomes are theoretically relevant. Financial indicators should therefore be viewed as complementary rather than interchangeable.

Accounting based indicators are widely used to assess corporate financial performance because they provide different perspectives on profitability and the efficiency with which organizational resources are employed. The present study refers to four commonly used dimensions: return on assets (ROA), return on equity (ROE), return on capital employed (ROCE), and return on sales (ROS).

ROA reflects the firm's ability to generate earnings from the assets under its control and therefore provides an indication of asset use efficiency. However, its interpretation may be affected by differences in asset intensity, accounting policies, and the measurement of the asset base. ROE, in contrast, assesses profitability in relation to shareholders' equity and therefore reflects a shareholder perspective on financial performance.

At the same time, ROE may be influenced by firms' financing structures, since higher financial leverage can affect the relationship between earnings and equity. ROCE relates operating returns to the capital committed to business activities and therefore offers a broader perspective on the efficiency of long-term capital utilization, although its interpretation may vary according to the definition of capital employed. Finally, ROS indicates the extent to which sales are converted into earnings and therefore provides information on operating profitability, but it may also reflect industry specific differences in margins and cost structures.

These limitations illustrate why no single accounting ratio provides a complete representation of financial performance. Considering several performance dimensions is therefore preferable when the objective is to capture different aspects of profitability and resource utilization. This approach is consistent with prior research emphasizing the multidimensional nature of organizational performance (Murphy et al., 1996; Venkatraman & Ramanujam, 1986; Richard et al., 2009).

In the present study, however, ROA, ROE, ROCE, and ROS are not calculated directly from firms' financial statements. Rather, they serve as reference dimensions for a perceptual measure of financial performance based on internal auditors' assessments collected through the questionnaire. The dependent construct therefore reflects respondents' perceptions of financial performance rather than observed accounting ratios. This distinction is particularly important because the interpretation of the findings concerns perceived financial outcomes and should not be extended directly to objectively reported financial ratios.

The use of perceptual measures of performance has precedent in management research. Dess and Robinson (1984) demonstrate the usefulness of subjective performance measures when objective financial information is difficult to obtain, while Wall et al. (2004) provide evidence supporting the validity of subjective measures of company performance. Accordingly, financial performance is operationalized in this study through four questionnaire items referring to ROA, ROE, ROCE, and ROS. Taken together, these dimensions provide a broader assessment of perceived financial performance than any single indicator considered in isolation.

3. Theoretical Foundations, Conceptual Model and Research Hypotheses

3.1. Theoretical Foundations of the Research

This study draws primarily on agency theory and human capital theory to explain the expected relationship between internal auditor competence and perceived financial performance.

Agency theory offers a governance perspective that helps explain the role of internal auditing within organizations. The separation of ownership and control may generate information asymmetry, divergent interests, and monitoring costs between shareholders and managers (Jensen & Meckling, 1976). Within this framework, internal auditing can be viewed as an internal monitoring mechanism that contributes to the assessment of risks, controls, managerial practices, and the reliability of organizational information. Adams (1994) applies agency theory specifically to internal auditing and argues that it helps explain both the existence of the internal audit function and the responsibilities assigned to it. Sarens and Abdolmohammadi (2011) further emphasize the monitoring role of internal audit within the broader corporate governance system, while Abbott et al. (2016) show that the quality of this monitoring depends substantially on internal auditor competence and independence.

The relevance of agency theory to financial performance in the present study operates through this monitoring mechanism. More effective internal audit work can contribute to the identification of control weaknesses, inefficient processes, unmanaged risks, and deficiencies in managerial practices. When such weaknesses are detected and communicated effectively, management may be better positioned to implement corrective actions, improve resource utilization, and reduce avoidable losses. Internal auditing may therefore contribute indirectly to financial performance by strengthening monitoring, enhancing internal control, and supporting more informed managerial decision making. However, because financial performance is measured perceptually in this study, the proposed relationship concerns internal auditors' assessments of organizational financial outcomes rather than objectively observed market or accounting performance. Accordingly, agency theory is used here to explain the governance mechanism underlying the expected association, rather than to imply that the study directly measures reductions in agency costs or information asymmetry from the perspective of shareholders.

This governance perspective is complemented by human capital theory. Human capital theory emphasizes the economic value of knowledge, skills, abilities, education, and experience accumulated by individuals (Becker, 1962). At the organizational level, stronger human capital can improve the quality with which professional tasks are performed and can contribute to better organizational outcomes (Crook et al., 2011). Applied to internal auditing, academic and professional training, professional experience, technical knowledge, and analytical skills represent forms of human capital that can enhance auditors' ability to understand organizational processes, evaluate risks and controls, interpret evidence, and formulate useful recommendations. Thiéry et al. (2023) provide direct support for this perspective by showing that investment in the human capital of internal audit departments is associated with higher internal audit quality.

Professional ethics and integrity complement these human capital attributes by shaping how auditors exercise their knowledge and professional judgment. Technical or analytical capabilities alone may be insufficient if audit conclusions are not developed and communicated objectively and with professional integrity. From this perspective, competence does not simply concern the possession of knowledge and skills, but also the responsible application of these capabilities in the performance of audit responsibilities.

Agency theory and human capital theory are therefore complementary in explaining the proposed relationships. Agency theory explains why internal auditing may matter for organizational outcomes by emphasizing its monitoring and governance role, whereas human capital theory explains how the capabilities of internal auditors can influence the quality with which this monitoring role is performed. Competent auditors are expected to be better able to identify relevant risks and control deficiencies, evaluate evidence, and formulate useful recommendations. These capabilities can strengthen the monitoring function described by agency theory and may, through improved controls, decision making, and resource utilization, be positively associated with perceived financial performance.

Importantly, the five dimensions of competence need not contribute with identical strength. Their effects may differ because they perform different functions within the audit process. Academic and professional training provides the formal conceptual and methodological foundation for audit work; professional experience facilitates the application of this knowledge to complex organizational situations; technical knowledge supports the assessment of specialized accounting, control, risk, and technological issues; analytical skills enable auditors to transform evidence into professional judgments; and ethics and integrity condition the credibility and responsible exercise of these capabilities. Recent research on internal audit competencies likewise suggests that effective internal audit practice depends on a combination of technical, analytical, technological, behavioral, and business capabilities rather than on a single, uniform competence profile (Vitalis et al., 2024).

Nevertheless, the existing literature does not provide a sufficiently consistent theoretical basis for predicting a strict ex ante ranking among the five dimensions. The present study therefore hypothesizes a positive association for each dimension while allowing their relative empirical magnitudes to be determined by the data. This approach makes it possible to assess whether some dimensions display stronger relationships with perceived financial performance without imposing an unsupported hierarchical ordering beforehand.

3.2. Conceptual Model and Research Hypotheses

Building on these theoretical arguments and the empirical evidence reviewed above, the conceptual model proposes positive relationships between the dimensions of internal auditor competence and the perceived financial performance of companies listed on the Casablanca Stock Exchange. Hutchinson and Zain (2009) provide evidence that internal audit quality is associated with firm performance, while Chen et al. (2020) show that internal audit function quality, particularly competence, is positively associated with operational efficiency in listed companies. In the Moroccan context, El Gharbaoui et al. (2021) report a positive relationship between internal audit quality, incorporating competence and independence, and the financial performance of CSE listed companies. More recent evidence also suggests that investment in the human capital of internal audit departments is associated with higher internal audit quality (Thiéry et al., 2023).

Because competence is conceptualized as a multidimensional construct, the model distinguishes five complementary dimensions: academic and professional training, professional experience, technical knowledge, analytical skills, and professional ethics and integrity. Although these dimensions jointly contribute to the professional capabilities required for effective internal auditing, they represent distinct forms of competence and may therefore differ in the strength

of their association with perceived financial performance. Contemporary research similarly highlights that effective internal audit practice depends on a combination of technical, analytical, technological, behavioral, and business competencies rather than on a single, uniform set of capabilities (Vitalis et al., 2024).

Academic and professional training provides auditors with the theoretical and methodological foundations required to understand auditing standards, accounting systems, governance mechanisms, risk management, and internal control. Chang et al. (2019) incorporate educational attainment and professional certification into their measure of internal auditor competence and show that higher competence is associated with stronger internal control over operations and compliance. In Morocco, El Kotbi and Achour (2024) similarly find that the qualifications of internal audit personnel are positively associated with organizational performance.

Professional experience complements formal education by enabling auditors to apply their knowledge to complex organizational situations. Experience accumulated through different audit engagements and control environments can strengthen professional judgment, improve risk identification, and facilitate the formulation of relevant recommendations. Chang et al. (2019) include previous audit experience among the components of internal auditor competence, while El Kotbi and Achour (2024) identify a positive association between internal audit experience and organizational performance.

Technical knowledge has become increasingly important as the scope of internal auditing has expanded beyond traditional accounting and control activities. Contemporary internal auditors require knowledge of accounting, finance, regulation, risk management, information systems, digital technologies, and data analytics. Vitalis et al. (2024) identify technical expertise, information technology, information systems, and data analytics among the core competencies required of internal audit professionals. Chen et al. (2020) further report a positive association between internal audit competence and operational efficiency.

Analytical skills enable internal auditors to interpret evidence, identify patterns and anomalies, evaluate complex risks, and transform information into well supported professional judgments. These capabilities are particularly important in risk-based auditing, where auditors must go beyond procedural verification and identify the causes and potential consequences of control weaknesses. Vitalis et al. (2024) emphasize critical and analytical thinking as important competencies for contemporary internal audit practice.

Finally, professional ethics and integrity shape how auditors exercise their knowledge and professional judgment. Integrity supports objectivity, credible reporting, resistance to inappropriate influence, and stakeholder confidence in audit conclusions. D'Onza et al. (2015) find that adherence to professional ethical principles is positively associated with internal auditors' perceptions of their function's ability to add value.

Taken together, these dimensions contribute to internal audit competence through different but complementary mechanisms. Academic and professional training provides the formal knowledge base, professional experience supports the contextual application of that knowledge, technical knowledge facilitates the assessment of specialized issues, analytical skills enable the interpretation of complex evidence, and professional ethics and integrity support the objective and credible exercise of professional judgment. Their relative contribution to perceived financial performance may therefore vary. However, the existing literature does not provide sufficiently consistent evidence to establish a strict theoretical ranking among the five dimensions. Accordingly, the study predicts a positive association for each dimension while allowing their relative empirical strength to be determined by the results.

Based on these theoretical arguments and empirical findings, the following general and dimension specific hypotheses are proposed. The general hypothesis is operationalized through five hypotheses corresponding to the main dimensions of internal auditor competence. These

hypotheses are summarized in Table 2, while the conceptual relationships between the five dimensions of internal auditor competence and perceived financial performance are illustrated in Figure 1.

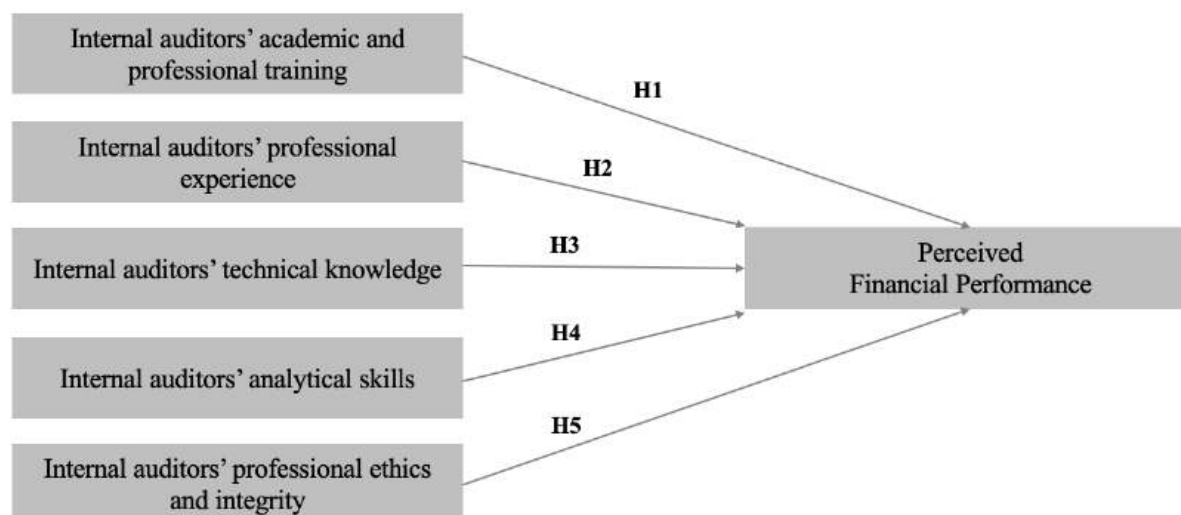
Table 2: Research Hypotheses and Supporting Literature

Hypothesis	Formulation	Main supporting studies
General Hypothesis	Internal auditor competence is positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange.	Hutchinson & Zain (2009); El Gharbaoui et al. (2021); Chen et al. (2020); Thiéry et al. (2023)
H1	Internal auditors' academic and professional training is positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange.	Chang et al. (2019); El Kotbi & Achour (2024); Thiéry et al. (2023)
H2	Internal auditors' professional experience is positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange.	Chang et al. (2019); El Kotbi & Achour (2024)
H3	Internal auditors' technical knowledge is positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange.	Chen et al. (2020); Vitalis et al. (2024)
H4	Internal auditors' analytical skills are positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange.	Vitalis et al. (2024)
H5	Internal auditors' professional ethics and integrity are positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange.	D'Onza et al. (2015)

Source: Authors.

Figure 1 presents the conceptual research model and illustrates the hypothesized relationships between the five dimensions of internal auditor competence and perceived financial performance.

Figure 1: Research Model



Source: Authors.

4. Research methodology

4.1. Research Design, Sample and Data Collection

This study adopts a quantitative, theory driven research design to examine the relationship between internal auditor competence and the perceived financial performance of companies listed on the Casablanca Stock Exchange (CSE). The empirical analysis focuses on internal

auditors because their professional position provides direct knowledge of internal audit practices, professional competencies, and organizational processes relevant to the research model.

A purposive non probability sampling approach was adopted, with eligibility restricted to internal auditors working in CSE listed companies. The sampling frame was established by identifying eligible listed companies and subsequently contacting internal audit professionals working within these organizations through professional contacts and LinkedIn.

A total of 143 eligible internal auditors were identified and contacted, and the questionnaire was distributed to all of them. Of the 143 questionnaires distributed, 111 responses were received, corresponding to an initial response rate of 77.6%.

Data were collected from August 2025 to July 2026 through an online questionnaire administered via Google Forms. Respondents were informed that participation was voluntary, that their responses would remain anonymous and confidential, and that the data would be used exclusively for academic research purposes. Data screening and the subsequent statistical analyses were conducted after the data collection period had closed in July 2026.

Following data quality screening, three questionnaires displaying inconsistent response patterns were excluded. The final sample therefore comprised 108 usable responses representing 77 CSE listed companies, corresponding to a usable response rate of 75.5%. Among the 77 companies represented in the final sample, 60 companies were represented by a single respondent, 6 companies by two respondents, and 11 companies by three or more respondents. Thus, most companies (77.9%) were represented by only one internal auditor, while 17 companies (22.1%) contributed multiple responses.

4.2.Measurement of Constructs

The questionnaire operationalized internal auditor competence through five dimensions derived from the theoretical and empirical literature: academic and professional training, professional experience, technical knowledge, analytical skills, and professional ethics and integrity. All items were measured using a seven-point Likert scale.

Academic and professional training captures the educational and professional preparation required to perform internal audit responsibilities. Prior research has incorporated educational attainment and professional certification into measures of internal audit competence (Chang et al., 2019). Professional experience reflects the practical knowledge accumulated through audit related activities and exposure to different organizational and control environments. Chang et al. (2019) likewise incorporate prior auditing experience into their empirical measure of internal audit competence.

Technical knowledge captures expertise in auditing, accounting, risk management, internal control, information systems, and related professional domains, whereas analytical skills reflect the ability to interpret evidence, identify anomalies, evaluate risks, and develop well supported professional judgments. These dimensions are consistent with recent evidence showing that contemporary internal auditors require an increasingly broad portfolio of technical, technological, analytical, and critical thinking capabilities (Vitalis et al., 2024).

Professional ethics and integrity capture the ethical foundations underlying the exercise of professional judgment. D'Onza et al. (2015) show that adherence to the IIA Code of Ethics is positively associated with internal auditors' perceptions of their function's ability to add value. Financial performance was measured perceptually rather than through financial statement data. The dependent construct comprises four questionnaire items referring to return on assets (ROA), return on equity (ROE), return on capital employed (ROCE), and return on sales (ROS). For clarity, the construct is referred to as perceived financial performance (PFP) throughout the model, although it represents respondents' perceptions of financial performance.

The use of perceptual performance measures has precedent in management research. Dess and Robinson (1984) demonstrate the usefulness of subjective performance measures when objective information is difficult to obtain, while Wall et al. (2004) provide evidence of convergent and construct validity between subjective and objective measures of company performance.

4.3. Preliminary Assessment and Refinement of the Measurement Instrument

Before estimating the final PLS-SEM model, a preliminary assessment of the measurement instrument was conducted using the first 25 responses collected from internal auditors working in CSE listed companies. These observations were subsequently retained in the final dataset and therefore did not constitute an independent pilot sample. Principal component analysis (PCA) was conducted separately for each construct as a preliminary item screening procedure to examine the performance of the measurement items and refine the questionnaire before estimation of the final model. Components were retained according to the Kaiser criterion, whereby components with eigenvalues greater than 1 were retained. Because a single component was retained for each construct, no rotation procedure was applied. The initial questionnaire comprised 26 items measuring the five dimensions of internal auditor competence and perceived financial performance. The PCA resulted in the retention of 19 items. As shown in Table 3, perceived financial performance retained all four initial items. Academic and professional training was reduced from three to two items, professional experience from five to three items, technical knowledge from seven to five items, analytical skills from four to three items, and professional ethics and integrity from three to two items. Overall, seven items were removed during this preliminary refinement process.

Table 3: Preliminary PCA and Reliability Results

Construct	Items before PCA	Items retained after PCA	KMO	Variance explained (%)	Cronbach's α
Academic and professional training	3	2	0.799	54.531	0.730
Professional experience	5	3	0.754	77.540	0.743
Technical knowledge	7	5	0.791	70.569	0.773
Analytical skills	4	3	0.824	69.498	0.807
Professional ethics and integrity	3	2	0.867	58.654	0.871
Perceived financial performance	4	4	0.754	77.540	0.743

Source: SPSS.

The Kaiser–Meyer–Olkin (KMO) values range from 0.754 to 0.867, indicating favorable patterns of shared variance for the purpose of this preliminary component analysis. The KMO measure was originally developed as an indicator of sampling adequacy for factor analytic procedures, with higher values indicating more favorable data structures for dimension reduction (Kaiser, 1970; Kaiser & Rice, 1974).

The retained component structure explains between 54.531% and 77.540% of the variance across the six constructs. In particular, professional experience and perceived financial performance exhibit the highest explained variance (77.540%), followed by technical knowledge (70.569%) and analytical skills (69.498%). Academic and professional training displays the lowest proportion of explained variance (54.531%), although more than half of the observed variance is accounted for by the retained component structure. These results were used primarily to support item refinement rather than to establish definitive construct validity. Internal consistency was also examined using Cronbach's alpha. The coefficients range from 0.730 to 0.871, with all constructs exceeding 0.70. Values at or above approximately 0.70 are commonly regarded as providing acceptable evidence of internal consistency in applied

research, although alpha should not be interpreted mechanically or as the sole indicator of measurement quality (Tavakol & Dennick, 2011). The highest internal consistency is observed for professional ethics and integrity ($\alpha = 0.871$) and analytical skills ($\alpha = 0.807$).

Taken together, the preliminary results supported the refinement of the questionnaire from 26 to 19 items while preserving the six constructs included in the research model. Nevertheless, because this preliminary analysis was based on only 25 observations, its results should be interpreted cautiously. Factor analytic sample size requirements cannot be determined through a universal rule of thumb and depend on characteristics such as communalities and the degree to which factors are adequately represented by their indicators (MacCallum et al., 1999). Accordingly, the PCA was used exclusively as a preliminary item screening and instrument refinement procedure. The reliability and convergent validity of the retained measurement scales were subsequently assessed using the full sample of 108 responses through the PLS-SEM measurement model.

4.4. Assessment of Common Method Bias

Given that internal auditor competence and perceived financial performance were measured using the same questionnaire and obtained from the same respondents, the potential presence of common method bias (CMB) was statistically examined (Podsakoff et al., 2003). Following Kock (2015), a full collinearity assessment was conducted for all latent constructs included in the research model. Full collinearity variance inflation factors (VIFs) were examined for academic and professional training, professional experience, technical knowledge, analytical skills, professional ethics and integrity, and perceived financial performance. A VIF value below 3.3 was used as the criterion for identifying potential common method bias.

Table 4: Full Collinearity Assessment for Common Method Bias

Construct	Full Collinearity VIF
Academic and professional training (APT)	1.67
Professional experience (PE)	2.08
Technical knowledge (TK)	1.23
Analytical skills (AS)	1.82
Professional ethics and integrity (PEI)	1.74
Perceived Financial Performance (PFP)	1.63

Source: SmartPLS 3.

The full collinearity VIF values range from 1.23 to 2.08. All values are below the threshold of 3.3 recommended by Kock (2015). Professional experience exhibits the highest VIF (2.08), whereas technical knowledge displays the lowest (1.23). These results suggest that common method bias is unlikely to represent a substantial threat to the interpretation of the relationships estimated in the model.

4.5. Data analysis

The data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 3 (Ringle et al., 2015). PLS-SEM was selected because the study aims to explain the variance in perceived financial performance through multiple latent dimensions of internal auditor competence and to estimate the proposed relationships simultaneously. This approach is particularly appropriate for explanatory models involving several latent constructs (Hair et al., 2019). PLS-SEM has also been applied in internal audit research to examine relationships among auditor competence, internal audit effectiveness, audit quality, and organizational outcomes using survey based latent constructs (Gamayuni, 2018; Singh et al., 2021; Hazaea et al., 2024; Novatiani et al., 2024).

Following established PLS-SEM assessment procedures, the analysis was conducted in two main stages. First, the measurement model was evaluated in terms of internal consistency

reliability, convergent validity, and discriminant validity. Internal consistency reliability was assessed using Cronbach's alpha and composite reliability (CR), while convergent validity was examined through the average variance extracted (AVE). Discriminant validity was assessed using the Fornell-Larcker criterion (Fornell & Larcker, 1981). Potential common method bias was additionally examined using the full collinearity assessment proposed by Kock (2015). Second, the structural model was assessed using the coefficient of determination (R^2), standardized path coefficients β , and their statistical significance. The statistical significance of the hypothesized relationships was assessed using a bootstrapping procedure with 5000 subsamples. The resulting t-statistics and p-values were used to evaluate the significance of the estimated path coefficients, following the recommendations of Hair et al. (2019).

5. Empirical results

5.1.Measurement Model Assessment

The measurement model was assessed before examining the hypothesized structural relationships. Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability, while convergent validity was assessed using average variance extracted (AVE), in line with established PLS-SEM guidelines (Hair et al., 2019).

Table 5: Reliability and Convergent Validity of the Measurement Model

Construct	Cronbach's α	CR	AVE
Academic and professional training	0.856	0.898	0.726
Professional experience	0.796	0.846	0.618
Technical knowledge	0.825	0.893	0.649
Analytical skills	0.650	0.840	0.636
Professional ethics and integrity	0.815	0.878	0.815
Perceived Financial Performance	0.804	0.850	0.618

Source: SmartPLS 3.

All composite reliability coefficients exceed the commonly recommended threshold of 0.70, ranging from 0.840 to 0.898. Cronbach's alpha also exceeds 0.70 for all constructs except analytical skills ($\alpha=0.650$). However, the analytical skills construct displays satisfactory composite reliability (CR = 0.840) and an AVE of 0.636. Because Cronbach's alpha can provide a conservative estimate of reliability, particularly for constructs measured with relatively few indicators, the combined reliability evidence supports retention of the construct. All AVE values exceed 0.50, providing evidence of satisfactory convergent validity (Hair et al., 2019). Discriminant validity was subsequently assessed using the Fornell-Larcker criterion (Fornell & Larcker, 1981). According to this criterion, discriminant validity is established when the square root of the average variance extracted (AVE) for each construct is greater than its correlations with the other constructs. The results are presented in Table 6.

Table 6: Discriminant Validity Assessment Using the Fornell-Larcker Criterion

Construct	APT	PE	TK	AS	PEI	PFP
APT	0.852					
PE	0.561	0.786				
TK	0.270	0.295	0.806			
AS	0.741	0.586	0.148	0.797		
PEI	0.066	0.066	0.447	0.028	0.903	
PFP	0.440	0.694	0.275	0.570	0.259	0.786

Source: SmartPLS 3.

As shown in Table 6, the square root of the AVE for each construct, reported on the diagonal, exceeds its correlations with all other constructs. The highest inter construct correlation is observed between academic and professional training and analytical skills ($r = 0.741$), followed

by the relationship between professional experience and perceived financial performance ($r = 0.694$). Both correlations remain below the corresponding square roots of the AVE. These results therefore support satisfactory discriminant validity among the six constructs and indicate that the dimensions included in the model capture empirically distinct concepts.

5.2. Structural Model and Hypothesis Testing

The structural model was assessed by examining the explanatory power of the model and the magnitude and significance of the hypothesized path coefficients. Perceived financial performance displays an R^2 value of 0.490 and an adjusted R^2 value of 0.465. This indicates that the five dimensions of internal auditor competence jointly explain 49.0% of the variance in perceived financial performance. The relatively small difference between R^2 and adjusted R^2 suggests that the explanatory power of the model remains stable after accounting for the number of predictor constructs included. This represents meaningful explanatory power in the context of the present model, although the interpretation of R^2 should remain context dependent rather than being based on a rigid universal threshold. The statistical significance of the structural path coefficients was assessed using a bootstrapping procedure.

Table 7: Structural Model Results and Hypothesis Testing

Hypothesis	Relationship	β	t-value	P-value	Decision
H1	APT to PFP	0.401	4.011	<0.001	Supported
H2	PE to PFP	0.297	3.068	0.002	Supported
H3	TK to PFP	0.216	1.985	0.048	Supported
H4	AS to PFP	0.232	2.701	0.007	Supported
H5	PEI to PFP	0.370	2.789	0.005	Supported

Source: SmartPLS 3.

All five path coefficients are positive and statistically significant at the 5% level. Academic and professional training exhibits the largest standardized coefficient ($\beta=0.401$), ($p<0.001$), followed by professional ethics and integrity ($\beta=0.370$), ($p=0.005$), professional experience ($\beta=0.297$), ($p=0.002$), analytical skills ($\beta=0.232$), ($p=0.007$), and technical knowledge ($\beta=0.216$), ($p=0.048$). Accordingly, H1–H5 are supported. These results provide support for the general hypothesis that internal auditor competence is positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange. At the same time, the differences in the magnitude of the standardized coefficients indicate that the five dimensions of competence are not associated with perceived financial performance to the same extent.

6. Discussion

The findings indicate that all five dimensions of internal auditor competence are positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange. This result reinforces the view that the contribution of internal auditing depends not only on the formal presence of the function but also on the capabilities of the professionals who perform audit engagements. In an emerging market setting, Chen et al. (2020) similarly find that internal audit function quality is positively associated with firm operational efficiency and, importantly, that internal audit competence contributes positively to this relationship.

The results also extend existing Moroccan evidence. El Gharbaoui et al. (2021) previously documented a positive relationship between internal audit quality and financial performance among CSE-listed companies. The present study advances this evidence by focusing specifically on competence and decomposing it into five distinct dimensions rather than combining competence with independence in a broader internal audit quality construct. El Kotbi

and Achour (2024) likewise find significant associations between organizational performance and the qualifications and experience of internal audit personnel among 560 Moroccan industrial firms, providing additional contextual support for the relevance of auditor level human capital.

Academic and professional training displays the strongest association with perceived financial performance. This result is consistent with Chang et al. (2019), who incorporate educational attainment and professional certification into their measure of internal audit competence and find that stronger competence is associated with more effective internal control over operations and compliance. From a human capital perspective, formal education and professional development provide auditors with the conceptual and methodological resources required to assess increasingly complex organizational risks and control systems.

Professional ethics and integrity exhibit the second largest coefficient. This finding highlights that professional capability cannot be reduced to technical expertise alone. The value of audit knowledge depends partly on whether auditors exercise judgment objectively and communicate significant findings without inappropriate influence. D'Onza et al. (2015) provide compatible evidence by showing that adherence to the IIA Code of Ethics is positively associated with internal auditors' perceptions of their function's ability to add value.

Professional experience is also positively related to perceived financial performance. Experience can enhance auditors' ability to recognize recurring control weaknesses, interpret ambiguous evidence, and apply formal knowledge to organization specific circumstances. This interpretation is consistent with Chang et al. (2019), who include audit experience as a component of competence, and with El Kotbi and Achour (2024), whose Moroccan evidence identifies auditor experience as significantly associated with organizational performance.

Finally, analytical skills and technical knowledge are both positively associated with perceived financial performance, although their standardized coefficients are comparatively smaller. This finding remains consistent with the increasingly multidimensional nature of contemporary internal audit competence. Vitalis et al. (2024), based on responses from 641 internal audit professionals, highlight the importance of technical, technological, analytical, critical-thinking, and problem-solving capabilities for modern internal audit roles. One possible explanation for the relatively smaller coefficients could be a conceptual proximity between technical knowledge and analytical skills, since both dimensions contribute to auditors' ability to process complex information and assess organizational risks. However, the discriminant validity assessment does not provide evidence of substantial empirical overlap between these constructs. The correlation between technical knowledge and analytical skills is relatively low ($r = 0.148$), and the Fornell-Larcker criterion is satisfied for both constructs. Therefore, the comparatively smaller coefficient associated with technical knowledge is unlikely to result primarily from a lack of empirical distinctiveness between the two dimensions. Rather, it indicates that, within the present model and sample, technical knowledge exhibits a weaker standardized association with perceived financial performance than the other competence dimensions. This result should not be interpreted as evidence that technical expertise is unimportant.

The positive association observed for analytical skills should nevertheless be interpreted with some caution. Although the construct exhibited satisfactory composite reliability ($CR = 0.840$) and convergent validity ($AVE = 0.636$), its Cronbach's alpha ($\alpha = 0.650$) remained below the conventional threshold of 0.70. This relatively lower internal consistency should therefore be considered when interpreting the magnitude of the relationship between analytical skills and perceived financial performance.

Overall, the findings are consistent with the study's combined theoretical framework. Agency theory explains the monitoring role through which internal audit can reduce information asymmetry and strengthen control, while human capital theory explains why the knowledge

and capabilities of internal auditors determine how effectively this role can be performed. Recent evidence showing that stronger internal audit human capital is associated with higher internal audit quality further supports this interpretation (Thiéry et al., 2023).

7. Conclusion

This study examined whether internal auditor competence, through its distinct dimensions, is positively associated with the perceived financial performance of companies listed on the Casablanca Stock Exchange. The empirical findings provide an affirmative answer to this research question. All five dimensions of internal auditor competence, namely academic and professional training, professional experience, technical knowledge, analytical skills, and professional ethics and integrity, are positively and significantly associated with perceived financial performance.

Among the five dimensions, academic and professional training exhibits the strongest standardized association with perceived financial performance, followed by professional ethics and integrity, professional experience, analytical skills, and technical knowledge. These findings support a multidimensional view of internal auditor competence and suggest that the contribution of internal auditing to organizational outcomes depends not only on the formal existence of the function, but also on the professional capabilities and attributes of the individuals who perform internal audit activities.

The study contributes to the literature in several respects. First, it focuses specifically on internal auditor competence rather than treating competence merely as one component of a broader internal audit quality construct. Second, by decomposing competence into five distinct dimensions, the study provides a more granular understanding of the forms of competence associated with perceived financial performance. Third, it contributes to the limited empirical literature on the Moroccan capital market by examining companies from multiple industries listed on the Casablanca Stock Exchange. The findings also reinforce the complementary relevance of agency theory and human capital theory in explaining how the monitoring role of internal audit and the capabilities of internal auditors may jointly relate to organizational outcomes.

From a managerial perspective, the results suggest that boards, audit committees, and chief audit executives should pay particular attention to the development of internal audit human capital. Investment in academic and professional training, continuing professional development, technical expertise, analytical capabilities, and professional experience may strengthen the effectiveness of internal audit activities. The strong association observed for professional ethics and integrity further indicates that competency development policies should not be limited to technical knowledge, but should also reinforce ethical judgment, objectivity, and professional conduct.

The findings should nevertheless be interpreted in light of several limitations. The study design limits the extent to which causal relationships can be inferred, while the use of purposive sampling constrains the statistical generalizability of the findings. In addition, although most companies were represented by a single respondent, some firms contributed multiple responses, creating a potential source of within company dependence that was not explicitly modeled. The use of self-reported measures for both internal auditor competence and perceived financial performance may also expose the results to common method bias. However, the full collinearity assessment conducted in the revised analysis produced VIF values below the recommended threshold of 3.3, suggesting that common method bias is unlikely to constitute a substantial threat to the interpretation of the results. Nevertheless, future studies could further mitigate this risk by combining survey measures of competence with objective accounting or market performance indicators and by collecting data from different groups of respondents.

Future research could also adopt longitudinal or multilevel designs, extend the analysis to other emerging capital markets, and examine competence jointly with internal auditor independence, audit committee effectiveness, and other governance mechanisms. In particular, the findings raise an important research question for future investigation: To what extent does audit committee effectiveness moderate the relationship between internal auditor competence and financial performance? Examining this question would help clarify whether the organizational governance environment strengthens or weakens the contribution of internal auditor competence to firm level outcomes.

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