

RESEARCH
ARTICLE**The Impact of Using Information Technology in Internal Auditing on the Quality of Financial Report: A Field Study on a Sample of Economic Entities in Algeria****Akachat Hayet**

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Issue web link<https://imcra-az.org/archive/38.5-science-education-and-innovations-in-the-context-of-modern-problems-issue-11-vol-8-2025.html>**Keywords**

Information Technology, Internal Audit, Financial Reporting Quality, ERP Systems, Data Analytics.

Abstract

This study aims to examine the impact of using information technology (IT) techniques in internal auditing on the quality of financial reporting in a sample of economic entities in Algeria. To achieve this objective, the research adopts a mixed-method approach, combining a questionnaire and semi-structured interviews to ensure a comprehensive analysis. Quantitative data were collected through a survey of 99 employees working in internal audit departments across 30 economic entities, while the qualitative dimension relied on interviews with three internal auditors to capture practical insights. Path analysis using the partial least squares structural equation modeling (PLS-SEM) approach in SmartPLS 4 was employed to test the hypotheses. The findings reveal a significant positive impact of IT use (particularly ERP systems and data analysis tools) on both internal audit effectiveness and the quality of financial reporting. However, the mediating role of internal audit between IT use and financial reporting quality was not supported. Furthermore, the absence of audit committees, limited management support, lack of advanced IT tools, and the failure of boards of directors to fully implement internal audit recommendations weakened the contribution of internal audit in enhancing financial reporting quality. The study recommends strengthening auditors' IT competencies, establishing audit committees, ensuring the execution of audit recommendations, and investing in modern technological tools to reinforce internal audit effectiveness and financial reporting quality.

JEL Classification: M41, M42, C83, O33

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1. Introduction

Today, the world is witnessing an increasing development in the role played by modern technologies in various aspects of economic and social life at the national level. It is evident that technology in this era is no longer an option but has become a fundamental work strategy that must be integrated into all aspects of the entity in order to achieve progress and growth. It is now widely acknowledged that information technology constitutes a vital and effective tool on which entities, whether public or private, rely to carry out their activities efficiently, while achieving high levels of speed and accuracy in performance.

Information technology has emerged as an advanced field of knowledge aimed at employing computers and modern communication systems in the processes of collecting, processing, storing, and transmitting diverse data, including audio, visual, textual, and digital content. The philosophy of this field focuses on the optimal use of advanced devices and techniques to transform raw data into strategic insights and documented evidence that enable administrative leaders to formulate sound and effective decisions (Salehi & Husini, 2011). Its development is constantly changing and advancing rapidly, affecting all business activities, to the extent that it has become impossible to separate any activity from information technology (Alkebsi & Aziz, 2017).

With the acceleration of technological development, all industrial sectors are now required to master information technology to ensure their sustainability and growth. At the forefront of these is the auditing field, which has undergone a fundamental transformation in its methodologies and working practices under the influence of these modern technologies. The effectiveness of internal auditing is measured by its ability to contribute positively to improving the quality of services provided and achieving the strategic objectives of the entity. Accordingly, internal auditing seeks to ensure the optimal use of available resources by providing reliable assurances and specialized consulting aimed at enhancing operational processes and strengthening corporate governance (Ayab et al., 2023). Internal auditors thus need to acquire knowledge and skills related to computerized information systems for purposes of planning, supervision, guidance, reviewing completed work, and reducing the time spent on testing the content and accuracy of accounts (Marwanto & Soepriyanto, 2025).

Moreover, information technology and internal auditing represent essential pillars for improving the quality of financial reports, whether in their traditional form or through various tools such as ERP systems and data analytics that raise the level of accuracy and transparency. Financial reports are the final output of the accounting process, used to assess entities' performance, evaluate their financial position, and identify sources of cash flows and changes in capital, thereby assisting in making sound decisions (Mohamed, 2018). A financial report also represents the process of publishing the official records of the entity's financial activities. For reports to be more effective and easier to use, they must take into consideration specific characteristics, namely: relevance, reliability, comparability, understandability, and consistency (Sina et al., 2021).

• Problem Statement

The interactive relationship between information technology and internal auditing plays a fundamental role in enhancing the quality of financial reports. Accordingly, understanding the integration between information technology and internal auditing has become a strategic necessity for improving the quality of financial reports and achieving sound financial governance within economic entities, particularly in light of the increasing challenges related to transparency and accountability. Based on this, the following main research question can be raised:

How does the use of information technology techniques in internal auditing affect the improvement of financial report quality?

• Significance of the Research

The significance of this research stems from the growing recognition that traditional auditing approaches may no longer suffice in today's digitally-driven business environment. While numerous studies have examined information technology adoption in various organizational contexts, there remains a notable gap in understanding how IT integration specifically

influences internal auditing effectiveness and, consequently, financial reporting quality within the Algerian economic landscape. This study addresses this void by providing empirical evidence from Algerian entities, where the regulatory framework and technological infrastructure present unique challenges and opportunities. Moreover, the study's relevance is particularly pronounced given Algeria's ongoing economic diversification efforts and the government's emphasis on improving transparency in both public and private sectors.

• Research Objectives

This research aims to achieve the following interconnected objectives:

- To examine the effect of using information technology techniques on the quality of financial reporting in economic entities;
- To investigate the impact of information technology techniques on the effectiveness of internal audit functions;
- To analyze whether the effectiveness of internal audit mediates the relationship between information technology techniques and the quality of financial reporting;
- To identify the organizational and structural factors that influences the relationship between internal audit and financial reporting quality.

• Research Methodology

This research adopts a mixed-method approach, combining a questionnaire and semi-structured interviews to ensure comprehensive analysis. The quantitative data were collected through a survey of 99 employees of internal audit departments in 30 economic entities in Algeria, while the qualitative dimension relied on interviews with 3 internal auditors to capture practical insights. Path analysis was used to test the relationships among the study variables, supported by the interview results that provided contextual explanations.

• Research Structure

Following the introduction, which establishes the research context and objectives, this paper presents a comprehensive literature review and hypothesis development section that examines existing scholarly work and formulates testable research propositions. The methodology section then outlines the research design, data collection procedures, and analytical techniques employed in the study. Subsequently, the results section presents the empirical findings and hypotheses testing, followed by the discussion section, which interprets these findings, addresses their implications, and considers their relationship to existing literature. Finally, the conclusion synthesizes the key contributions of the research, acknowledges limitations, and suggests directions for future investigation.

2. Literature Review and Hypothesis Development

This section reviews the prior literature related to the research problem, with a focus on a set of empirical studies that addressed multiple relevant dimensions. These studies discussed information technology techniques, factors of internal audit effectiveness, and the quality of financial reports. The analysis of these studies contributed to building the theoretical framework of the present study and subsequently to the formulation of its hypotheses.

2.1 Information Technology Techniques and Internal Auditing

The relationship between information technology and the internal auditing function has received significant attention in recent studies, due to the variety of determinants influencing the effectiveness of this connection. According to Chi et al. (2024), the impact of information technology techniques on internal auditing can only be realized under certain fundamental conditions, most notably the independence and competence of internal auditing and effective managerial support. Based on these determinants, studies that first focused on effectiveness through managerial support and internal auditor competence will be discussed, followed by studies addressing the impact of using information technology techniques on the effectiveness of internal auditing.

Both Ayab et al. (2023) and Saeed et al. (2022) agreed that managerial support enhances the effective use of information technology techniques in internal auditing within a sample of economic entities in Jordan and Ethiopia. Managerial support was considered a moderating factor in the relationship between the use of information technology techniques and the effectiveness of internal auditing, through management's commitment to facilitating technology adoption and providing modern tools that improve internal audit effectiveness. In contrast, Marwanto and Soepriyanto (2025), in a study conducted in Indonesia, reported different results: managerial support did not register any moderating effect, even though the sample expressed positive evaluations of IT's role in improving their work. The study attributed this outcome to the lack of training of internal auditors, weak management commitment to training, and the limited exploitation of available technological capabilities.

Other studies focused on internal auditor competence as a moderating factor between information technology and internal audit effectiveness. Chi et al. (2024) highlighted that the positive impact of modern technologies cannot be realized without auditors possessing the necessary skills and knowledge to use auditing tools effectively. This finding was supported by Doda and Murthy (2025), who emphasized the importance of developing internal auditors' competencies in mastering IT tools to keep pace with the rapidly changing business environment.

As for the technologies applied in internal auditing, Salur and Kattar (2021) investigated the impact of ERP systems on auditing functions in the context of modern information technology. Based on findings from prior research conducted in Turkey, they concluded that the benefits of applying ERP systems in auditing far outweigh their drawbacks, provided that auditors possess the academic and practical training required to use the system effectively. Wahdan and El-Serafy (2020) supported this conclusion by highlighting ERP's advantages in internal auditing, such as reducing audit costs, minimizing the possibility of errors during data examination, speeding up processing, and increasing accuracy in detecting issues as they arise. Similarly, Silva and Marques (2022), in a study conducted in Portugal, found a direct relationship between the effective use of ERP systems and the academic and practical qualifications of internal auditors. Without sufficient expertise and proper academic background, ERP systems cannot be used effectively. Extending their work, Silva et al. (2023) conducted a second study on the same sample, concluding that ERP use positively influences the effectiveness and efficiency of internal auditing, with auditors expressing overall satisfaction with such systems.

Regarding data analytics systems, Si (2022) examined their impact, noting that their use is not limited to improving data quality but also extends to accelerating audit procedures, allocating resources more accurately, and expanding audit coverage. Al-Khasawneh and Baniata (2024), studying Jordanian banks, showed that relying on simple data analysis tools such as Excel and spreadsheets significantly contributed to conducting analytical procedures and detailed testing, which positively reflected on internal audit performance.

Based on the above, it becomes clear that the use of information technology techniques can contribute to strengthening the effectiveness of the internal auditing function. However, this impact remains contingent upon a set of organizational and human factors. Accordingly, the following hypothesis can be formulated:

H: There is a positive and statistically significant effect of using information technology techniques on the effectiveness of internal auditing.

2.2 Information Technology and Financial Reports Quality

Many recent studies have shown a general consensus on the vital role that information technology plays in improving the quality of financial reports, as this relationship represents a key axis in the development of accounting information systems and in achieving transparency and accuracy in financial disclosure. In this context, an applied study conducted in the Indonesian public sector found a strong and statistically significant positive relationship between information technology and the quality of financial reports. The use of such systems contributed to reducing errors, accelerating the reporting process, and enhancing the level of transparency and reliability (Rachmad et al., 2024). These results are consistent with the findings of Darwis et al. (2023), who linked IT techniques with organizational factors such as control and human resources, stressing that technology is not effective on its own, but its impact grows stronger in a well-structured organizational environment. Supporting this direction, Mardinan et al. (2018) emphasized the importance of integrating IT with internal control, noting that enhancing reliability and accuracy in reporting can only be achieved in the presence of precise and effective control tools. Conversely, Salehi and Torabi (2012) found that IT enhances the relevance of

accounting information but reduces its reliability; it also slightly increases comparability and contributes to mitigating the negative effects of existing constraints on the qualitative characteristics of accounting information.

According to Sina et al. (2021), there are several dimensions to financial reporting quality, such as relevance, reliability, comparability, and understandability. Technology contributes to improving the quality of companies' financial reports by using IT tools—computers, devices, and software—to support effective decision-making at both strategic and operational levels. While IT use in accounting systems was limited in its early stages, today it has evolved into a broader field supporting ERP systems with business intelligence applications. Meliana and Ansar (2021) found that ERP plays a strategic role in integrating corporate data and reducing operational errors, while producing comprehensive reports that meet both financial and managerial needs, thus enhancing the quality and efficiency of decision-making. Barna et al. (2021) reinforced these findings, classifying ERP systems as a logical development of IT and emphasizing that their optimal effectiveness depends on appropriate organizational support and technically skilled human resources. Such conditions enable ERP systems to reinforce principles of transparency and institutional accuracy.

Eleimat et al. (2023) argued that data analytics represents a qualitative shift in detecting accounting anomalies and improving the accuracy of outputs, in addition to providing real-time analyses based on massive datasets, thereby contributing to more objective decision-making. Mhlanga (2024) further highlighted that integrating data analytics with artificial intelligence and blockchain in reporting systems enhances transparency and trust while limiting accounting manipulations, especially in environments with weak oversight.

The majority of studies emphasize the pivotal role of IT, whether in its traditional form or through its tools, in improving the quality of financial reports. However, this role remains conditional upon a strong institutional structure, including effective internal controls, continuous managerial support, and technically qualified personnel. While ERP is considered an integrative tool with broad strategic impact, data analytics represents a transformative shift that fundamentally improves the accuracy and transparency of reports. Therefore, combining these tools and applying them within a framework of sound governance represents the optimal path toward achieving high-quality financial reporting. Based on these findings, the following hypothesis can be formulated:

H₁: There is a positive and statistically significant effect of using information technology techniques on the quality of financial reports.

2.3 Internal Auditing and Financial Reports Quality

Several studies have shown that the effectiveness of internal auditing is one of the factors influencing the quality of financial reports; however, this impact cannot be realized in isolation from supporting factors. Riyanto and Rapina (2024) identified these supporting factors as compliance with professional standards, the role of the internal auditor in internal control, risk management and governance evaluation, in addition to the presence of audit committees within the entity. This was confirmed by Ebimobowei and Joyce (2024), who clarified that audit independence and the evaluation of control and risk systems are among the most influential determinants, and that the presence of audit committees acts as a moderating factor enhancing this relationship. Similarly, Abbas (2024) found a positive relationship between compliance with professional internal audit standards and the quality of financial reports in a study of three Iraqi banks, where such compliance contributed to achieving the main quality characteristics of relevance and reliability.

In this context, Sari et al. (2024) indicated that reliability improves when risks surrounding financial reports are properly identified and addressed. Meanwhile, both Riyanto and Rapina (2024) and Qadri (2025) argued that achieving relevance is linked to entities' investments in training and developing auditors, as well as adopting digital transformation in auditing and control activities, which contributes to improving accuracy and efficiency in internal work and thus enhances financial report quality.

While most studies stress the significant role of internal audit effectiveness factors in improving financial report quality, Adewara et al. (2023) reported that independence and competence did not affect financial report quality in Nigeria's public sector, as internal auditors suffered from weak independence, which negatively impacted their performance efficiency. Similarly, Bakri et al. (2025) reached the same conclusion, finding that although competence and independence are factors of internal audit effectiveness, they did not show any impact on financial reporting quality. They explained this

by noting that the auditors' role was limited to reviewing work plans without conducting a comprehensive review of financial statements, which resulted in the absence of the expected positive impact.

In light of the above, it becomes evident that internal audit effectiveness impacts financial report quality only through a set of organizational and professional factors, such as independence, compliance with standards, and the presence of audit committees. Accordingly, the following hypothesis can be formulated to measure the nature of this effect:

H₁: There is a positive and statistically significant effect of internal audit effectiveness on the quality of financial reports.

2.4 Information Technology Techniques, Internal Auditing, and Financial Reports Quality

Internal auditing has undergone remarkable development over time, both in terms of standards and independence, especially with the emergence of digital transformation, which has enhanced its effectiveness, particularly in areas such as control, risk assessment, and governance, in improving the quality of financial reports. Internal auditing is considered one of the essential pillars for ensuring the credibility of financial information and its proper disclosure.

In this context, numerous studies have agreed that the use of information technology techniques by internal auditors contributes to improving audit effectiveness and thereby increasing its role in enhancing financial report quality. Mohamed et al. (2022) found a positive relationship between internal audit effectiveness and financial report quality in the context of digital transformation, through its role in control, risk management, and strengthening governance. Internal auditors were able to prepare accurate reports that enhanced the reliability and relevance of financial information. Similarly, Nhial et al. (2025) confirmed that adopting IT techniques enables auditors to improve report quality by enhancing its secondary characteristics, such as comparability and understandability. These techniques contribute to unifying and harmonizing data, providing accurate and easily interpretable financial information for users.

The literature indicates that IT techniques enhance the effectiveness of internal auditing, which in turn positively affects the quality of financial reports. Hence, the study's main hypothesis can be formulated to test this triangular relationship:

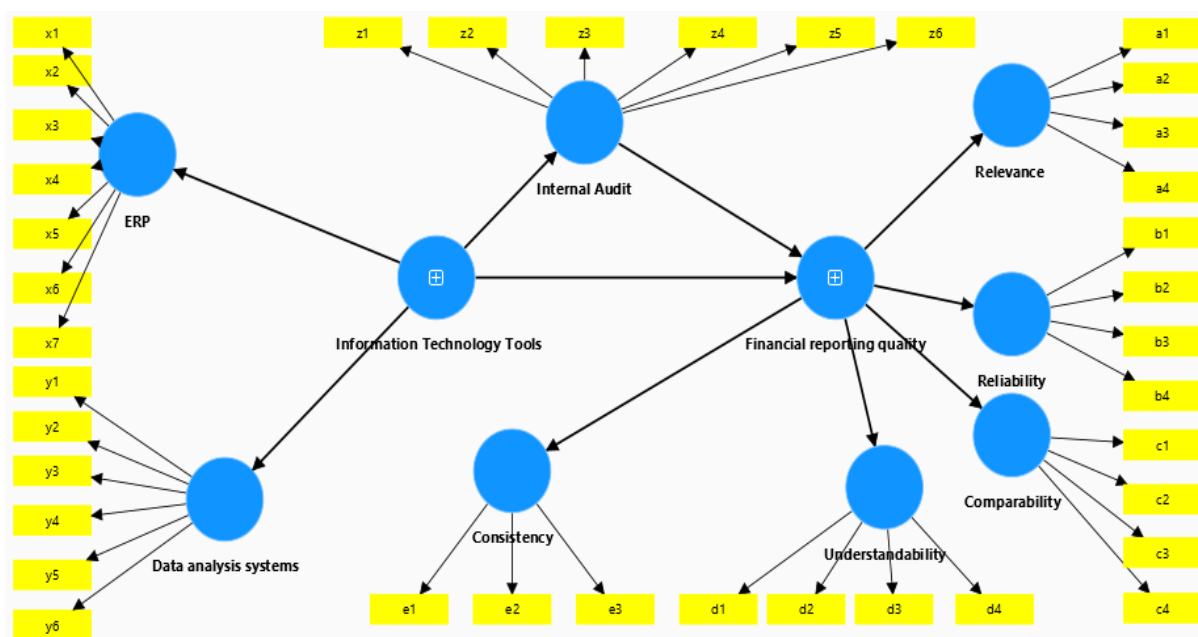
H₂: There is a positive and statistically significant effect of using information technology techniques in internal auditing on the quality of financial reports.

3. Methods

3.1 Model and Definition of Variables

The study adopted an analytical-exploratory approach by applying Structural Equation Modeling using the Partial Least Squares method (SEM-PLS) through the SmartPLS 4 software. The aim was to examine the effect of using information technology techniques in internal auditing on the quality of financial reports within a sample of economic entities in Algeria. The preliminary model of the study was developed based on previous literature, as illustrated in figure 1.

Figure 1. Study's Initial Model



Source: Authors based on SmartPLS 4 software outputs.

The model illustrates the path coefficients linking all the study variables, as well as the paths connecting each variable to its indicators. The study variables are divided into independent, dependent, and mediating variables, as shown in Table 1.

Table 1: Description of Study Variables

Variable	Type	Description
Information Technology Techniques	Independent Variable	Comprises two dimensions, namely Enterprise Resource Planning (ERP) systems and Data Analytics systems, which were used to measure their impact on both internal auditing and the quality of financial reports.
Internal Auditing	Mediating Variable	Consists of a set of items related to the extent of the auditor's use of the techniques adopted in the study, aiming to determine the level of influence on the effectiveness of the function.
Quality of Financial Reports	Dependent Variable	Comprises five dimensions representing the primary and secondary qualitative characteristics: relevance, reliability, comparability, understandability, and consistency. These were established to measure the quality level of financial reports.

Source: Authors

3.2 Research Population and Sampling Strategy

The study population consists of all economic entities in Algeria that have an internal audit department. The sample was selected in a semi-purposive manner and included 30 economic entities. The questionnaire was distributed electronically to the study sample through LinkedIn messaging and email correspondence. A total of 120 questionnaires were distributed to employees of internal audit departments, of which 105 were retrieved. After reviewing and screening them,

99 questionnaires were found valid for statistical analysis. The sample comprised heads of internal audit departments, senior internal auditors, and assistant internal auditors.

The respondents' demographic profile is presented in table 2.

Table 2: Distribution of the Sample According to Demographic Variables

Demographic Variables	Category	Frequency
Job Position	Head of Internal Audit Dept.	48
	Senior Internal Auditor	36
	Assistant Internal Auditor	15
Educational Qualification	Bachelor's Degree	26
	Master's Degree	55
	Magister	12
	Doctorate	5
	Other	1
Years of Professional Experience	Less than 5 years	17
	5 to 10 years	22
	11 to 15 years	23
	More than 15 years	37
Field of Specialization	Accounting	19
	Auditing	42
	Finance	34
	Other	4

Source: Authors based on the questionnaire's results

The study sample demonstrated in Table 2 consisted of 99 internal audit employees from 30 economic entities. The majority were heads of internal audit departments (48) and senior internal auditors (36). Most respondents held a Master's degree (55), followed by a Bachelor's degree (26), with professional experience largely exceeding 10 years (60). In terms of specialization, auditing (42) and finance (34) were the most represented fields.

Moreover, interviews were conducted with three economic entities, namely:

- El Hadjar Iron and Steel Complex: The largest iron and steel complex in Algeria, established in 1969. It is an industrial entity located in Annaba, in eastern Algeria;

- Ooredoo: A service-oriented entity founded in 1997 under the name Wataniya Telecom, later renamed Ooredoo after the Qatari Ooredoo Group acquired the majority stake;
- ASROUT (Road Network Maintenance and Sanitation Company): An entity of an industrial and commercial nature, headquartered in Algiers. It was established in 1995 and specializes in road works and sanitation.

3.3 Data Collection Instruments and Procedures

The study relied on the questionnaire as the primary tool for data collection, which was distributed electronically to the study sample. The questionnaire consisted of two main sections:

- A section on respondents' personal information.
- A section on the main themes of the study, represented by three axes corresponding to the study variables. Each axis included a set of dimensions measured using a five-point Likert scale (the survey instrument is included in the appendices).

In addition, a secondary tool was employed to support the findings, namely the interview, which was conducted with heads of internal audit departments in the aforementioned entities. The interview form contained three main questions:

- Based on your professional experience, what are the factors influencing the internal audit function?
- What programs and technologies are used within your entity that contribute to improving the quality of internal auditors' work?
- How can an internal auditor who relies on modern programs available within your entity enhance disclosure and transparency in financial reports?

3.3 Data Analysis Technique

The data from the 99 valid questionnaires were analyzed using Structural Equation Modeling (SEM) via the Partial Least Squares (PLS) approach, operationalized in the SMARTPLS 4 software. PLS-SEM was selected for its suitability for predictive research models with complex relationships and multiple latent variables. The analysis was conducted in three stages:

- Assessment of the Measurement Model: Evaluating the reliability and validity (convergent and discriminant) of the constructs.
- Assessment of the Structural Model: Examining the predictive power and relationships between the constructs.
- Hypothesis Testing: Evaluating the statistical significance of the path coefficients to test the study's main hypotheses.

4. Results

4.1 Assessment of the Measurement Model

The assessment of the measurement model is considered the first step in Structural Equation Modeling using the Partial Least Squares method (PLS-SEM). At this stage, convergent validity, internal consistency, and discriminant validity are verified. The results of these assessments are presented in Tables 3 and 4.

Table 3: Convergent Validity and Internal Consistency

Dimensions of the study	CR	Rho a	Rho c	AVE
Enterprise Resource Planning	0.815	0.818	0.867	0.521
Data Analysis systems	0.747	0.772	0.835	0.511

Internal Audit	0.852	0.852	0.889	0.572
Relevance	0.813	0.812	0.877	0.641
Reliability	0.877	0.890	0.916	0.732
Comparability	0.911	0.913	0.938	0.790
Understandability	0.901	0.904	0.931	0.772
Consistency	0.869	0.887	0.920	0.793

Source: SmartPLS 4 software outputs

The results of the table 3 can be interpreted as follows:

- **Convergent validity:** The primary objective of this test is to examine the level of consistency among the questionnaire items. To achieve this, indicator reliability was assessed, which requires each indicator's loading value to exceed 0.7. This condition was not met for indicators Y2 and X6, which necessitated their removal to improve composite reliability. In addition, the Average Variance Extracted (AVE) test was used, which requires all values to equal or exceed 0.5. According to the results of the table, all latent variables recorded values greater than 0.5, indicating that each dimension is capable of explaining more than half of the variance in its associated indicators. Therefore, it can be concluded that convergent validity is achieved in the model.
- **Internal consistency:** Internal consistency is assessed using two main indicators: Cronbach's Alpha and Composite Reliability. The results show that all Cronbach's Alpha values exceeded the 0.6 threshold, ranging between 0.747 and 0.911. These are acceptable and strong values that reflect a high level of internal reliability. Similarly, Composite Reliability values exceeded the 0.7 threshold, allowing us to conclude that all latent variables demonstrate a good level of reliability.

Table 4 : Fornell-Larcker Test

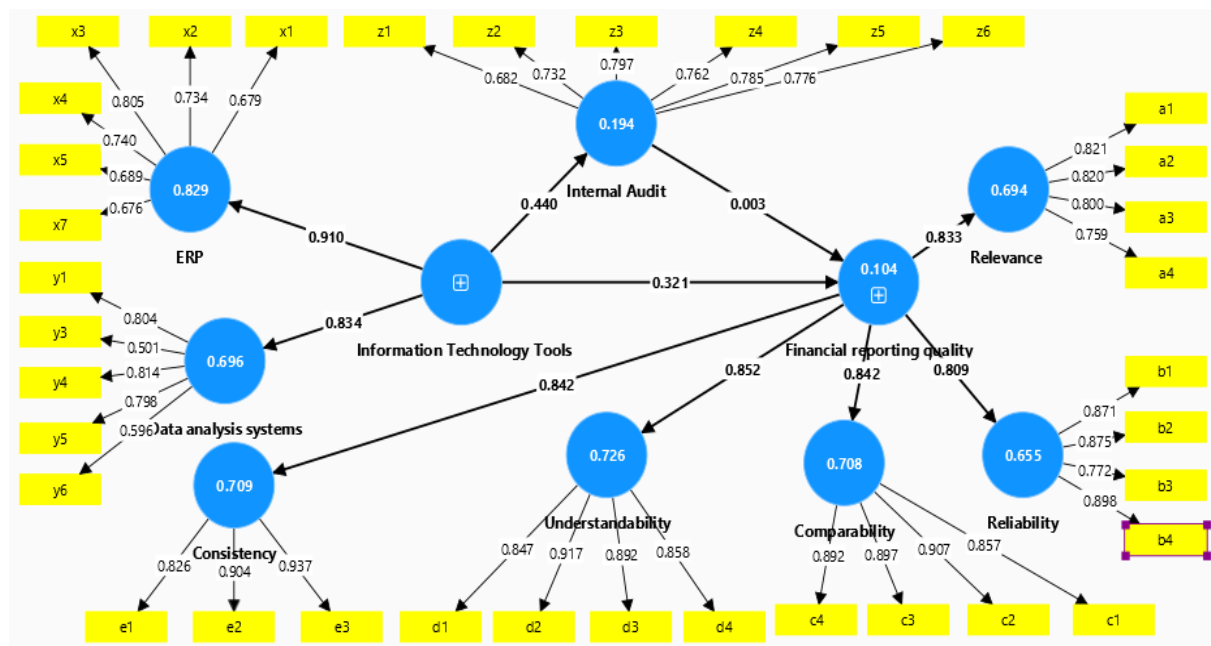
	COM	CON	DAS	ERP	IA	REV	REL	UNDE
COM	0.889							
CON	0.616	0.890						
DAS	0.187	0.193	0.715					
ERP	0.435	0.286	0.532	0.722				
IA	0.112	0.130	0.399	0.360	0.757			
REV	0.651	0.647	0.123	0.211	0.202	0.800		
REL	0.604	0.622	0.145	0.285	0.065	0.559	0.855	
UNDE	0.601	0.684	0.081	0.261	0.106	0.656	0.597	0.879

Source: SmartPLS 4 software outputs

The results of Table 4 show that each latent variable in the model represents itself with the highest value in the Fornell-Larcker criterion. For example, the ERP system variable achieved a value of 0.722 with itself, which is the highest value either across rows or columns, indicating its correlation with the other latent variables. Similarly, each of the other dimensions records the highest correlation value with itself compared to the remaining variables. This confirms that each dimension enjoys a clear degree of distinctiveness from the others, thereby meeting the requirement of discriminant validity according to the Fornell-Larcker criterion.

Through the evaluation of the reflective measurement model of the study, it is evident that the data are valid and reliable, and that the remaining indicators are appropriate for addressing the research problem and testing its hypotheses. After evaluating and verifying the measurement model, the general model of the study was reached, which will be relied upon in analyzing the structural model and testing the hypotheses, as represented in Figure 2.

Figure 2: The General Structural Model of the Study



Source: SmartPLS 4 software outputs

Figure 2 illustrates the general model after removing two statistically insignificant indicators in order to enhance internal consistency and test the Average Variance Extracted (AVE). After verifying the reflective measurement model evaluation tests, the study can proceed with analyzing the structural model and testing the hypotheses.

4.2 Structural Model Analysis

After completing the analysis of the reflective measurement model and ensuring the validity and reliability of the model in measuring the variables, the next step is to analyze the structural model. This stage aims to test the hypotheses by evaluating the path coefficients and examining their statistical significance, in addition to studying the Variance Inflation Factor (VIF) and estimating the effect sizes among the variables.

- **Variance Inflation Factor (VIF):** Before testing the coefficients of the structural model, it is necessary to examine multicollinearity to ensure that the results are not biased. This step is complementary to the evaluation of the reflective measurement model. The VIF value should not exceed 3 and should not be less than 0.2. Table 5 presents the results of this coefficient:

Table 5: Variance Inflation Factor (VIF)

		VIF
Informations technology techniques	Enterprise Resource Planning	1.000
Information technology techniques	Data Analysis Systems	1.000
Informations technology techniques	Internal Audit	1.000
Informations technology techniques	Financial reporting quality	1.241
Internal Audit	Financial reporting quality	1.241
financial reporting quality	Relevance	1.000
financial reporting quality	Reliability	1.000
financial reporting quality	Comparability	1.000
financial reporting quality	Understandability	1.000
financial reporting quality	Consistency	1.000

Source: SmartPLS 4 software outputs

The results in Table 5 show no multicollinearity among the exogenous and endogenous latent variables, as the Variance Inflation Factor values ranged between 1.000 and 1.241, which are below the threshold of 3. Therefore, these values can be reliably used to assess the structural model's path coefficients and to test the study's hypotheses without removing any variable.

- **Coefficient of Determination (R^2):** This is used to measure the extent to which exogenous latent variables explain the endogenous latent variables. The explanatory power is classified as follows: above 0.67 indicates strong explanatory power, between 0.33 and 0.67 indicates moderate explanatory power, between 0.12 and 0.33 indicates weak explanatory power, and below 0.12 indicates no explanatory power.

Table 6: Coefficients of Determination (R^2) for the Study Model

	R-square	R-square adjusted
Informations technology techniques + Internal Audit	0.157	0.140
Informations technology techniques	0.242	0.234

Source: SmartPLS 4 software outputs

It is evident from Table 6 that the independent variable together with the mediating variable are able to explain financial reporting quality only to a weak degree, as the value of the coefficient of determination (R^2) for the model reached 0.157, meaning that only 15.7% of the variance in financial reporting quality is explained. The adjusted coefficient of determination (Adjusted R^2) was 0.140, reflecting a reduction in the explanatory power of the model when the number of variables is taken into account. In contrast, when using the independent variable alone, the value of the coefficient of determination increased to 0.242, and the adjusted R^2 to 0.234, indicating that this variable alone has a stronger

explanatory ability for financial reporting quality. Therefore, the results suggest that introducing "internal auditing" as a mediating variable did not enhance the model's effectiveness; instead, it led to a decrease in explanatory power.

- **Effect Size (F²) Evaluation:** The effect size is judged according to the following criteria:
 - ☞ Less than 0.02 → No effect
 - ☞ From 0.02 to 0.15 → Weak effect
 - ☞ From 0.15 to 0.35 → Moderate effect
 - ☞ Greater than 0.35 → Strong effect

Table 7: Effect Size Results

	financial reporting quality	Internal Audit
Internal Audit	0.003	-
Informations technology techniques	0.160	0.319

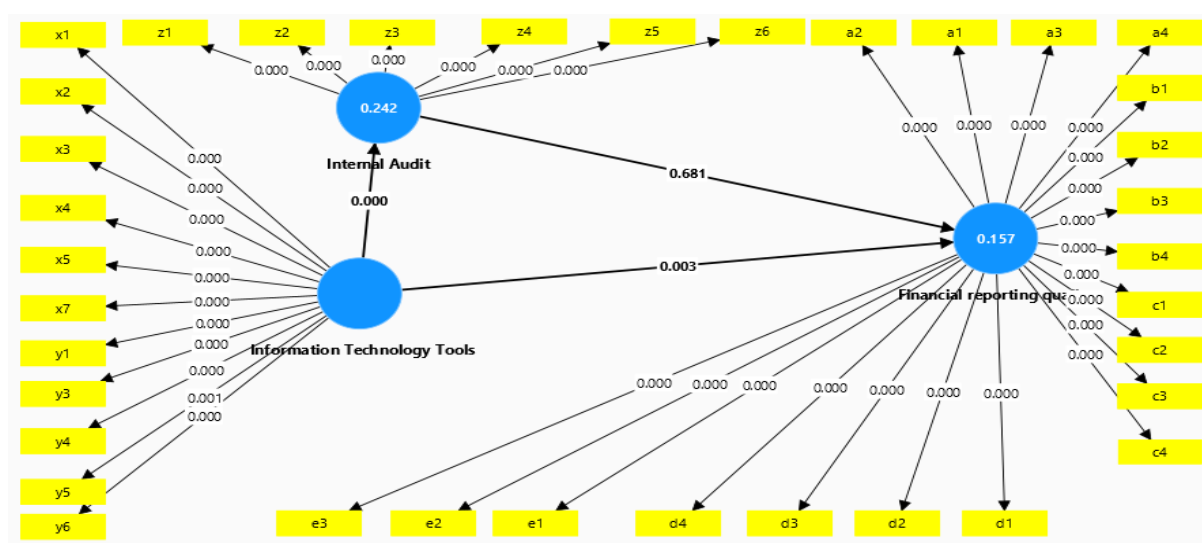
Source: SmartPLS 4 software outputs

The analysis results of the effect sizes presented in Table 7 indicate that *internal audit* does not have a significant direct impact on the quality of financial reports, with an effect size of 0.003, which is extremely weak and lacks practical significance. In contrast, the findings revealed that information technology techniques represent the relatively stronger factor in the model, with a direct effect size of 0.160 on the quality of financial reports, reflecting a moderate effect. Moreover, the results showed that IT techniques significantly contribute to strengthening internal audit, with an effect size of 0.319, which also represents a moderate influence, pointing to their role in enhancing the efficiency and effectiveness of internal audit procedures. Based on these findings, it can be concluded that information technology techniques have both a direct and indirect role in influencing the quality of financial reports. They directly improve report quality and indirectly do so by boosting internal audit performance. Although the indirect effect remains weak, its relative contribution can be effective within the mediating relationship between IT techniques and financial reporting quality.

4.3 Hypotheses Testing

After completing the measurement and structural evaluation of the study's overall model and confirming its suitability for hypothesis testing and deriving the study's findings, the hypotheses are tested by assessing the fit and significance of the relationships within the structural model, referred to as path coefficients, as illustrated in Figure 3. Meanwhile, Table 8 presents the results of fit and significance between the relationships of the structural model, based on which the study's hypotheses will be either rejected or accepted.

Figure 3: Path Coefficients of the Study's Main Variables



Source: SmartPLS 4 software outputs

Table 8: Path Analysis

Decision	p-values	t-statistics	Original Sample	Hypotheses	Type of Effect
Accepted	0.000	6.544	0.492	1	Direct
Accepted	0.003	2.929	0.422	2	
Rejected	0.681	0.411	-0.058	3	
Rejected	0.705	0.379	-0.029	4	Indirect

Source: SmartPLS 4 software outputs

Testing the First Hypothesis

The first hypothesis is formulated as follows:

- H_0 : There is no positive and statistically significant effect of the use of information technology techniques on the effectiveness of internal auditing.
- H_1 : There is a positive and statistically significant effect of the use of information technology techniques on the effectiveness of internal auditing.

The results in Table 7 show that the path coefficient value reached 0.492, which is much greater than 0, indicating a strong relationship between the independent variable and the mediating variable. The T-value was estimated at 6.544, which exceeds the threshold of $T = 1.96$ at a significance level of 0.05. We also find that the P-value is 0.000, which is less than

0.05. Therefore, the effect between the two variables is statistically significant, meaning that the use of information technology techniques has a positive effect on the effectiveness of internal auditing. This leads to the acceptance of the alternative hypothesis and the rejection of the null hypothesis.

Testing the Second Hypothesis

The second hypothesis is formulated as follows:

- *H₀*: There is no positive and statistically significant effect of the use of information technology techniques on the quality of financial reporting.
- *H_a*: There is a positive and statistically significant effect of the use of information technology techniques on the quality of financial reporting.

The results in Table 7 show that the path coefficient value reached 0.422, which is greater than 0, indicating a strong relationship between the independent variable and the dependent variable. The T-value was estimated at 2.929, which exceeds the threshold of $T = 1.96$ at a significance level of 0.05. We also find that the P-value is 0.003, which is less than 0.05. Therefore, the effect between the two variables is statistically significant, meaning that the use of information technology techniques has a positive effect on the quality of financial reporting. This leads to the acceptance of the alternative hypothesis and the rejection of the null hypothesis.

Testing the Third Hypothesis

The third hypothesis is formulated as follows:

- *H₀*: There is no positive and statistically significant effect of internal audit effectiveness on the quality of financial reporting.
- *H_a*: There is a positive and statistically significant effect of internal audit effectiveness on the quality of financial reporting.

The results in Table 7 show that the path coefficient value reached -0.058, which is less than 0, indicating the absence of a strong relationship between the mediating variable and the dependent variable. The T-value was estimated at 0.411, which is lower than the threshold of $T = 1.96$ at a significance level of 0.05. We also find that the P-value is 0.681, which is greater than 0.05. Therefore, the effect between the two variables is not statistically significant, meaning that internal audit effectiveness does not have a positive effect on the quality of financial reporting. This leads to the rejection of the alternative hypothesis and the acceptance of the null hypothesis.

Testing the Fourth Hypothesis

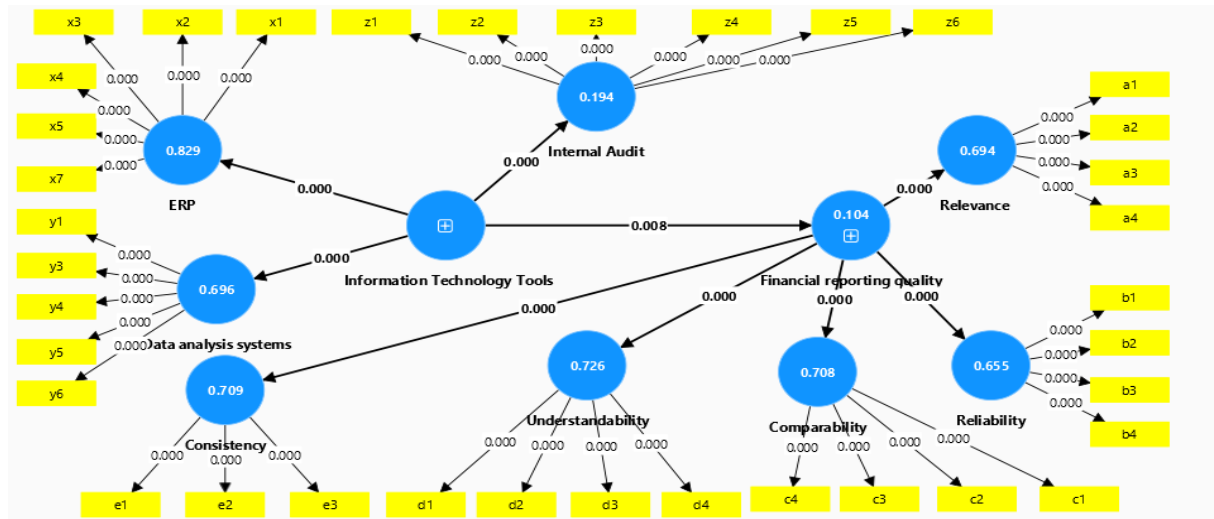
The fourth hypothesis is formulated as follows:

- *H₀*: There is no positive and statistically significant effect of using information technology techniques in internal auditing on the quality of financial reporting.
- *H_a*: There is a positive and statistically significant effect of using information technology techniques in internal auditing on the quality of financial reporting.

The results show that the path coefficient value reached -0.029, which is less than 0, indicating the absence of a strong relationship between the independent and dependent variables when internal auditing is used as a mediating variable. The T-value was estimated at 0.379, which is lower than the threshold of $T = 1.96$ at a significance level of 0.05. We also find that the P-value is 0.705, which is greater than 0.05. Therefore, the effect among the variables is not statistically significant, meaning that the use of information technology techniques in internal auditing does not have a positive effect on the quality of financial reporting. This leads to the rejection of the alternative hypothesis and the acceptance of the null hypothesis.

Finally, the study arrives at the model that represents the final results, relying on structural equation modeling using the partial least squares (PLS) method, as illustrated in Figure 5.

Figure 5: The Modified Structural Model



Source: SmartPLS 4 software outputs

Figure 5 is considered a general summary of the statistical study, where it was concluded that the use of information technology techniques has a positive effect on both the effectiveness of internal auditing and the quality of financial reports. In contrast, using internal auditing as a mediating variable did not result in a positive effect. Moreover, the study found no effect of the internal auditing function on the quality of financial reports, which led to the removal of the path linking internal auditing to financial reporting quality.

5. Discussion

5.1 The Effect of Information Technology Techniques on the Effectiveness of Internal Auditing

The results of the path analysis revealed a positive and statistically significant effect of using information technology techniques on the effectiveness of internal auditing, based on responses from a sample of internal auditors in economic entities in Algeria. This indicates that the auditors' use of simple data analysis systems and ERP systems has enhanced the accuracy and efficiency of their work.

This result is consistent with the findings of Chi et al. (2024), Ayab et al. (2023), and Saeed et al. (2022), who confirmed the existence of a positive relationship between information technology techniques and internal auditing. Information technology was considered one of the most important factors in improving the effectiveness of internal auditing. Likewise, Silva et al. (2023) demonstrated that the use of ERP systems had a positive impact on the effectiveness of internal auditing in Portugal, while Al- Khasawneh and Baniata (2024) showed that simple data analysis systems improved auditors' performance in Jordanian banks. However, this result contrasts with the findings of Marwanto and Soepriyanto (2025), who showed that information technology does not have a significant effect on the effectiveness of internal auditing in public institutions in Indonesia.

According to the interview sample responses, the use of ERP systems and simple data analysis tools, whether through Excel, dashboards, or other supporting software, contributed significantly to improving auditors' performance by increasing accuracy, accelerating task completion, and simplifying procedures.

5.2 The Effect of Information Technology Techniques on the Quality of Financial Reports

The results of the path analysis indicated a positive and statistically significant effect of the use of information technology techniques on the quality of financial reports for a sample of economic entities in Algeria. This implies that the investment of entities in adopting information technology techniques, such as simple data analysis systems and ERP systems, contributed to improving the quality and transparency of their financial reports.

This finding was confirmed by the studies of Rachmad et al. (2024), Darwis et al. (2023), and Meliana and Ansar (2021), which all highlighted the strong positive relationship between information technology and the quality of financial reports. The use of these systems helped reduce errors, accelerate the reporting process, and enhance transparency and reliability. On the other hand, this result contrasts with the findings of Salehi and Torabi (2012), which stated that while information technology enhances the relevance of accounting information, it simultaneously undermines its reliability, and only marginally increases comparability.

Based on the interview sample responses, this result can be explained by the fact that the adoption of information technology techniques by the concerned entities significantly contributed to improving the relevance and reliability of the information disclosed in their financial reports. This was achieved through providing accurate systems for data processing, reducing the likelihood of errors or manipulation, and facilitating timely access to information, which enhances transparency and strengthens user confidence in those reports.

5.3 The Effect of Internal Audit Effectiveness on the Quality of Financial Reports

The results of the path analysis indicate the absence of a statistically significant effect of internal auditing on the quality of financial reports, based on the responses of a sample of internal auditors in economic entities in Algeria. This suggests that there is no direct and clear relationship between the effectiveness of internal auditing and the quality of financial reports.

This result supports the findings of Adewara et al. (2023) and Bakri et al. (2025) who pointed out that the effectiveness of internal auditing does not have a tangible positive impact on the quality of financial reports in public entities in Nigeria and Indonesia, due to the weak role of internal auditors in those entities. In contrast, this result contradicts many previous studies, such as Ebimobwei and Joyce (2024), which emphasized the vital role of internal auditors in improving the quality of financial reports. Similarly, the studies of Sari et al. (2024), Riyanto and Rapina (2024), and Qadri (2025) showed that internal auditing has a significant effect in enhancing the relevance and reliability of information in financial reports through its contribution to evaluating internal control systems, risk management, and governance.

Interview results revealed that the primary reason for this finding is the absence of audit committees in most Algerian entities, in addition to the lack of effective implementation of internal auditor recommendations. One interviewed internal auditor mentioned the existence of significant overlap in duties within his entity, as he was responsible for both internal auditing and management control simultaneously. Another auditor stated that he had to temporarily assume the tasks of an accountant in the absence of the designated employee, which negatively affected his independence and objectivity, and consequently, the effectiveness of his monitoring role.

5.4 The Impact of Using Information Technology Techniques in Internal Auditing on the Quality of Financial Reporting

The results of the path analysis showed no statistically significant effect of information technology techniques on the quality of financial reporting when internal auditing was adopted as a mediating variable in this relationship. The reason for this is the absence of any effect between the effectiveness of internal auditing and the quality of financial reporting for a sample of economic entities in Algeria.

This finding contradicts Mohamed et al. (2022), who found a strong relationship between information technology techniques and the quality of financial reporting when used by internal auditors in economic entities in Egypt. Similarly, Nhial et al. (2025) confirmed that information technology techniques employed in the internal auditing departments of economic entities in Sudan contribute to improving the understandability, comparability, and reliability of the disclosed financial information.

This result was interpreted, based on previous findings and the opinions of the interview sample, as indicating that the lack of a clear effect of internal auditing on the quality of financial reporting does not necessarily stem from weaknesses in auditors' competencies or in the tools used, but rather from the absence of a supportive organizational environment within the concerned entities. This deficiency is also attributed to the limited realization of independence and objectivity. The interviews revealed that auditors are often assigned additional tasks that overlap with their auditing responsibilities, which negatively affects their professional role. Marwanto and Soepriyanto (2025) supported this argument, noting management's limited interest in developing the internal audit function due to the scarcity of training programs and the lack of investment in enhancing the competencies of auditors in public entities in Indonesia. This applies equally to the Algerian economic entities under study, where the interviewees confirmed this trend, pointing out that entities do not provide specialized software for internal auditing that could make a significant difference in performance efficiency and result accuracy. This reflects the weakness of the necessary infrastructure to activate the role of internal auditing effectively in improving the quality of financial reporting, in addition to the incomplete implementation of internal auditors' recommendations regarding the quality of financial statements and accounts, which is due to the reliance on external parties to perform this function. This further confirms the weakness of the internal audit function in the concerned entities.

6. Conclusion

This study aimed to examine the impact of using information technology techniques in internal auditing on the quality of financial reporting, with a particular focus on ERP systems and simple data analysis tools. This was carried out by analyzing the extent to which these techniques influence the effectiveness of internal auditing and their reflection on the primary and secondary characteristics of financial information quality, based on the responses of a sample of internal auditors in economic entities in Algeria. The study reached a set of results that can be summarized as follows:

- The use of information technology techniques, especially ERP systems, has a positive impact on enhancing the effectiveness of internal auditing by facilitating access to necessary information and improving its processing;
- Information technology techniques contribute to improving the quality of financial reporting by supporting disclosure processes and increasing the accuracy and reliability of information;
- Administrative support plays a pivotal role in strengthening the relationship between internal auditing and the quality of financial reporting;
- The absence of audit committees in the entities under study negatively affected the independence of the internal audit function;
- The overlap of internal auditors' tasks led to a weakening of their objectivity, reducing the effectiveness of their role in improving the quality of financial reporting;
- There is no statistically significant effect of using information technology techniques in internal auditing on the quality of financial reporting due to weak implementation of internal auditors' recommendations;
- Other factors are relied upon by the entities under study to improve the quality of financial reporting, such as external auditors.

Based on the findings, the current study recommends the following:

- Internal auditors should ensure the continuous development of their skills in using modern information technology tools;
- Internal auditors should strictly adhere to their scope of work without interfering in the execution of other tasks under any circumstances, in order to maintain their objectivity during the performance of their duties;

- Senior management should commit to implementing the recommendations of internal auditors included in their final reports and justify any recommendation that is not taken into consideration;
- Economic entities in Algeria should invest in acquiring technology-based programs that support the internal auditing process;
- Audit committees should be established within entities to ensure the independence of internal auditors, thereby enhancing the quality of their results;
- Continuous training and development programs should be provided for employees in the internal audit department to build their skills and strengthen their ability to perform tasks efficiently and professionally.

Future research could expand the scope of investigation by examining a larger sample of economic entities across different sectors and regions, in order to capture sectoral variations and provide a more comprehensive understanding of the relationship between information technology techniques, internal auditing, and the quality of financial reporting. Moreover, comparative studies between economic entities in Algeria and those in other countries with more advanced auditing practices would help to highlight contextual differences and identify best practices that could be adopted locally. Further research could also focus on the role of audit committees and corporate governance mechanisms in strengthening the independence and effectiveness of internal auditing, thereby enhancing the quality of financial reporting.

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendices

Appendix A: Questionnaire Items

Axis One: Information Technology Techniques						
No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Dimension One: Enterprise Resource Planning (ERP) System						
01	The ERP system operates efficiently and continuously without interruption.					
02	The ERP system allows easy and timely access to the necessary information.					
03	The ERP system provides detailed and regularly updated reports to support decision-making processes.					
04	The ERP system organizes internal operations and ensures coordination between different departments and units.					
05	The ERP system allows continuous updating and reviewing of information to ensure its accuracy.					
06	The ERP system ensures high levels of security to protect the economic entity's data.					
07	The ERP system contributes to improving operations by providing innovative solutions that support the economic entity's decisions.					
Dimension Two: Data Analysis Systems						
01	Data analysis systems contribute to obtaining accurate and error-free results.					
02	Data analysis systems improve the quality of operations execution and reduce the need for manual intervention.					
03	Data analysis systems perform tasks efficiently, effectively, and in a timely manner.					
04	Data analysis systems provide accurate analyses that assist in making strategic decisions.					
05	Data analysis systems contribute to enhancing					

	transparency by providing reports that can be analyzed and reviewed.					
06	Data analysis systems ensure the protection of information from unauthorized access.					
Axis Two: Internal Audit Function						
No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01	Internal auditing supported by information technology contributes to improving the effectiveness of the entity's financial operations.					
02	Internal auditing enhances credibility and transparency within the entity through the use of data analysis systems.					
03	Internal auditing helps reduce potential risks by accurately tracking financial operations through the ERP system.					
04	Information technology systems help save time and effort during the implementation of internal audit procedures.					
05	Information technology techniques contribute to improving the efficiency of the internal auditor.					
06	Information technology techniques improve internal audit procedures and facilitate the examination of financial records and ledgers.					
Axis Three: Financial Reporting Quality						
Dimension 1: Relevance						
No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01	Financial reports contain additional details that enable users to make appropriate decisions.					
02	The information provided in financial reports helps predict the future of the					

	entity.					
03	Financial reports include accounting information capable of influencing users' decisions.					
04	The entity ensures the issuance of financial reports on a periodic basis.					
Dimension 2: Reliability						
No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01	The information in financial reports reflects the truthfulness of economic events that occurred during the period.					
02	Financial reports contain unbiased information.					
03	Financial reports contain error-free information.					
04	Financial reports contain information that is objective and verifiable.					
Dimension 3: Comparability						
No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01	The financial reports issued by the entity include information comparable with the results of similar entities.					
02	The financial reports issued by the entity include information comparable with the results of previous periods of the same entity.					
03	The entity complies with accounting principles and adopted standards when preparing financial reports.					
04	Providing comparability in financial reports increases their efficiency and effectiveness.					
Dimension 4: Understandability						

No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01	The accounting information disclosed in the reports is easy to understand for all users.					
02	Financial reports are prepared and written in clear and simple language.					
03	The entity ensures that the necessary information is provided without being overly brief or overly detailed to the point of losing meaning.					
04	Graphs and charts are used in financial reports to illustrate and facilitate the understanding of information visually.					
Dimension 5: Consistency						
No.	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
01	The entity ensures that financial statements are prepared using the same methods adopted in previous years and in accordance with the same policies.					
02	The entity accompanies its financial reports with appendices that explain all changes in the preparation and evaluation methods of financial reports.					
03	The principle of consistency is adhered to when preparing and presenting disclosed financial reports.					