İPƏK YOLU, No.3, 2026, səh.93-115
https://doi.org/10.30546/SI.2026.03.01.123

THE ROLE OF INTERNAL AUDIT IN ENHANCING THE QUALITY OF FINANCIAL REPORTING IN ALGERIAN ECONOMIC ENTITIES

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Abstract. This study examines the impact of internal audit on financial reporting quality in Algerian economic entities. Data were collected from 124 internal auditors across 49 entities and analyzed using SPSS.v26 and PLS-SEM in SmartPLS4. The results show that internal audit enhances reporting quality primarily through internal control evaluation, while its effects through risk management and governance remain limited.

Keywords: Internal auditing, financial reporting quality, corporate governance, risk management, ınternal control system.

ƏLCƏZAİR İQTİSADİ MÜƏSSİSƏLƏRİNDƏ MALİYYƏ HESABATLARININ KEYFİYYƏTİNİN YAXŞILAŞDIRILMASINDA DAXİLİ AUDİTİN ROLU

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Xülasə. Məqalədə Əlcəzair iqtisadi müəssisələrində daxili auditin maliyyə hesabatlarının keyfiyyətinə təsirini araşdırılmışdr. Məlumatlar 49 müəssisədən 124 daxili auditordan toplanmış və SPSS.v26 və SmartPLS4 proqramı vasitəsilə PLS-SEM metodundan istifadə edilərək təhlil edilmişdir. Nəticələr göstərir ki, daxili audit maliyyə hesabatlarının keyfiyyətini əsasən daxili nəzarət sisteminin qiymətləndirilməsi vasitəsilə artırır, lakin risklərin idarə edilməsi və korporativ idarəetmə üzrə təsiri məhduddur.
Açar sözlər: Daxili audit, maliyyə hesabatlarının keyfiyyəti, korporativ idarəetmə, risklərin idarə edilməsi, daxili nəzarət sistemi.

1. Introduction

In recent years, the global business environment has undergone profound economic and technological transformations. These developments have challenged organizations to adapt effectively, particularly in the face of intense competition, increasing organizational size and the separation of ownership from management - where shareholders hold equity while managers assume operational responsibilities. Such conditions have underscored the necessity of adopting robust internal control systems that safeguard assets, ensure operational stability and strengthen organizational resilience. Within this context, the internal audit function has become a cornerstone mechanism, supporting organizations in reinforcing these controls, meeting objectives and ensuring compliance with laws and regulations.

Internal auditing also serves as a credible means of building trust in the execution of organizational activities, ensuring that operations align with established policies and regulatory requirements. Guided by internationally recognized standards issued by the Institute of Internal Auditors, recently updated in 2024 and renamed the “Global Standards”, the function is anchored in principles and ethical rules that enhance audit quality. Its overarching purpose remains the same: to add value to organizations by improving the transparency and reliability of managerial information, thereby strengthening financial reporting and fostering stakeholder confidence in investment and strategic decisions.

At the institutional level, financial reporting is vital not only as the external face of organizations but also as a strategic tool for evaluating performance, identifying weaknesses and designing corrective policies. Accurate and reliable financial reports provide stakeholders with a faithful representation of the financial position of the entity, while enabling management to ensure financial stability and pursue long-term objectives. Accordingly, the role of internal auditing in improving the quality of financial reporting can be framed around the three core responsibilities established by international standards: evaluating internal control systems and identifying weaknesses, strengthening risk management by proposing effective mitigation strategies and engaging with corporate governance structures to promote accuracy and transparency. To achieve these goals, internal auditors must adhere to key professional requirements (independence, objectivity and competence) as outlined in their ethical charter.

In Algeria, the internal audit function has been gaining increasing importance, where it is seen as a critical tool for strengthening internal control systems, managing risks and improving the credibility of financial reporting. However, the absence of a clear legal framework defining the scope of internal auditing in the Algerian context raises important questions regarding the extent to which organizations comply with international standards and fulfill the essential roles of internal auditing.

1.1. Problem statement

This study explores the importance of the internal audit function in economic entities and its role in adding value by supporting management in preparing high-quality financial reports that reflect the true financial position of organizations. The main research question is therefore formulated as follows: How can the internal audit function contribute to improving the quality of financial reporting?

1.2. Significance of the study

This study examines how the internal audit function enhances the transparency and credibility of financial reporting in Algerian economic entities. By identifying practical tools and roles for evaluating internal control systems, strengthening risk management and reinforcing corporate governance principles, the study provides actionable recommendations to improve audit effectiveness. Ultimately, these contributions aim to increase investor and stakeholder confidence and support institutional sustainability in highly competitive financial markets.

1.3. Study methodology

To address the research problem, this study adopts a quantitative approach relying on a structured questionnaire administered to a sample of internal audit practitioners working in Algerian economic entities. The collected data were analyzed using partial least squares structural equation modeling (PLS-SEM), which allows for simultaneously assessing the measurement model and testing the hypothesized structural relationships.

2. Literature review and research hypotheses

The relationship between internal auditing and financial reporting quality has attracted significant scholarly attention across various contexts, reflecting both the practical importance of reliable reporting and the theoretical interest in governance mechanisms. Research generally converges on the idea that the internal audit function is a critical component of corporate governance, although findings regarding its determinants and effectiveness remain mixed across institutional environments.

In the Rwandan public sector, Ntakiyimana [15] examined how internal audit attributes such as independence, professional experience, qualifications and management support influence financial reporting quality. While the regression results showed positive coefficients for these attributes, their effects were not statistically significant, suggesting that structural and institutional constraints limit the ability of auditors to meaningfully influence reporting practices. Nonetheless, the study emphasized that organizational commitment to auditor independence and professional competence remains essential for strengthening financial accountability in government institutions. Complementing this perspective, Majidah and Falikhatun [13] provided a systematic mapping of Indonesian research on internal auditing. By reviewing 57 academic contributions, they identified the quality of financial reporting as the most frequently explored outcome of internal audit effectiveness. However, their synthesis also revealed inconsistencies in findings and highlighted underexplored dimensions such as organizational culture and gender, which may moderate the relationship between audit practices and reporting outcomes. These insights underscore the complexity of contextual factors shaping internal audit effectiveness, beyond traditional technical competencies.

Evidence from the Gulf region further enriches the debate. Al-Wadai et al. [3] drawing on the resource-based view, argued that characteristics such as auditor competence, objectivity, work performance and the effectiveness of corporate governance and internal control systems function as strategic resources that enhance the quality of internal audit outputs. Their findings from Saudi Arabia confirmed that both individual and organizational capabilities are indispensable for producing credible audit reports, thereby reinforcing the link between internal auditing and broader governance effectiveness.

In a similar vein, studies from Asia and Africa consistently highlight the role of auditor competence and independence. Iriyadi et al. [10] showed that in Indonesia, the competence and objectivity of internal auditors positively affect the quality of financial reporting, despite the challenges posed by auditors' dual accountability to both directors and audit committees. Khan [11] confirmed these results in Bangladesh's banking sector, demonstrating that professional qualifications, independence and experience significantly improve reporting quality, while leadership style appeared less relevant. This suggests that technical expertise and structural independence carry more weight than managerial traits in determining audit effectiveness.

More recent contributions have also investigated the mechanisms through which internal audit influences financial reporting. Liu et al. [12] found that internal audit quality enhances the comparability of accounting information in Chinese listed firms by reducing agency costs and improving transparency. Similarly, Renschler et al. [17], using human capital data, showed that the competence and size of internal audit teams reduce the likelihood of material misstatements, while firms tend to strengthen their internal audit function in response to reporting deficiencies. Pizzini et al. [16] added another dimension by showing that high-quality internal audits reduce audit delays, mainly due to competence and effective fieldwork, which facilitates coordination with external auditors.

Research from developing economies further reinforces the argument that internal audit can curb opportunistic reporting behavior. Agbata and Ezeala [2] reported that in Nigerian real estate and construction firms, adherence to internal audit standards significantly reduced earnings management and improved accrual quality. Similarly, Novatiani et al. [14] highlighted that competence and internal controls enhance internal audit quality, which in turn helps prevent fraudulent financial statements in Indonesian state-owned enterprises. These studies suggest that in weak institutional environments, strengthening internal audit capabilities can serve as a safeguard against opportunism and fraud.

Other studies have focused specifically on independence as a cornerstone of effective auditing. Wang and Liang [18] demonstrated that in Chinese listed companies, the independence of internal auditing, measured through audit committee oversight, significantly enhances financial reporting quality, with governance structures mediating this relationship. Arum [6] also found that competence and objectivity reinforce the effectiveness of internal auditing, ultimately contributing to improved reporting outcomes. Similarly, FuPing and Loang [8] confirmed that multiple dimensions of internal audit quality, including independence, scope and reliability, are positively associated with financial reporting quality in Chinese small and medium-sized enterprises. Additional evidence points to the role of internal auditing in performance evaluation and organizational accountability. Fadl Allah [7] emphasized that internal auditors not only safeguard financial reporting quality but also contribute to assessing overall institutional performance, with professional qualifications and continuous training emerging as vital enablers. This view resonates with broader calls for ongoing professional development and the integration of modern technologies to enhance audit practices.

Taken together, the literature highlights several consistent themes. Across diverse institutional settings, competence, objectivity and independence of internal auditors emerge as recurring determinants of reporting quality. Organizational factors, such as management support, audit committee effectiveness and governance structures, shape the extent to which these attributes translate into reliable outcomes. However, inconsistencies across findings also suggest that contextual factors, such as industry characteristics, cultural norms and regulatory enforcement, mediate the effectiveness of internal auditing. For the Algerian context, where governance challenges and institutional weaknesses are well-documented, these insights indicate that strengthening the internal audit function requires not only technical capacity-building but also structural reforms that enhance independence, ensure management accountability and promote adherence to international auditing standards.

Building on the insights derived from the reviewed literature and prior empirical findings, the present study develops a set of hypotheses to examine the extent to which the internal audit function contributes to enhancing the quality of financial reporting in Algerian economic entities as follows:

- *H1*: The availability of quality factors within the internal audit function contributes to improving the relevance and reliability of financial reporting.
  - Sub-hypothesis 1: The availability of quality factors within the internal audit function improves the relevance of financial reports.
  - Sub-hypothesis 2: The availability of quality factors within the internal audit function improves the reliability of financial reports.
- *H2*: The internal audit function contributes to improving the quality of financial reports through its role in evaluating the internal control system.
  - Sub-hypothesis 1: The internal audit function improves the relevance of financial reports through its role in evaluating the internal control system.
  - Sub-hypothesis 2: The internal audit function improves the reliability of financial reports through its role in evaluating the internal control system.
- *H3*: The internal audit function contributes to improving the quality of financial reports through its role in risk management.
  - Sub-hypothesis 1: The internal audit function improves the relevance of financial reports through its role in risk management.
  - Sub-hypothesis 2: The internal audit function improves the reliability of financial reports through its role in risk management.
- *H4*: The internal audit function contributes to improving the quality of financial reports through its role in establishing corporate governance principles.
  - Sub-hypothesis 1: The internal audit function improves the relevance of financial reports through its role in establishing corporate governance principles.
  - Sub-hypothesis 2: The internal audit function improves the reliability of financial reports through its role in establishing corporate governance principles.

3. Methods

3.1. Sampling and data collection

The study population comprises all economic entities in Algeria; public, private and mixed. A random selection was applied, with emphasis on large entities with established experience, complemented by some medium and small entities that maintain an internal audit function, despite their relative scarcity. The study covered entities from the industrial, commercial, service and energy works sectors. Respondents included staff from internal audit departments - namely the head of internal audit, senior and assistant auditors, the internal controller and the head of risk management - given their direct relevance to the study's dimensions.

The study sample included 49 economic entities geographically distributed across the four regions of Algeria: East, West, Center and South. The questionnaire, consisting of three main sections, was distributed through two methods. First, paper copies were delivered manually to entities in Constantine and neighboring Wilayas. Second, the primary mode of distribution was electronic, using Google forms. The questionnaire link was shared via personal or institutional accounts and responses were submitted directly online. A total of 150 questionnaires were distributed to these economic entities, of which 132 were retrieved. After review and preliminary analysis, 8 questionnaires were excluded due to incomplete responses, resulting in 124 valid questionnaires for statistical analysis, as shown in Table 1.

Table 1. Distribution and validity of questionnaires

Statement	Number	Percentage
Number of distributed questionnaires	150	100%
Number of retrieved questionnaires	132	88%
Number of unretrieved questionnaires	18	12%
Number of excluded (not analyzable) questionnaires	8	5.33%
Number of questionnaires valid for analysis	124	82.66%

Source: Authors

3.2. Data analysis procedures

To identify the attitudes and opinions of the study sample, the following statistical programs were employed:

- Excel
- SPSS v.26
- SmartPLS 4

4. Results

4.1. Validity testing of the questionnaire

Face validity was established by submitting the questionnaire to five experts in auditing, accounting and methodology from several Algerian universities. Based on their feedback, items were revised or removed and a pilot test with 33 internal auditors (30 responses retrieved) confirmed clarity and suitability. Cronbach's Alpha reached 0.923, well above the minimum threshold of 0.6, indicating strong reliability. Internal validity will be assessed later using SmartPLS 4 through factor loadings of the reflective measurement model, to identify and remove weak indicators and ensure a high-quality final model.

4.2. Descriptive analysis of the personal information of the study sample

The study sample consisted of 124 respondents working in internal audit functions within Algerian economic entities. Most participants occupied senior positions, with nearly 81% being either Heads of Internal Audit Departments or Senior Internal Auditors, reflecting a strong representation of experienced professionals. In terms of academic qualifications, the majority held a Master's degree (48%), followed by Bachelor's (24%), Magister (15%) and Doctorate (12%), which indicates a generally high educational level. Regarding specialization, most respondents graduated in Auditing (38%) and Finance (35%), while others specialized in Accounting (15%) or related fields (12%).

Table 2. Descriptive characteristics of the study sample (N = 124)

Variable	Categories	Frequency	%
Job Position	Head of Internal Audit Dept.	56	45.2
	Senior Internal Auditor	44	35.5
	Assistant Internal Auditor	15	12.1
	Internal Controller	5	4.0
	Head of Risk Management	3	2.4
	Other	1	0.8
Field of Study	Auditing	47	37.9
	Finance	43	34.7
	Accounting	19	15.3
	Other (e.g., Business Admin, HR, Law)	15	12.1
Professional Certs.	None	75	60.5
	DPAI	31	25.0
	CIA	12	9.7
	Other (ISO, quality, internal control, etc.)	6	4.8
Educational Degree	Bachelor (Licence)	30	24.2
	Master	60	48.4
	Magister	18	14.5
	Doctorate / Postgraduate	15	12.1
Work Experience	< 5 years	23	18.5
	5 – 10 years	31	25.0
	11 – 15 years	33	26.6
	> 15 years	37	29.8

Source: Authors

As for professional experience, about 56% of respondents had more than 10 years in the field, showing that the sample is composed largely of seasoned auditors. However, professional certifications were less common: 61% had no certification, while 39% held qualifications such as DPAI or CIA. This suggests that while the sample is highly educated and experienced, access to professional certifications remains limited. Table 2 summarizes the descriptive characteristics of the sample.

4.3. Descriptive analysis of information related to the entity and the internal audit function

The analysis revealed that most of the surveyed economic entities belong to the public sector and operate primarily in industrial and service activities, with the majority being joint-stock companies. Internal audit functions are generally structured at the directorate level, reflecting their importance within organizational hierarchies. However, despite this structural recognition, the independence of internal audit remains limited. In many cases, internal auditors report directly to the general manager or the chairman of the board rather than to an independent audit committee, which is present in only a small proportion of entities. Similarly, the appointment and dismissal of internal audit heads are predominantly controlled by the board chairman or general manager and the approval of audit mandates is most often granted by executive management. Table 3 summarizes the results of the gathered information related to the Entity and the internal audit function.

Table 3. Descriptive analysis of information related to the entity and the internal audit function

Aspect Studied	Categories	Frequency	%	Key Finding
Entity's Sector	Public / Private / Mixed	66 / 41 / 17	53.2 / 33.1 / 13.7	Majority are public-sector entities.
Main Activity	Industrial / Services / Commercial / Energy	54 / 47 / 13 / 10	43.5 / 37.9 / 10.5 / 8.1	Most are industrial, followed by services.
Legal Form	SPA / SARL / SNC / Other	109 / 8 / 1 / 6	87.9 / 6.5 / 0.8 / 4.8	Predominantly joint-stock companies (SPA).
Internal Audit Structure	Directorate / Department / Unit / Other	90 / 18 / 8 / 8	72.6 / 14.5 / 6.5 / 6.5	Majority have internal audit at directorate level.
Reporting Line	General Manager / Board Chairman / Audit Committee	63 / 51 / 10	50.8 / 41.1 / 8.1	Internal audit mainly reports to top management (GM or Chairman).
Appointment of Audit Head	Board Chairman / GM / Audit Committee	60 / 47 / 17	48.4 / 37.9 / 13.7	Mostly appointed by Board Chairman, fewer by GM or Audit Committee.
Approval of Audit Mandates	General Manager / Board Chairman / Audit Committee	50 / 44 / 30	40.3 / 35.5 / 24.2	Mostly approved by GM, fewer by Chairman, least by Audit Committee.

Source: Authors

4.4. Analysis of the general model of the study using structural equation modeling (PLS-SEM)

The first step in PLS-SEM is the evaluation of the reflective measurement model, which involves assessing convergent validity, internal consistency and discriminant validity to ensure the reliability of both endogenous and exogenous latent variables. For this purpose, the proposed research model was developed and visualized using SmartPLS 4.

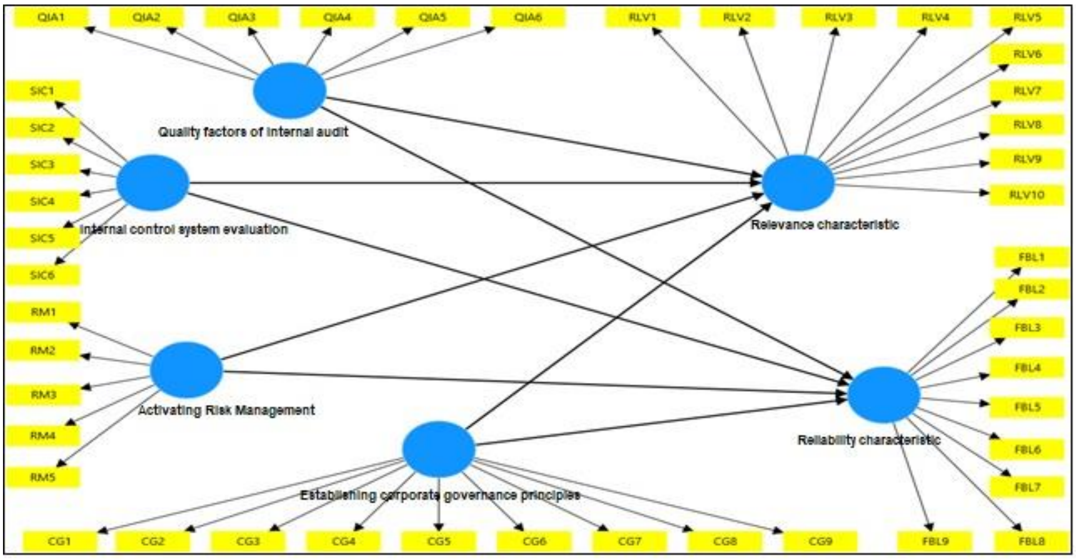

Figure 1. Proposed study model
Source: Elaborated by the authors using SmartPLS.4 software

Figure 1 illustrates the proposed structural model composed of an outer and an inner model. The outer model defines the independent and dependent latent variables representing the internal audit function and financial reporting quality. The inner model connects each latent variable to its reflective indicators, allowing the exclusion of non-significant items without affecting construct validity

4.5. Convergent validity results

The assessment of indicator reliability revealed that most outer loadings exceeded the recommended threshold of 0.7, confirming the adequacy and strong correlation of the indicators with their respective latent variables. A limited number of indicators had loadings between 0.4 and 0.7; in line with methodological guidelines, only those whose removal improved internal consistency and composite reliability were eliminated. Consequently, nine indicators (QIA2, QIA3, SIC6, CG1, CG3, RLV5, RLV9, FBL2 and FBL9) were excluded, while the majority were retained. This process ensured the model's validity and maintained a robust representation of the constructs with an optimal number of indicators.

The results of the Average Variance Extracted (AVE) test confirmed that all latent variables in the proposed model exceeded the minimum threshold of 0.5, with values ranging from 0.525 to 0.724. This indicates that each latent construct explains more than half of the variance of its associated indicators, thereby demonstrating strong internal consistency and alignment between the constructs and their measures. Consequently, the overall model achieves an acceptable and high level of convergent validity, supporting its suitability for further structural analysis.

4.6. Internal consistency reliability test results

The assessment of internal consistency reliability, conducted using both Cronbach's Alpha and Composite Reliability (CR), confirmed the robustness of the reflective measurement model. Cronbach's Alpha values for all constructs ranged between 0.812 and 0.891, exceeding the minimum acceptable threshold of 0.6, while CR values ranged from 0.870 to 0.914, surpassing the recommended benchmark of 0.7. These results demonstrate that the latent variables exhibit high levels of internal consistency and stability, ensuring that the constructs are measured reliably. Consequently, the findings provide strong evidence for the reliability of the study model and its suitability for hypothesis testing.

4.7. Discriminant validity

The results of the cross-loadings test, the HTMT criterion and the Fornell-Larcker criterion collectively confirm that discriminant validity is well established in the proposed study model. Each indicator loads more strongly on its own construct than on others, HTMT ratios remain below the accepted thresholds of 0.85 and 0.90 and the square roots of AVE values exceed the inter-construct correlations. These consistent results provide strong evidence that the latent variables in the model are conceptually and statistically distinct, thereby supporting the overall robustness of the measurement model.

Through the evaluation of the reflective measurement model, the reliability and validity of the data, as well as the adequacy of the remaining indicators in addressing the research problem and testing its hypotheses, were confirmed. The most notable changes that occurred at this stage were the removal of five indicators from the external latent variables and four indicators from the internal latent variables. This was done to improve the internal consistency results and increase the composite reliability values so that they exceed the threshold of 0.5. Finally, the revised model was prepared after ensuring its goodness of fit, to be used in the structural evaluation tests.

Figure 2 illustrates the overall study model after the removal of nine statistically insignificant indicators, whose values ranged between 0.4 and 0.7. Their elimination contributed to improving the internal consistency, allowing the composite reliability to exceed the threshold of 0.7, along with an increase in the Average Variance Extracted (AVE), which surpassed 0.5 after previously not exceeding 0.4. The remaining indicators with values below

0.7 were not removed, as they did not affect the internal consistency and were considered important to the study model.

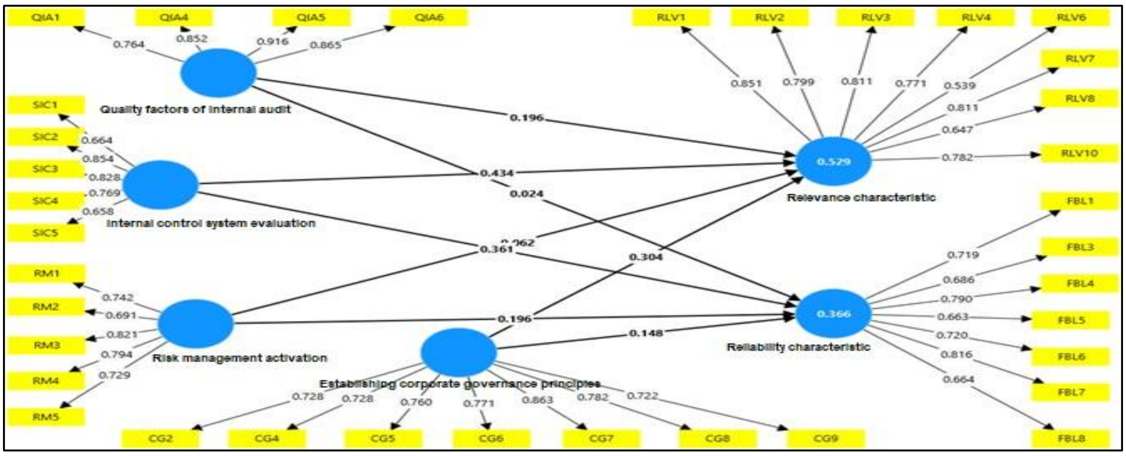

Figure 2. General structural model of the study

Source: Elaborated by the authors using SmartPLS.4 software

4.8. Structural model analysis

After completing the evaluation of the reflective measurement model and confirming convergent validity, internal consistency and discriminant validity, the next stage is the analysis of the structural model. This is carried out by examining the following criteria:

- Variance Inflation Factor (VIF);
- Coefficient of Determination (R^2);
- Effect Size (F^2);
- Predictive Relevance (Q^2);

a. Variance Inflation Factor (VIF)

Before testing the path coefficients of the structural model, it is necessary to assess multicollinearity to ensure unbiased results. This step complements the reflective measurement model evaluation. VIF values should not exceed 3; however, some studies allow a maximum threshold of 5, while the lower limit should not fall below 0.2 for the estimates to remain statistically valid. Failure to meet this condition would require removing the indicator or the construct as a whole.

The VIF results (Table 4) confirm the absence of multicollinearity among the exogenous latent constructs - internal audit quality, internal control system evaluation, risk management and corporate governance - on the endogenous latent constructs (relevance and reliability). The VIF values ranged between 1.491 and 1.953, well below the cut-off of 5, supporting their suitability for further structural model testing.

Table 4. VIF results between constructs

Construct	Relevance	Reliability
Internal Audit Quality Factors	1.536	1.536
Internal Control System Evaluation	1.491	1.491
Risk Management Activation	1.718	1.718
Corporate Governance Principles	1.953	1.953

Source: Elaborated by the authors using SmartPLS.4 software

b. Coefficient of determination (R^2)

R^2 represents the extent to which exogenous latent variables (dimensions of internal audit function) explain the variance in endogenous latent variables (dimensions of financial reporting quality). The explanatory power is classified as follows:

- $R^2 > 0.67 \rightarrow$ Strong
- $0.33 \leq R^2 \leq 0.67 \rightarrow$ Moderate
- $0.12 \leq R^2 < 0.33 \rightarrow$ Weak
- $R^2 < 0.12 \rightarrow$ No explanatory power

Table 5. R^2 and adjusted R^2 results

Endogenous Construct	R^2	Adjusted R^2	Explanatory Power
Relevance	0.529	0.513	Moderate
Reliability	0.366	0.344	Moderate

Source: Elaborated by the authors using SmartPLS.4 software

The results indicate that the exogenous constructs (internal audit quality, internal control system evaluation, risk management and corporate governance) explain 51.3% of the variance in relevance and 34.4% in reliability, both at a moderate level. The adjusted R^2 values are very close to the unadjusted values, confirming the overall robustness of the model.

c. Effect Size (F^2)

F^2 measures the impact of each exogenous construct on the endogenous constructs by recalculating R^2 after removing a construct. The interpretation follows:

- $F^2 < 0.02 \rightarrow$ No effect
- $0.02 \leq F^2 < 0.15 \rightarrow$ Small effect
- $0.15 \leq F^2 < 0.35 \rightarrow$ Medium effect
- $F^2 \geq 0.35 \rightarrow$ Large effect

Table 6. F^2 effect size results

Exogenous Construct	Relevance	Effect	Reliability	Effect
Internal Audit Quality Factors	0.053	Small	0.001	None
Internal Control Evaluation	0.268	Medium	0.138	Small
Risk Management Activation	0.005	None	0.035	Small
Corporate Governance Principles	0.100	Small	0.018	None

Source: Elaborated by the authors using SmartPLS.4 software

The results reveal that internal control evaluation had a medium effect on relevance (0.268), while other relationships mostly showed small or no effect. Collectively, the dimensions of the internal audit function influence financial reporting quality primarily through enhancing relevance, whereas reliability is influenced to a lesser degree.

d. Predictive Relevance (Q^2)

Predictive relevance assesses the model's ability to predict data not included in the sample. Values must exceed 0 to confirm predictive accuracy:

- $0 \leq Q^2 < 0.25 \rightarrow$ Weak predictive relevance
- $0.25 \leq Q^2 < 0.5 \rightarrow$ Moderate predictive relevance
- $Q^2 \geq 0.5 \rightarrow$ Strong predictive relevance

Table 7. Q^2 predictive relevance results

Endogenous Construct	Q^2
Relevance	0.462
Reliability	0.304

Source: Elaborated by the authors using SmartPLS.4 software

Both Q^2 values exceed zero, with relevance (0.462) and reliability (0.304) demonstrating moderate predictive relevance. This confirms the predictive validity of the structural model.

5. Hypothesis testing and results discussion

Hypothesis testing, carried out through the Bootstrapping technique available in the SmartPLS 4 software, is conducted by evaluating the significance and relevance of the relationships within the structural model (Path Coefficients), which appear as estimates of the relationships between variables and are expressed as path coefficients. These coefficients are defined as standardized values that range between -1 and +1, where values closer to +1 indicate a strong and positive relationship, while values further away indicate weaker relationships.

The study adopts a significance level of 0.05. Table 8 presents the results of the path analysis, which indicate the significance and relevance of the structural relationships and serve as the basis for either rejecting or accepting the study hypotheses.

Table 8. Evaluation of significance and relevance of structural model relationships (path analysis)

Relationship	Path Coefficient	T-Value	P-Value	P < 5%	Confidence Interval	Decision
Internal Audit Quality Factors → Relevance	0.196	2.018	0.044	Yes	0.018, 0.395	Hypothesis Accepted
Internal Audit Quality Factors → Reliability	0.024	0.232	0.817	No	-0.167, 0.232	Hypothesis Rejected
Internal Control System Evaluation → Relevance	0.434	4.563	0.000	Yes	0.253, 0.619	Hypothesis Accepted
Internal Control System Evaluation → Reliability	0.361	3.896	0.000	Yes	0.177, 0.536	Hypothesis Accepted
Risk Management Activation → Relevance	-0.062	0.683	0.495	No	-0.230, 0.127	Hypothesis Rejected
Risk Management Activation → Reliability	0.196	2.282	0.023	Yes	0.045, 0.384	Hypothesis Accepted
Corporate Governance Principles → Relevance	0.304	3.376	0.001	Yes	0.117, 0.463	Hypothesis Accepted
Corporate Governance Principles → Reliability	0.148	1.506	0.132	No	-0.058, 0.335	Hypothesis Rejected

Source: Elaborated by the authors based on SmartPLS 4 outputs

The results shown in Table 13 present the values of the path analysis of the structural model, which were used to test the validity of both the main and sub-hypotheses. The evaluation is based on the path coefficients, T-values and P-values and each hypothesis will be assessed and discussed individually according to the aforementioned acceptance conditions.

5.1. Discussion of the results of the first main hypothesis

The first hypothesis was formulated as follows: *"The availability of internal audit quality factors contributes to improving the relevance and reliability of financial reports"*.

To test this hypothesis, it was divided into two sub-hypotheses, discussed as follows:

1) Discussion of the results of the first sub-hypothesis

The path coefficient value was estimated at 0.196, which is greater than zero but not close to 1, indicating the existence of a weak relationship between the external latent variable (internal audit quality factors) and the internal latent variable (relevance). The T-Value was 2.018, which exceeds the threshold of 1.96 at the 5% significance level, while the P-Value was 0.044, which is less than 0.05. Moreover, the confidence interval [0.395, 0.018] does not include values below zero. Therefore, the relationship between the two variables is statistically significant, meaning that internal audit quality factors positively influence the achievement of financial reporting relevance in the entities under study. Based on these results, the null hypothesis is rejected and the alternative hypothesis, which states that internal audit quality factors contribute to enhancing the relevance of financial reports, is accepted.

Although the relationship between internal audit quality factors and relevance is weak, the study's sample generally agreed that such factors contribute, even to a limited extent, to achieving relevance. Overall, the relevance of financial information in financial reports appears to result from the adoption of modern technological tools provided by the entity that facilitate auditors in performing their tasks, combined with auditors' expertise and skills. This enables them to carry out their duties effectively, producing accurate results that can be used by the board of directors in making appropriate decisions. These decisions, in turn, lead to the preparation of high-quality financial reports that benefit stakeholders when needed.

2) Discussion of the second sub-hypothesis

The path coefficient value was 0.024, which is greater than zero but far from 1, indicating the absence of a meaningful relationship between the external latent variable (internal audit quality factors) and the internal latent variable (reliability). The T-Value was 0.232, which is lower than the threshold of 1.96 at the 5% significance level, while the P-Value was 0.817, which is higher than 0.05. The confidence interval [-0.167, 0.232] includes values below zero, which confirms the absence of a statistically significant effect. Therefore, internal audit quality factors do not influence the achievement of financial reporting reliability in the studied entities. Based on these results, the alternative hypothesis is rejected and the null hypothesis, which posits that internal audit quality factors do not contribute to improving the reliability of financial reports, is accepted.

The responses of the study sample, representing a set of economic entities in Algeria, suggest that internal audit quality factors do not have a noticeable positive impact on financial reporting reliability. This lack of contribution may be attributed to top management or the board of directors not recognizing the role of internal auditing in adding value to the entity or to reliance on other parties, such as external auditors or internal controllers, to ensure reliability. In large foreign entities, the higher the competence and professionalism of the auditor, the greater the ability to detect errors. Additionally, the lack of auditor independence within the studied entities may explain why internal auditors are unable to produce highly credible and unbiased results that top management or the board can confidently rely on when preparing financial reports.

5.2. Discussion of the results of the second main hypothesis

The second main hypothesis was formulated as follows: *"The internal audit function contributes to improving the quality of financial reports through its role in evaluating the internal control system".*

To test the validity of this hypothesis, it was divided into two sub-hypotheses as follows:

1) Discussion of the first sub-hypothesis

The path coefficient reached 0.434, which is greater than 0 and close to 1. This indicates a strong relationship between the external latent variable evaluation of the internal control system and the internal latent variable relevance. The T-Value was 4.563, which exceeds the 1.96 threshold at the 5% significance level. The P-Value was 0.000, which is less than 0.05 and the confidence interval [0.619, 0.253] did not include values below zero. Therefore, the effect between the two variables is statistically significant, meaning that the internal auditor's evaluation of the internal control system positively influences the improvement of the relevance of financial reports in the entities under study. Based on these results, the conditions for statistical significance were met, leading to the rejection of the null hypothesis and the acceptance of the alternative hypothesis, which states that the internal audit function contributes to improving the relevance of financial reports through its role in evaluating the internal control system.

The statistical results showed that the internal audit function indeed contributes to enhancing the relevance of information contained in the financial reports of the studied entities. This can be explained by the fact that the procedures applied by the internal auditor assist the board of directors in providing accurate information to stakeholders regarding the true financial position of the entity. Additionally, the auditor's role in evaluating the system helps to identify weaknesses and provide the necessary recommendations to resolve them. Thus, evaluating the internal control system is one of the most prominent tasks of the internal auditor, aiming to identify potential risks facing the entity in terms of its policies and internal procedures that underpin all its internal activities.

2) Discussion of the second sub-hypothesis

The path coefficient reached 0.361, which is greater than 0 and close to 1, indicating a strong relationship between the external latent variable evaluation of the internal control system and the internal latent variable reliability. The T-Value was 3.896, which is above the 1.96 threshold at the 5% significance level. The P-Value was 0.000, which is less than 0.05 and the confidence interval [0.536, 0.177] did not include values below zero. Therefore, the effect between the two variables is statistically significant, meaning that the internal auditor's evaluation of the internal control system positively influences the improvement of the reliability of financial reports in the institutions under study. Based on these results, the null hypothesis was rejected and the alternative hypothesis, which states that the internal audit function contributes to improving the reliability of financial reports through its role in evaluating the internal control system, was accepted.

According to the findings of the study and the confirmation of the second sub-hypothesis regarding the internal auditor's contribution to enhancing the reliability of information contained in financial reports, this result can be explained by the internal auditor's commitment to continuously evaluating the control system adopted within the entity. This ensures compliance with applicable standards in the execution of financial and accounting operations. Moreover, reliance on an effective internal control system results in accurate and reliable information being provided to stakeholders such as investors and creditors. Consequently, the role of internal audit in evaluating the internal control system becomes a key mechanism for building stakeholder trust, attracting investments and maintaining the institution's position in the financial market.

5.3. Discussion of the results of the third main hypothesis

The third main hypothesis of the study was formulated as follows: *"The internal audit function contributes to improving the quality of financial reports through its role in activating risk management".*

To test the validity of this hypothesis, it was divided into two sub-hypotheses as follows:

1) Discussion of the first sub-hypothesis

The path coefficient reached -0.062, which is less than 0, confirming the absence of a relationship between the external latent variable risk management activation and the internal latent variable relevance. The T-Value was 0.683, which is lower than the 1.96 threshold at the 5% significance level. The P-Value was 0.495, which is greater than 0.05 and the confidence interval [0.127, -0.230] included values below zero. Therefore, the effect between the two variables is not statistically significant, meaning that activating risk management does not improve the relevance of financial reports in the entities under study. Accordingly, the alternative hypothesis was rejected and the null hypothesis, which states that the internal audit function does not contribute to improving the relevance of financial reports through its role in activating risk management, was accepted.

Although the internal audit function plays a vital role in activating risk management in accordance with international internal auditing standards, the study results indicate that this role does not have a direct impact on the relevance of financial reports. This may be explained by the fact that the internal auditor often focuses on verifying the accuracy of data rather than its compliance with relevance criteria or because a separate risk management department exists in the studied entities. In such cases, achieving relevance in the information contained in financial reports may depend more on coordination and collaboration with that department rather than solely on the internal audit function.

2) Discussion of the second sub-hypothesis

The path coefficient reached 0.196, which is greater than 0, confirming the presence of a relationship between the external latent variable risk management activation and the internal latent variable reliability. The T-Value was 2.282, which is higher than the 1.96 threshold at the 5% significance level. The P-Value was 0.023, which is lower than 0.05 and the confidence interval [0.384, 0.045] did not include values below zero. Therefore, the effect between the two variables is statistically significant, meaning that the internal audit's role in activating risk management positively influences the reliability of financial reports in the entities under study. Accordingly, the null hypothesis was rejected and the alternative hypothesis, which states that the internal audit function contributes to improving the reliability of financial reports through its role in activating risk management, was accepted.

These findings indicate that the internal audit function plays a role in enhancing the reliability and credibility of the information contained in their financial reports through its contribution to risk management activation. This can be explained by the ability of internal auditors to detect errors and risks across all departments of the entity and to propose corrective measures. This aligns with numerous previous studies on the role of internal audit in improving the quality of accounting information by examining financial operations, identifying deviations and ensuring accuracy and reliability so that financial reports produced are of high credibility and useful to stakeholders.

5.4. Discussion of the results of the fourth main hypothesis

The fourth main hypothesis of the study was formulated as follows: *"The internal audit function contributes to improving the quality of financial reports through its role in establishing the principles of corporate governance".*

To test the validity of this hypothesis, it was divided into two sub-hypotheses as follows:

1) Discussion of the first sub-hypothesis

The path coefficient reached 0.304, which is greater than 0, confirming the existence of a strong relationship between the external latent variable establishing corporate governance principles and the internal latent variable relevance. The T-Value was 3.376, which is higher than the 1.96 threshold at the 5% significance level. The P-Value was 0.001, which is lower than 0.05 and the confidence interval [0.463, 0.117] did not include values below zero. Therefore, the effect between the two variables is statistically significant, meaning that establishing corporate governance principles positively influences the improvement of financial report relevance in the entities under study. Accordingly, the null hypothesis was rejected and the alternative hypothesis, which states that the internal audit function contributes to improving the relevance of financial reports through its role in establishing corporate governance principles, was accepted.

These results indicate that the internal audit function enhances the relevance of the information contained in financial reports by ensuring the establishment of corporate governance principles. This result may be attributed to the fact that corporate governance strengthens accountability and transparency throughout the entity by implementing an effective control system. Furthermore, reliance on governance principles ensures the production of information that complies with generally accepted accounting standards, principles and regulatory policies. Thus, the internal auditor's commitment to applying governance principles across all departments of the entity contributes to improving the quality of results relied upon by top management and the board of directors in preparing accurate financial reports consistent with applicable policies and regulations.

2) Discussion of the second sub-hypothesis

The path coefficient reached 0.148, which is less than 0, confirming the absence of a strong relationship between the external latent variable establishing corporate governance principles and the internal latent variable reliability. The T-Value was 1.506, which is lower than the 1.96 threshold at the 5% significance level. The P-Value was 0.132, which is higher than 0.05 and the confidence interval [0.335, -0.058] included values below zero. Therefore, the effect between the two variables is not statistically significant, meaning that the internal auditor's establishment of corporate governance principles does not improve the reliability of financial reports in the institutions under study. Accordingly, the alternative hypothesis was rejected and the null hypothesis, which states that the internal audit function does not contribute to improving the reliability of financial reports through its role in establishing corporate governance principles, was accepted.

The findings suggest that the internal audit function does not enhance the reliability and credibility of financial reports through its role in establishing governance principles. This may be due to the fact that the internal audit's role in improving financial report reliability is more closely linked to verifying the implementation of procedures and the accuracy of data - tasks that governance principles do not directly address, as they primarily strengthen the control environment. Another contributing factor is the absence of audit committees in most of the entities included in the study.

5.5. Adjusted structural model

The main modifications affecting the initial overall model of the study can be summarized as follows:

- Removal of 5 indicators from the dimensions of the independent variable, internal audit function;
- Removal of 4 indicators from the dimensions of the dependent variable, quality of financial reports;
- Removal of the path linking internal audit quality factors with reliability;
- Removal of the path linking risk management activation with relevance;
- Removal of the path linking establishing corporate governance principles with reliability.

Figure 3 shows that the greatest contribution of the internal audit function to improving the relevance and reliability of financial reports comes through the internal auditor's evaluation of the internal control system. Meanwhile, the availability of internal audit quality factors and its role in establishing governance principles contribute to enhancing the relevance of information in terms of its clarity and compliance with international standards, whereas the internal auditor's activation of risk management contributes to improving reliability but not relevance.

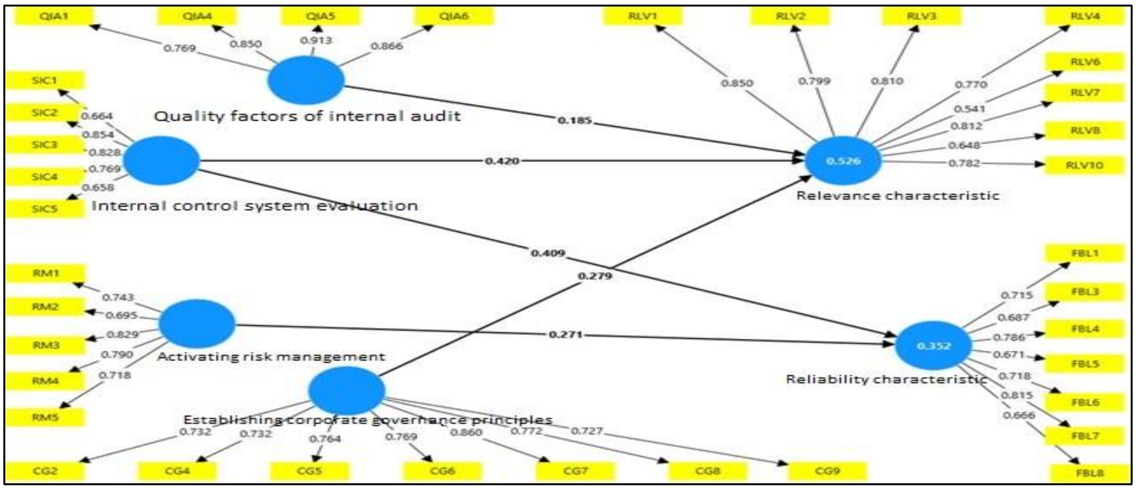

Figure 3. Adjusted structural model of the study

Source: Elaborated by the authors using SmartPLS.4 software

6. Conclusion

This study explored the extent to which the internal audit function contributes to improving the quality of financial reporting in Algerian economic entities. The analysis of survey data revealed several noteworthy findings. Traditional determinants of audit quality; such as independence, professional competence and the use of information technology, were found to have only a limited impact on reporting quality. This shortcoming is largely attributed to managerial pressures that compromise auditor independence, the lack of adequate technological resources and insufficient expertise in advanced audit techniques.

In contrast, the evaluation of internal control systems by internal auditors emerged as a key factor in strengthening both the relevance and reliability of financial information. A sound internal control framework reduces opportunities for manipulation and ensures that disclosed data is both accurate and decision-useful. The study further indicated that while the activation of risk management did not significantly improve the relevance of reports, contrary to much of the prior literature, it did enhance reliability by enabling auditors to detect errors and irregularities and to recommend corrective measures. Similarly, the role of internal auditing in promoting corporate governance practices contributed positively to the relevance of financial reporting by fostering accountability and transparency. However, this effect did not extend to reliability, a result that may be explained by the absence of audit committees in many entities, which undermines both independence and credibility. Taken together, these findings suggest that the potential of internal auditing to enhance financial reporting quality is highly contingent on organizational conditions, governance structures and the resources available to auditors.

The practical implications of these results are significant for different stakeholders. For internal auditors themselves, the findings underscore the importance of safeguarding their independence through strict adherence to ethical standards and maintaining a clear professional boundary to preserve objectivity. Strengthening competencies in modern auditing tools, particularly information technology, is essential, as is ensuring that management follows through on audit recommendations. Greater collaboration with risk management functions can further support the reliability of financial reporting.

At the institutional level, economic entities should invest in advanced audit-support technologies and provide continuous training to enhance the skills of audit staff. The establishment of audit committees is particularly crucial, as they reinforce the independence of auditors and enhance the credibility of audit outcomes. Institutions must also cultivate a culture of compliance with both internal policies and external standards, while granting auditors unrestricted access to the information necessary to perform their tasks effectively.

Professional bodies in Algeria also have an important role to play. Developing locally adapted auditing standards that reflect the Algerian institutional and economic environment would strengthen practice. Organizing workshops, training sessions and certification programs with international recognition would raise the overall level of professional competence. In addition, building platforms for networking and knowledge-sharing among auditors would facilitate the exchange of expertise. Clearer guidance on risk assessment and corporate governance integration, along with awareness campaigns on the value of internal auditing, would further elevate the profession's impact.

At the policy level, updating the regulatory framework to align with international standards is imperative. Policymakers should also enforce compliance by requiring all economic entities to maintain internal audit departments and to produce transparent and credible financial disclosures. The imposition of penalties on non-compliant entities would serve as an effective deterrent. By strengthening the regulatory environment, the state can play a direct role in enhancing both the credibility of financial reporting and the perceived value of internal auditing.

Future research could extend these findings to financial and banking institutions, where the stakes of reporting credibility and governance are particularly high. Promising avenues include investigating the impact of information technology and artificial intelligence on the effectiveness of internal audits, exploring the role of auditors in the early detection of financial risks and irregularities and assessing how internal auditing contributes to corporate governance and overall financial performance.

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