

The Effect of Information Technology and Professional Competence and Skills on Internal Audit Effectiveness: The Mediating Role of Audit Quality

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Abstract: The primary objective of this study was to examine the effect of information technology and professional competence and skills on internal audit effectiveness, considering the mediating role of audit quality. This research is classified as an applied study and is descriptive-correlational in nature. The data were quantitative and collected through a field study. The statistical population consisted of internal auditors working in governmental and public-sector organizations in Yazd Province. Accordingly, 384 questionnaires were collected and selected during the first half of 2026. The questionnaire was developed based on the study by Lonto and Pandowo (2025) and comprised 18 items, of which four measured internal audit effectiveness, four measured information technology, five measured professional competence and skills, and five measured audit quality. Face and content validity were confirmed, and the Cronbach's alpha coefficient was .949. After establishing the validity and reliability of the developed questionnaire, the relationships among the variables were examined using structural equation modeling and SmartPLS 3 software. In summary, the findings indicated that information technology and auditors' professional competence and skills had positive and statistically significant effects on internal audit effectiveness. The findings also demonstrated that audit quality played a significant mediating role both in the relationship between information technology and internal audit effectiveness and in the relationship between professional competence and skills and internal audit effectiveness.

Keywords: information technology, professional competence and skills, internal audit effectiveness, audit quality.

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1. Introduction

Internal auditing has evolved from a narrowly defined control and compliance function into a strategic assurance and advisory mechanism that supports governance, risk management, accountability, and organizational performance. In contemporary organizations, internal auditors are expected not only to verify the accuracy of financial records and compliance with regulations but also to assess operational efficiency, evaluate internal controls, identify emerging risks, and provide recommendations that contribute to managerial decision-making. This development has increased the importance of internal audit effectiveness as a central indicator of whether the internal audit function can achieve its assigned objectives and create value for the organization. The need for an effective internal audit function is particularly pronounced in governmental and public-sector organizations because these entities are responsible for safeguarding public resources, ensuring transparency, and demonstrating accountability to multiple stakeholders. Accordingly, internal

auditing is regarded as an essential organizational mechanism for strengthening control systems and improving managerial oversight [1].

Internal audit effectiveness generally refers to the extent to which the internal audit function accomplishes its intended objectives, provides reliable assurance, detects deficiencies, supports risk management, and contributes to organizational improvement. It is not determined by a single organizational characteristic; rather, it reflects the interaction of institutional support, auditor independence, professional competence, access to information, technological capability, audit procedures, and communication with management. Earlier research has shown that independence is an essential prerequisite for effective auditing because auditors must be able to evaluate organizational activities without undue managerial influence or conflicts of interest [2]. Nevertheless, independence alone does not ensure effectiveness. Internal audit functions must also possess sufficient authority, resources, technical competence, organizational recognition, and access to relevant information if they are to produce timely and actionable findings.

The importance of effective internal auditing becomes especially evident in public administration, where weak controls may contribute to inefficiency, mismanagement, corruption, and the misuse of organizational resources. Evidence from public-sector settings indicates that internal audit functions can play a meaningful role in preventing corruption when they are adequately structured, professionally staffed, and supported by appropriate governance arrangements [3]. Similarly, research on decentralized governmental systems has identified professional capability, organizational independence, management support, and the availability of resources as important determinants of internal audit effectiveness [4]. Studies of public institutions have also demonstrated that the effectiveness of internal auditing has implications for corruption prevention, particularly where audit recommendations are taken seriously and internal auditors are able to examine high-risk activities [5]. These findings suggest that internal auditing should be understood as part of a broader governance architecture rather than merely as a routine administrative procedure.

The effectiveness of internal auditing also has significant implications for the quality of organizational information. Internal auditors reduce information risk by examining reporting processes, evaluating internal controls, and identifying inconsistencies between managerial claims and organizational evidence. When the internal audit function operates effectively, it can reduce information asymmetry between managers, auditors, boards, and other stakeholders by improving the credibility and accessibility of organizational information [6]. In addition, internal audit activities may contribute to the prevention of fraudulent financial reporting by strengthening accounting information systems and monitoring control weaknesses [7]. Internal auditing is also associated with fraud prevention through its interaction with anti-fraud awareness, organizational commitment, and organizational culture [8]. Consequently, the effectiveness of internal auditing is closely linked to the integrity of financial reporting, the reliability of internal information, and the organization's capacity to prevent and detect misconduct.

Despite its importance, internal audit effectiveness is increasingly challenged by the rapid development of information technology. Contemporary organizations generate and process large volumes of financial and operational data through integrated information systems, cloud-based platforms, enterprise resource planning systems, digital payment systems, automated workflows, and online service infrastructures. As a result, audit evidence is increasingly stored, transmitted, and analyzed electronically. This transformation has changed both the subject matter and the methodology of internal auditing. Auditors must evaluate automated controls, system access, data integrity, cybersecurity risks, and information-system governance while also using technological tools

to collect evidence, conduct analyses, document procedures, and report findings. Research has long indicated that financial auditors use information technology in different stages of the audit process, although the level and sophistication of usage may vary considerably across organizations and audit assignments [9].

Information technology can improve internal audit effectiveness in several ways. It can accelerate data collection, facilitate continuous access to financial information, enhance analytical coverage, reduce manual errors, support exception testing, and permit auditors to examine larger or even complete populations of transactions. Technology-assisted auditing can also improve the timeliness of audit activities by enabling auditors to identify anomalies and control weaknesses more rapidly. The use of information technology, particularly when supported by senior management, has been found to enhance internal audit effectiveness by improving access to evidence and strengthening auditors' ability to perform their responsibilities [10]. More recent research similarly identifies information technology as an important factor in the development of internal audit effectiveness, particularly in data-intensive organizational environments [11]. These advantages indicate that technological capability is becoming a necessary organizational resource for modern internal audit units.

The relationship between technology and internal auditing is not limited to the automation of audit procedures. Internal auditing may itself influence the effectiveness of information technology governance by evaluating whether technological investments, controls, responsibilities, and risk-management processes are aligned with organizational objectives [12]. In this respect, the relationship is reciprocal: information technology strengthens the audit function, while internal auditing improves the governance and control of information technology. Technology also affects auditors' professional judgment by expanding access to data, facilitating analytical procedures, and changing the way evidence is assessed. The combined use of data analytics, information technology, and internal control information can improve the quality and consistency of professional judgment when auditors possess the ability to interpret technological outputs correctly [13].

Nevertheless, the adoption of information technology does not automatically produce more effective auditing. Organizations may face barriers such as inadequate infrastructure, limited technical support, resistance to change, insufficient training, fragmented databases, poor system integration, and concerns about information security. In addition, auditors may possess access to technological tools without having the knowledge required to use them effectively. Recent investigations have therefore emphasized the challenges and organizational barriers associated with integrating information technology into internal auditing, as well as the need for coordinated technical, managerial, and educational solutions [14]. The mere availability of software or digital systems is insufficient; technology must be embedded in audit planning, fieldwork, evidence evaluation, and reporting practices.

The emerging use of continuous auditing illustrates the importance of this integration. Continuous auditing enables audit procedures to be performed more frequently through automated data extraction, control monitoring, and real-time or near-real-time analysis. However, auditors' willingness to use continuous auditing depends on perceived usefulness, organizational conditions, professional expectations, and technological readiness [15]. Thus, technological adoption is partly a behavioral and competency-related issue rather than solely an infrastructural one. Auditors must be capable of selecting appropriate tools, evaluating system-generated evidence, identifying data limitations, and interpreting analytical results within the context of audit objectives.

This requirement highlights professional competence and skills as another fundamental determinant of internal audit effectiveness. Professional competence encompasses the knowledge, technical skills, practical experience, behavioral capabilities, ethical judgment, communication ability, and professional attitudes necessary to perform audit responsibilities effectively. Internal auditors must understand accounting, auditing standards, internal

control, risk management, organizational processes, information systems, legal requirements, and sector-specific operations. They must also possess analytical reasoning, professional skepticism, interviewing skills, report-writing ability, and the capacity to communicate sensitive findings constructively. Research on internal audit functions has demonstrated that the characteristics distinguishing more effective audit units include not only organizational arrangements but also the capabilities and professional orientation of their personnel [16].

Competency requirements have become broader as the internal audit profession has expanded. Qualitative research has identified multiple dimensions in competency models for internal auditors, including technical expertise, managerial understanding, interpersonal capability, ethical commitment, and knowledge of organizational operations [17]. In specialized auditing contexts, such as Shari'ah auditing, auditors are likewise expected to combine technical accounting knowledge with regulatory understanding, communication skills, ethical characteristics, and relevant professional experience [18]. These findings reinforce the view that effective audit performance depends on a multidimensional competency profile rather than on accounting knowledge alone.

Professional competence is closely connected to audit quality. Auditors with stronger knowledge and skills are more capable of designing appropriate procedures, identifying material risks, evaluating evidence critically, and reaching defensible conclusions. Empirical research indicates that auditors' ethics, experience, and professional competence are associated with audit quality and that professional skepticism may strengthen these relationships [19]. Auditor competence, independence, integrity, due professional care, and experience have also been identified as important predictors of audit quality, although their effects may vary according to auditors' personality characteristics [20]. From the perspective of financial reporting, auditor competence and professional ethics can improve reporting quality by increasing the reliability of the audit process and reducing the likelihood that significant deficiencies remain undetected [21].

Experience and ethical sensitivity are particularly important because audit decisions often involve ambiguity and professional judgment. Auditors must evaluate incomplete evidence, distinguish between error and intentional misstatement, and determine whether identified weaknesses are significant enough to report. Higher levels of professional skill and ethical sensitivity can improve the quality of such judgments [22]. Professional role clarity is also relevant. Role ambiguity may undermine auditors' integrity and competence by creating uncertainty regarding responsibilities, authority, and performance expectations, whereas personal and cognitive resources may help mitigate these effects [23]. Therefore, professional competence is not merely an individual attribute; it is also shaped by the organizational context in which auditors perform their duties.

The changing labor market further demonstrates the broadening scope of professional competency. Analyses of employment advertisements for accounting professionals show that organizations increasingly demand a combination of technical accounting expertise, digital capability, communication skills, problem-solving ability, teamwork, adaptability, and business knowledge [24]. Evaluations of professional skills in local auditing firms have likewise emphasized the need to strengthen analytical, technological, communication, and professional abilities in response to changing audit environments [25]. In the field of information-systems auditing, competency-based approaches to academic and professional training have become essential because auditors must understand both audit methodology and the technical architecture of information systems [26]. These developments indicate that the professional competence of internal auditors must continually evolve alongside organizational and technological change.

Information technology and professional competence are therefore interdependent. Technology modifies the competencies required of auditors, while auditor competence determines whether technological resources are used

effectively. Emerging technologies require internal auditors to acquire new skills in data analysis, systems evaluation, information security, automated control testing, and digital risk assessment [27]. Auditors who lack these skills may rely excessively on system-generated outputs, misunderstand analytical findings, or fail to identify technological risks. Conversely, competent auditors can use technology to expand audit coverage, improve the precision of testing, and allocate attention to higher-risk areas.

The effectiveness of information technology may also depend on whether it contributes to audit quality. Audit quality reflects the extent to which audit procedures are appropriately planned and executed, sufficient and relevant evidence is obtained, material problems are identified, and conclusions are accurately reported. High-quality auditing requires technical rigor, independence of judgment, adequate documentation, and compliance with professional standards. Professional requirements and training systems must therefore be continually revised to maintain audit quality in changing regulatory and technological environments [28]. At the same time, organizational pressures may reduce audit quality. Workload compression, for example, can constrain the time available for evidence collection and review and thereby weaken the quality of audit performance [29]. Audit quality is consequently shaped by both auditor capability and the conditions under which audit work is conducted.

Within the internal audit context, audit quality can be viewed as a mechanism through which organizational resources and auditor capabilities are converted into effective outcomes. Information technology may improve the reliability, breadth, and timeliness of audit procedures, thereby increasing audit quality. Improved audit quality, in turn, can strengthen the usefulness of findings, the credibility of reports, and the contribution of internal auditing to management and governance. Evidence from governmental organizations suggests that information technology can enhance internal audit quality by improving the accuracy and efficiency of audit procedures [30]. Similarly, research in organizational settings indicates that audit quality, technology use, management support, and the application of formal audit guidelines jointly influence internal audit effectiveness in fraud prevention and detection [31].

Professional competence may operate through a similar mechanism. Competent auditors are more likely to apply appropriate procedures, exercise professional skepticism, interpret evidence accurately, and communicate findings effectively. These characteristics enhance audit quality, which subsequently increases the effectiveness of the internal audit function. Studies have found that internal auditors' professional competence improves accounting quality and strengthens the usefulness of audit activities [32]. Professional competence also contributes to financial reporting quality by increasing the reliability and relevance of auditors' evaluations and recommendations [33]. Thus, audit quality may mediate the effect of professional competence on internal audit effectiveness rather than competence influencing effectiveness exclusively through a direct relationship.

Communication and organizational interaction are also critical in this process. Internal auditors may produce technically sound findings, yet the audit function will remain ineffective if reports are unclear, recommendations are impractical, or managers fail to act on the results. Research has shown that competence, independence, audit work, and communication contribute jointly to internal audit effectiveness [34]. This finding is especially relevant in public-sector organizations, where internal auditors must communicate with managers, financial officers, regulatory bodies, and operational units. Audit effectiveness therefore depends on both the technical quality of audit work and the ability to translate findings into organizational action.

Management values and strategic orientation can further affect the extent to which audit recommendations are integrated into organizational practices. Although research on strategic orientation and sustainability has focused on broader organizational behavior, it demonstrates that managerial values influence whether formal systems are

converted into substantive organizational commitment [35]. In the internal audit context, this implies that technological investments and professional audit work are more likely to improve effectiveness when management values accountability, learning, ethical conduct, and evidence-based decision-making. Therefore, the organizational environment can amplify or constrain the benefits derived from information technology and professional competence.

Prior research has examined several determinants of internal audit effectiveness, including independence, competence, audit work, communication, management support, technological usage, and organizational context. However, these factors have often been investigated independently or through direct-effect models. Such approaches may not fully explain the process through which technological and professional resources generate effective internal audit outcomes. A more comprehensive model should consider audit quality as an intervening mechanism because technology and competence primarily influence effectiveness by improving how audit procedures are designed, performed, documented, and communicated. Recent research has directly proposed that audit quality mediates the relationship between information technology and internal audit effectiveness, thereby providing a more process-oriented explanation of this relationship [36].

This issue is particularly important in governmental and public-sector organizations, where audit units often operate within complex administrative structures and face limitations related to resources, technological integration, bureaucratic procedures, and professional development. Internal auditors in such organizations must examine extensive financial and operational information while responding to demands for transparency, efficiency, and fraud prevention. The combination of appropriate information technology and strong professional competence may enable them to perform these responsibilities more effectively, but the expected benefits will materialize only when these resources improve the quality of audit work. Despite the growing body of literature, further empirical evidence is needed regarding the simultaneous effects of information technology and professional competence and skills on internal audit effectiveness and the mediating role of audit quality, particularly among internal auditors in governmental and public-sector organizations.

Accordingly, the aim of the present study was to examine the effects of information technology and professional competence and skills on internal audit effectiveness, with particular emphasis on the mediating role of audit quality.

2. Methodology

According to the research onion proposed by Danayi-Fard et al. (2004), the present study adopted a positivist philosophical approach, meaning that it was based on the objective observation and measurement of reality and the testing of hypotheses. In terms of orientation, the study was applied and aimed to address practical problems and improve organizational performance. The research approach was inductive, meaning that general conclusions were derived from specific data and observations. The study employed a quantitative method and used numerical data and statistical analyses to answer the research questions. The data were collected through fieldwork in a real-world setting using a survey strategy, which relies on instruments such as questionnaires or structured interviews. The research objective was descriptive, with an emphasis on examining and describing the existing situation without manipulating or altering the variables. The data-collection instrument was a questionnaire.

The statistical population of the present study consisted of an unknown number of internal auditors employed in governmental and public-sector organizations in Yazd Province. Using Cochran's formula and a 95% confidence level, the sample size was determined to be 384 participants. In the first stage, data were collected through a library-

based method involving the examination of existing documents and records to extract the theoretical foundations and review the research literature. In the second stage, a field method was used to collect data directly from the statistical population. The required raw data and information were gathered through a questionnaire. Therefore, the present study employed a theoretical-field survey method that combined the examination of theoretical sources with data collection in a real-world environment.

In the present study, the questionnaire consisted of closed-ended questions measured on a five-point Likert scale. The questionnaire was structured into two sections. The first section addressed respondents' demographic characteristics, while the second section contained specialized questions derived from the theoretical foundations of the field and standardized questionnaires relevant to the subject of the study. Overall, the questionnaire consisted of general and specialized questions. The questionnaire data were analyzed using SPSS version 22 for the description of demographic characteristics and reliability assessment and SmartPLS 2 for confirmatory factor analysis to evaluate the measurement model, exploratory analysis to assess the structural model, evaluation of the overall fit and quality of the model, and testing of the research questions.

3. Findings and Results

The present study examined the effect of information technology and professional competence and skills on internal audit effectiveness, considering the mediating role of audit quality. The statistical population consisted of an unknown number of internal auditors working in governmental and public-sector organizations in Yazd Province, and the required sample size was calculated as 384 using Cohen's formula. Initially, the data were described and summarized using descriptive statistical indicators. In descriptive analysis, data are used solely to examine the status of a particular group or situation. This section presents the descriptive statistical indicators for each research variable.

Table 1. Descriptive Statistics for the Main Research Variables

Variable	Symbol	Number of Questionnaires	Minimum	Maximum	Mean	Standard Deviation
Internal audit effectiveness	IAE	384	4	20	2.854	0.993
Information technology	IT	384	10	20	3.829	0.709
Professional competence and skills	CPP	384	14	25	3.635	0.688
Audit quality	AQ	384	5	25	2.806	0.949

According to the results presented in Table 1, four items were designed to measure internal audit effectiveness. Based on these four items, the minimum total response score was 4. In other words, at least one respondent assigned the lowest score to all four items. A similar result was observed for the audit quality variable. Likewise, the maximum score for internal audit effectiveness was 20, indicating that at least one respondent selected "strongly agree" for all four internal audit effectiveness items. The minimum and maximum scores for the other research variables are also presented in the table. An examination of the variable means indicates that audit quality had the lowest mean, with a value of 2.806. A mean greater than 3 indicates that respondents' answers tended toward "agree" and "strongly agree." The mean represents the distribution of observations around a central point. The means of the other variables were also close to 3, indicating diverse respondent opinions, some of which were close to the average response. Information technology had the highest mean, at 3.829, although its mean did not differ substantially from those of the other variables. Finally, the results presented in the table indicate that professional competence and skills had the lowest standard deviation, suggesting that respondents held relatively similar views

regarding professional competence and skills. Internal audit effectiveness had the highest standard deviation, at 0.993, indicating the greatest variation in responses to the items measuring this variable.

In structural equation modeling methodology, the validity of the constructs under investigation must first be assessed to determine whether the items selected to measure the intended variables possess adequate measurement accuracy. Confirmatory factor analysis (CFA) was used for this purpose. The factor loading of each item on its corresponding variable should have a t value greater than 1.96 and a p value less than .05. Under these conditions, the item is considered sufficiently accurate for measuring the relevant construct or latent variable. The factor-loading values for the items associated with each variable are presented in the following table. All items had t statistics greater than 1.96 and significance levels below .05; therefore, none of the items were removed from the model. Consequently, the analysis proceeded using all items, and the model was subsequently evaluated. Based on the factor-loading values, an indicator with a higher factor loading makes a greater contribution to measuring the corresponding variable, whereas an indicator with a smaller coefficient makes a more limited contribution to measuring the construct.

Table 2. Results of the Assessment of Item Factor Loadings for the Research Variables

Variable	Item	Factor Loading	t Statistic	p Value
Audit quality	AQ1	0.933	140.623	.000
	AQ2	0.919	127.091	.000
	AQ3	0.922	118.159	.000
	AQ4	0.918	113.369	.000
	AQ5	0.922	119.661	.000
Professional competence and skills	CPP1	0.833	47.579	.000
	CPP2	0.825	50.488	.000
	CPP3	0.850	55.861	.000
	CPP4	0.861	80.031	.000
	CPP5	0.857	66.926	.000
Internal audit effectiveness	IAE1	0.939	170.041	.000
	IAE2	0.927	141.027	.000
	IAE3	0.941	171.561	.000
	IAE4	0.921	137.327	.000
Information technology	IT1	0.856	66.111	.000
	IT2	0.858	60.429	.000
	IT3	0.850	61.472	.000
	IT4	0.845	51.138	.000

The results of the reliability assessment using three methods—Cronbach's alpha, rho_A, and composite reliability—are presented in Table 3. The Cronbach's alpha, rho_A, and composite reliability results for the main research constructs indicate that the values for all variables were greater than .70, which represents the minimum acceptable threshold. Cronbach's alpha, rho_A, and composite reliability values exceeding .70 for the research constructs confirm the satisfactory reliability of the model indicators.

Table 3. Reliability Assessment of the Research Model Constructs

Research Model Dimension	Symbol	Cronbach's Alpha	rho_A	Composite Reliability (CR)
Internal audit effectiveness	IAE	0.950	0.950	0.964
Professional competence and skills	CPP	0.900	0.905	0.926
Information technology	IT	0.874	0.875	0.914
Audit quality	AQ	0.956	0.957	0.966

To evaluate the measurement models, convergent validity and discriminant validity were assessed. Accordingly, the results of the average variance extracted (AVE), factor loadings, cross-loadings, Fornell–Larcker criterion, and heterotrait–monotrait ratio (HTMT) were analyzed and reported. The convergent validity results showed that all AVE values were greater than .50. Therefore, all latent variables in the model demonstrated satisfactory convergent validity. Based on the factor-loading results for the items associated with each variable, the t statistic for all items was greater than 1.96, and the p index was less than .50. Therefore, all factor-loading values were within the statistically significant range.

In the assessment of discriminant validity, the cross-loading results showed values greater than .70 for the corresponding construct and lower values for the other constructs, indicating satisfactory discriminant validity. In addition, based on the Fornell–Larcker criterion, the square root of the AVE for each construct, represented by the main diagonal values, was greater than the correlation coefficients between that construct and the other constructs, represented by the values in the corresponding rows and columns. This finding indicates acceptable discriminant validity for the constructs. Finally, all HTMT values were below .90; therefore, discriminant validity was considered acceptable.

Based on the results obtained from examining the relationships between the independent and dependent variables and the corresponding coefficients, the statistical significance of the effects among the research variables was assessed. To determine the significance of each path coefficient, or beta coefficient, the t value associated with each path coefficient was examined. Bootstrapping was used for this purpose. The t statistics and significance levels for all paths showed that the t statistic was greater than 1.96 and the p value was less than .05. These findings indicate that all paths had statistically significant effects at the 95% confidence level.

Table 4. Effects of the Research Variables in the Main Model

Path	Path Coefficient	Standard Error	t Statistic	p Value
Information technology → Internal audit effectiveness	0.256	0.034	7.459	.000
Professional competence and skills → Internal audit effectiveness	0.230	0.036	6.415	.000
Information technology → Audit quality → Internal audit effectiveness	0.281	0.025	11.221	.000
Professional competence and skills → Audit quality → Internal audit effectiveness	0.330	0.028	12.000	.000

The inner model was used to test the research hypotheses. Comparing the calculated t value for each path coefficient made it possible to confirm or reject the hypotheses. Specifically, when the absolute value of the t statistic is greater than 1.96, the path coefficient is considered statistically significant at the 95% confidence level. When the t statistic exceeds 2.58, the path coefficient is considered statistically significant at the 99% confidence level. The results of testing the conceptual research model, expressed in terms of the significance of the path coefficients, are presented in the following figure.

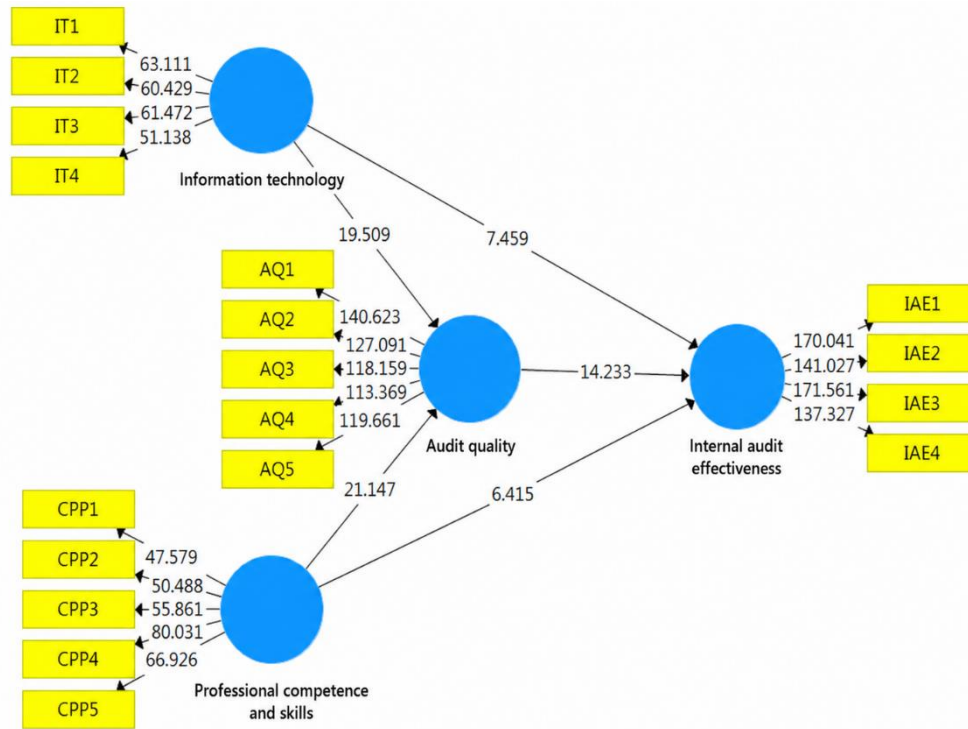


Figure 1. Main model with significance values (t values)

The numbers displayed on the paths represent the t values for the respective paths. To establish the statistical significance of a path coefficient, the corresponding t value must be greater than 1.96. In the present analysis, the t statistics for all paths exceeded 1.96. Therefore, all paths were statistically significant at the 95% confidence level.

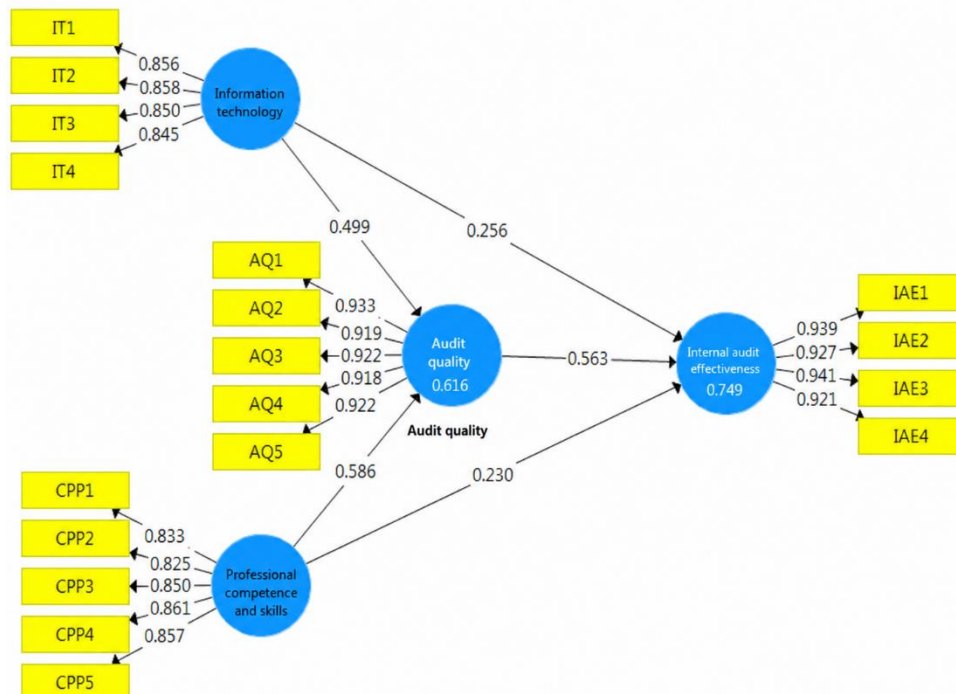


Figure 2. Main model with path coefficients

The numbers displayed on the lines represent beta coefficients obtained from the regression equations among the variables and constitute the path coefficients. The numbers within each circle represent the model's coefficient

of determination (R^2), with the predictor variables entering the circle through the arrows. The coefficient of determination for internal audit effectiveness was estimated at .749, indicating that the research variables collectively explained 74.9% of the variance in internal audit effectiveness.

As shown in Figure 2, among the various items, the highest factor loading was associated with item IAE3, "Rapid and online access to financial data and information is available for conducting audits," with a coefficient of .941. All the examined items had factor loadings greater than .60. The lowest factor loading was associated with item CPP2, "My work experience improves audit quality," with a factor loading of .825. The values for the remaining items are presented in the table.

The R^2 , f^2 , and Q^2 tests were used to assess the predictive power of the dependent variables in the model. The goodness-of-fit (GoF), standardized root mean square residual (SRMR), normed fit index (NFI), and root mean square residual covariance (RMS_theta) indices were used to assess the overall fit of the model. The coefficient-of-determination results showed that the structural models had R^2 values of .749 and .616. In other words, the research variables explained 74.9% and 61.6% of the variance in internal audit effectiveness and audit quality, respectively. The adjusted coefficients of determination, which provide greater reliability, yielded similar results. This degree of explained variance indicates the approximately moderate predictive power of the research model. The f^2 results showed that most effect-size values ranged between .10 and .35, indicating good predictive power for the structural models. The Q^2 results also showed that the variables had satisfactory predictive relevance. Thus, the structural model demonstrated good predictive power.

To evaluate the overall fit of the measurement model, the quality of the measurement models was also assessed. The relevant values for all measurement models should be positive, and weak, moderate, and strong levels are interpreted in the same manner as the quality of the structural model. The results indicated that the measurement models demonstrated strong fit. The SRMR, NFI, RMS_theta, and GoF indices were used to assess the overall model fit. The observed SRMR value was below .10, indicating satisfactory model fit. The observed NFI value was greater than .70, indicating an acceptable model. Finally, the RMS_theta value was .107, indicating an acceptable model. The third and final test used to evaluate the overall model fit was the overall goodness-of-fit, or GoF, test. Wetzels et al. (2009) proposed values of .01, .25, and .36 as the thresholds for weak, moderate, and strong GoF, respectively. The results indicated that the model had strong predictive power.

After evaluating the structural model and conducting the corresponding tests, the confirmation or rejection of the hypotheses was examined based on the path coefficients and t statistics. Table 5 presents the results regarding the confirmation or rejection of the research hypotheses.

Table 5. Results of Hypothesis Testing

Hypothesis	Path Coefficient	Standard Error	t Statistic	p Value	Result
Hypothesis 1: Information technology has a significant effect on internal audit effectiveness.	0.256	0.034	7.459	.000	Supported
Hypothesis 2: Professional competence and skills have a significant effect on internal audit effectiveness.	0.230	0.036	6.415	.000	Supported
Hypothesis 3: Audit quality mediates the relationship between information technology and internal audit effectiveness.	0.281	0.025	11.221	.000	Supported
Hypothesis 4: Audit quality mediates the relationship between professional competence and skills and internal audit effectiveness.	0.330	0.028	12.000	.000	Supported

According to the results presented in Table 5, the path coefficient for the effect of information technology on internal audit effectiveness was .256. This coefficient was statistically significant at the 95% confidence level because

the t statistic was 7.459 and the probability of error was below 5%. Therefore, information technology had a positive and statistically significant effect on internal audit effectiveness, such that an increase in information technology was associated with an increase in internal audit effectiveness. Accordingly, the first hypothesis, stating that “information technology has a significant effect on internal audit effectiveness,” was supported.

Regarding the second hypothesis, the path coefficient for the effect of professional competence and skills on internal audit effectiveness was .230. This coefficient was statistically significant at the 95% confidence level. Therefore, professional competence and skills had a positive and statistically significant effect on internal audit effectiveness. Accordingly, the second hypothesis, stating that “professional competence and skills have a significant effect on internal audit effectiveness,” was supported.

Regarding the third hypothesis, the path coefficient for the indirect effect of information technology on internal audit effectiveness through audit quality—information technology → audit quality → internal audit effectiveness—was .281. Based on the t statistic, this coefficient was statistically significant at the 95% confidence level. Therefore, the third research hypothesis, stating that “audit quality mediates the relationship between information technology and internal audit effectiveness,” was supported.

Regarding the fourth hypothesis, the path coefficient for the indirect effect of professional competence and skills on internal audit effectiveness through audit quality—professional competence and skills → audit quality → internal audit effectiveness—was .330. Based on the t statistic, this coefficient was statistically significant at the 95% confidence level. Therefore, the fourth research hypothesis, stating that “audit quality mediates the relationship between professional competence and skills and internal audit effectiveness,” was supported.

4. Discussion and Conclusion

The present study examined the effects of information technology and professional competence and skills on internal audit effectiveness, with audit quality considered as a mediating variable. The findings showed that information technology had a positive and statistically significant direct effect on internal audit effectiveness. Professional competence and skills also had a positive and statistically significant effect on internal audit effectiveness. In addition, audit quality significantly mediated both the relationship between information technology and internal audit effectiveness and the relationship between professional competence and skills and internal audit effectiveness. The structural model explained 74.9% of the variance in internal audit effectiveness and 61.6% of the variance in audit quality, indicating that the variables included in the model possessed substantial explanatory power. Overall, the results demonstrate that internal audit effectiveness is strengthened when auditors have access to appropriate technological resources, possess adequate professional capabilities, and perform audit activities at a high level of quality.

The first finding indicated that information technology had a positive and significant effect on internal audit effectiveness. This result suggests that greater access to technological infrastructure, electronic data, audit software, and online information systems enables internal auditors to perform their responsibilities more efficiently and accurately. Information technology can reduce the time required to collect and process audit evidence, improve access to financial and operational information, and permit auditors to analyze larger volumes of transactions. It can also support the identification of anomalies, unusual patterns, control failures, and high-risk activities that may not be easily detected through conventional manual procedures. Therefore, the positive path coefficient observed in the present study reflects the increasing dependence of effective internal auditing on technological capability.

This finding is consistent with previous studies showing that the use of information technology improves internal audit effectiveness by facilitating the timely acquisition and analysis of audit evidence. Alkebsi and Aziz found that information technology usage, particularly when accompanied by top management support, contributed significantly to internal audit effectiveness [10]. Similarly, Ramazanova and Nurgaliyeva identified information technology as an important factor in the development of an effective internal audit function [11]. The present finding also supports the results of Lento and Pando, who emphasized that information technology enables internal auditors to improve the scope, timeliness, and reliability of audit procedures [36]. The convergence of these findings indicates that technological resources have become an essential component of internal audit capacity rather than a supplementary organizational facility.

The positive effect of information technology can also be explained by its contribution to continuous and data-driven auditing. Through automated data extraction, computerized testing, electronic documentation, and real-time monitoring, internal auditors can conduct procedures more frequently and identify control deficiencies at an earlier stage. Sepasi et al. showed that the adoption of continuous auditing depends on auditors' readiness and their perception of the usefulness of technology [15]. Pedrosa and Costa similarly reported that information technology is increasingly used in financial auditing to improve evidence gathering and audit execution [9]. Accordingly, when internal auditors use technology effectively, auditing becomes more timely, comprehensive, and responsive to organizational risks.

The result is also consistent with research conducted in governmental and institutional settings. Eisazadeh and Aghaei reported that information technology improved internal audit quality in government organizations by increasing the accuracy and efficiency of audit procedures [30]. Soepriyanto likewise found that information technology use was among the important factors influencing internal audit effectiveness in the prevention and detection of fraud [31]. In addition, Tanbour et al. showed that internal auditing and information technology governance are closely connected, because effective audit activities support the evaluation and improvement of technological governance structures [12]. These studies reinforce the conclusion that information technology improves both the execution of internal auditing and the organizational systems that internal auditors are expected to evaluate.

The second finding showed that professional competence and skills had a positive and significant effect on internal audit effectiveness. This result indicates that auditors who possess stronger technical knowledge, practical experience, analytical ability, ethical judgment, communication skills, and familiarity with organizational processes are more capable of achieving internal audit objectives. Competent auditors can identify significant risks, select appropriate audit procedures, evaluate evidence critically, and formulate relevant recommendations. They are also more likely to communicate findings clearly and persuade managers to implement corrective actions. Therefore, professional competence improves not only the technical execution of audit work but also the usefulness and organizational impact of the internal audit function.

This finding is aligned with the results of Setyaningrum and Kuntadi, who found that competence, independence, audit work, and communication contributed significantly to internal audit effectiveness [34]. It is also consistent with the findings of Tackie et al., who identified auditors' competence as one of the major determinants of internal audit effectiveness in decentralized governmental organizations [4]. Lenz et al. similarly emphasized that the characteristics and capabilities of internal audit personnel distinguish effective internal audit functions from less effective ones [16]. These results support the argument that organizational structures and audit

mandates cannot ensure effectiveness unless internal auditors possess the competencies required to perform their duties properly.

The finding can also be interpreted in light of the multidimensional nature of professional competence. Internal auditing requires more than knowledge of accounting standards and conventional audit procedures. Auditors must understand risk management, internal control, governance, information systems, regulatory requirements, and sector-specific operations. They must also demonstrate professional skepticism, ethical sensitivity, interpersonal communication, and the capacity to interpret complex information. Jorjani et al. identified technical, behavioral, ethical, managerial, and organizational competencies as central components of an internal auditor competency model [17]. Ali et al. likewise demonstrated that effective auditors require a combination of knowledge, practical skills, and professional characteristics [18]. The positive relationship found in the present study therefore reflects the cumulative contribution of these different dimensions of professional capability.

The result also agrees with studies connecting competence to the quality of professional judgment and reporting. Kazempour and Hassas Yeganeh reported that auditors' skill levels and ethical sensitivity were associated with more appropriate professional judgments [22]. Daryaei and Azizi found that professional competence, experience, and ethics improved audit quality, especially when auditors exercised professional skepticism [19]. Rezaei Rajani et al. also showed that competence, integrity, due professional care, independence, and experience influenced audit quality [20]. These findings help explain why professional competence improved internal audit effectiveness in the present study: capable auditors are better able to produce credible findings and recommendations that contribute to organizational control and decision-making.

The increasing technological complexity of auditing further strengthens the importance of professional competence. Auditors must be able to use data-analysis tools, evaluate automated controls, understand information-system risks, and interpret electronically generated evidence. Arsar and Mohammadi showed that emerging information technologies have changed the professional skills required of internal auditors [27]. Yudin et al. emphasized the necessity of competency-based education and professional preparation for auditors of information systems and technologies [26]. Nguyen et al. also highlighted the importance of developing technical, analytical, and communication skills among auditors in response to changing professional demands [25]. Thus, the significant effect of competence in the current study may partly reflect auditors' ability to integrate traditional audit knowledge with digital and analytical capabilities.

The third finding demonstrated that audit quality significantly mediated the relationship between information technology and internal audit effectiveness. This result indicates that information technology does not improve internal audit effectiveness solely through a direct operational pathway. Rather, part of its effect occurs because technological resources improve the quality of audit planning, evidence collection, testing, documentation, and reporting. When technology enables auditors to obtain more complete and reliable information, perform more accurate analyses, and identify irregularities more rapidly, the resulting audit work becomes more credible and useful. Improved audit quality then contributes to greater internal audit effectiveness by increasing the reliability of findings and the likelihood that audit recommendations will support organizational improvement.

This finding directly supports the model proposed by Lento and Pando, in which audit quality serves as an intervening mechanism between information technology and internal audit effectiveness [36]. It is also consistent with the findings of Eisazadeh and Aghaei, who reported that information technology improved internal audit quality in governmental organizations [30]. Soepriyanto similarly demonstrated that information technology use and audit quality jointly enhanced internal audit effectiveness in preventing and detecting fraud [31]. Therefore,

the current result extends previous evidence by showing that technology becomes more influential when it is translated into higher-quality audit work.

The mediating effect can also be explained through the role of technology in strengthening evidence quality. Audit quality depends on obtaining sufficient, appropriate, and reliable evidence. Electronic systems allow auditors to access transaction histories, compare data across periods, test entire populations, and document procedures systematically. Shiri and Hamidian found that data analytics and information technology influenced auditors' professional judgment by improving the availability and analysis of relevant information [13]. However, technology produces these benefits only when it is integrated properly into audit procedures. Masoumi Bilandi et al. identified technological, organizational, educational, and infrastructural barriers that may prevent information technology from being effectively incorporated into internal auditing [14]. Thus, the mediation result suggests that technology itself is not sufficient; its contribution depends on whether it improves the actual quality of audit execution.

The fourth finding showed that audit quality significantly mediated the relationship between professional competence and skills and internal audit effectiveness. This result means that competent auditors improve effectiveness partly because their knowledge, experience, judgment, and professional behavior result in higher-quality audit work. Professional competence enables auditors to design appropriate audit procedures, recognize relevant risks, assess evidence accurately, and report findings clearly. When these capabilities improve audit quality, the internal audit function becomes more capable of achieving its objectives, supporting management, strengthening controls, and contributing to governance.

This result is consistent with Kadim et al., who showed that the professional competence of internal auditors improved the quality of accounting and audit-related outcomes [32]. Monti also emphasized that auditors' professional competencies contribute to improved financial reporting quality [33]. Seifi et al. found that auditor competence and professional ethics were associated with higher financial reporting quality [21]. These studies support the mediating mechanism observed in the present research: competence strengthens the technical and professional quality of audit work, which subsequently increases the effectiveness of internal auditing.

The mediating role of audit quality also demonstrates that competence must be expressed through professional performance. Auditors may possess qualifications or theoretical knowledge, but these characteristics will not necessarily improve effectiveness unless they are applied in planning, testing, evaluation, documentation, and communication. Fabianska emphasized the need to improve professional requirements for auditors to maintain audit quality in changing institutional environments [28]. Lira et al. similarly showed that contemporary accounting and auditing positions require a combination of technical, technological, interpersonal, and problem-solving competencies [24]. Therefore, professional development should focus not only on acquiring knowledge but also on applying that knowledge in ways that produce high-quality audit outcomes.

The significant mediation findings further indicate that audit quality is a central mechanism connecting organizational and human resources to internal audit effectiveness. Information technology provides the tools and data required for more efficient auditing, while professional competence provides the intellectual and behavioral capacity required to use those tools and interpret the resulting evidence. Audit quality integrates these resources by transforming them into rigorous procedures, credible findings, and useful recommendations. This interpretation is consistent with the broader literature indicating that effective internal auditing reduces information asymmetry, improves reporting credibility, and supports organizational accountability [6]. It also aligns with evidence showing that internal audit and accounting information systems can reduce the risk of fraudulent financial reporting [7].

The high explanatory power of the model also shows that internal audit effectiveness is strongly dependent on the interaction among technology, competence, and audit quality. Nevertheless, the findings should not be interpreted as suggesting that these are the only relevant determinants. Independence, organizational support, communication, workload, ethical culture, and managerial commitment may also influence effectiveness. Rezaei found that internal auditor independence was significantly related to audit effectiveness [2]. Momeni et al. showed that role ambiguity can affect auditors' integrity and competence [23]. Lopez and Peters demonstrated that workload compression can reduce audit quality by limiting the time available for audit procedures [29]. Moreover, managerial values and strategic orientations can influence whether organizational systems and professional recommendations are converted into meaningful practices [35]. Therefore, the current model should be viewed as a strong but not exhaustive explanation of internal audit effectiveness.

The findings have particular relevance for governmental and public-sector organizations. These entities operate under extensive accountability requirements and are responsible for protecting public resources. Effective internal auditing can contribute to the prevention of corruption, fraud, and inefficient resource use. Asiedu and Deffor showed that effective internal auditing can assist public-sector organizations in combating corruption [3]. Shohihah et al. likewise demonstrated that internal audit effectiveness has important implications for corruption prevention in governmental institutions [5]. Reskia and Sofie also emphasized the role of internal audit in fraud prevention when combined with organizational commitment and an appropriate anti-fraud culture [8]. Accordingly, improving technological capabilities, auditor competence, and audit quality may have broader consequences for public accountability and institutional trust.

The present study had several limitations. First, the data were collected through a self-report questionnaire, and the responses may therefore have been affected by social desirability, individual perceptions, or respondents' willingness to present their organizations positively. Second, the study was cross-sectional, which limits the ability to establish definitive causal relationships among information technology, professional competence and skills, audit quality, and internal audit effectiveness. Third, the participants were limited to internal auditors working in governmental and public-sector organizations in Yazd Province; therefore, caution is required when generalizing the findings to private companies, other provinces, or different institutional and national contexts. Fourth, the study focused on a limited set of explanatory variables, although factors such as auditor independence, management support, organizational culture, workload, access to resources, and the implementation of audit recommendations may also affect internal audit effectiveness.

Future studies should use longitudinal designs to examine how changes in technological capability, professional development, and audit quality influence internal audit effectiveness over time. Comparative studies could be conducted across governmental, public-sector, and private organizations or across different geographical regions to determine whether the observed relationships vary according to institutional context. Researchers could also incorporate additional mediating or moderating variables, such as management support, organizational culture, auditor independence, professional skepticism, technological readiness, role ambiguity, and workload. Mixed-methods studies combining surveys with interviews, observations, and analyses of audit reports could provide a more comprehensive understanding of how technological and professional resources are translated into effective audit practices. Future research should also distinguish among specific technologies, including data analytics, continuous auditing systems, artificial intelligence, cloud-based systems, and automated control-monitoring tools.

Governmental and public-sector organizations should invest in reliable information systems, integrated databases, audit-management software, and secure access to timely financial and operational data. Internal audit

units should provide continuous professional education in accounting, auditing, data analytics, information-system controls, cybersecurity, risk management, professional judgment, and communication. Recruitment and promotion policies should be based on multidimensional competency frameworks that include technical knowledge, practical experience, ethical conduct, analytical ability, and interpersonal skills. Managers should ensure that technological resources are incorporated into audit planning and fieldwork rather than being used only for routine documentation. Quality-assurance and improvement programs should also be established to evaluate audit procedures, documentation, evidence sufficiency, reporting clarity, and the implementation of recommendations.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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References

- [1] H. Mousavi, "The Necessity of Internal Auditing in Organizations," in *Second National Conference on New Approaches in Management Sciences, Economics, and Accounting*, Mazandaran, 2016.
- [2] M. Rezaei, "Examining the Relationship between Internal Auditor Independence and Audit Effectiveness in Service Organizations," (in English), *Scientific Research Journal of Accounting*, vol. 9, no. 4, pp. 88-104, 2012.
- [3] K. F. Asiedu and E. W. Deffor, "Fighting Corruption by Means of Effective Internal Audit Function: Evidence from the Ghanaian Public Sector," (in English), *International Journal of Auditing*, vol. 21, no. 1, pp. 82-99, 2017, doi: 10.1111/ijau.12082.
- [4] G. Tackie, E. Marfo-Yiadom, and S. Oduro Achina, "Determinants of Internal Audit Effectiveness in Decentralized Local Government Administrative Systems," (in English), *International Journal of Business and Management*, vol. 11, no. 11, p. 184, 2016, doi: 10.5539/ijbm.v11n11p184.
- [5] I. Shohihah, A. Djamhuri, and L. Purwanti, "Determinants of Internal Audit Effectiveness and Implications for Corruption Prevention in the Ministry of Religious Affairs," (in English), *Wacana: Journal of Social and Humanity Studies*, vol. 21, no. 1, pp. 1-14, 2018.
- [6] M. Haghighat Shahrestani, S. Kheradgar, and F. Mohammadi Nodeh, "The Effects of Internal Audit Effectiveness and Financial Reporting Quality on Information Asymmetry between Managers and Auditors," (in English), *Accounting Advances*, vol. 13, no. 1, pp. 101-129, 2021.
- [7] S. Mulyani, E. Kasim, W. Yadiati, and H. Umar, "Influence of Accounting Information Systems and Internal Audit on Fraudulent Financial Reporting," (in English), *Opción*, vol. 35, no. 21, pp. 323-338, 2019.
- [8] R. Reskia and Sofie, "The Effects of Internal Audit, Anti-Fraud Awareness, Organizational Commitment, and Organizational Culture on Fraud Prevention: A Case Study of PT Inti Persada Nusantara," (in English), *Jurnal Ekonomi Trisakti*, vol. 2, no. 2, pp. 419-432, 2022, doi: 10.25105/jet.v2i2.14531.

- [9] I. Pedrosa and C. J. Costa, "Financial Auditing and Surveys: How Are Financial Auditors Using Information Technology? An Approach Using Expert Interviews," in *ACM International Conference Proceeding Series*, 2012, pp. 37-43, doi: 10.1145/2311917.2311925.
- [10] M. Alkebsi and K. A. Aziz, "Information Technology Usage, Top Management Support, and Internal Audit Effectiveness," (in English), *Asian Journal of Accounting and Governance*, vol. 8, no. Special Issue, pp. 123-132, 2017, doi: 10.17576/AJAG-2017-08SI-11.
- [11] K. M. Ramazanovna and A. M. Nurgaliyeva, "Information Technologies as One of the Important Factors in the Development of Internal Audit Effectiveness," (in English), *Bulletin of Karaganda University, Economy Series*, vol. 109, no. 1, pp. 123-131, 2023, doi: 10.31489/2023ec1/123-131.
- [12] K. M. Tanbour, A. I. Nour, and S. M. A. Halawa, "The Impact of Internal Auditing on the Effectiveness of Information Technology Governance in Insurance Companies Listed on the Palestine Exchange," in *Artificial Intelligence and Economic Sustainability in the Era of Industrial Revolution 5.0*. Cham: Springer Nature Switzerland, 2024, pp. 359-377.
- [13] M. Shiri and M. Hamidian, "Analyzing the Effects of Data Analytics, Information Technology, and Internal Controls on Auditors' Professional Judgment," (in English), *Professional Auditing Research*, vol. 5, no. 18, pp. 60-85, 2024.
- [14] Z. Masoumi Bilandi, M. S. Tabatabaiean, and N. Yousefzadeh, "Challenges, Barriers, and Solutions for Integrating Information Technology into Internal Auditing," (in English), *Empirical Studies in Financial Accounting*, vol. 22, no. 87, pp. 1-36, 2025.
- [15] S. Sepasi, H. Etemadi, and M. Shahrabi Farahani, "Examining Internal Auditors' Tendency to Use Continuous Auditing," (in English), *Accounting Knowledge*, vol. 7, no. 27, pp. 63-82, 2016.
- [16] R. Lenz, G. Sarens, and K. D'Silva, "Probing the Discriminatory Power of Characteristics of Internal Audit Functions: Sorting the Wheat from the Chaff," (in English), *International Journal of Auditing*, vol. 18, no. 2, pp. 126-138, 2014, doi: 10.1111/ijau.12017.
- [17] N. Jorjani, A. Vedadi, and D. Gholamzadeh, "Explaining and Presenting a Competency Model for Internal Auditors of the Iran Rural Cooperative Organization: A Qualitative Study," (in English), *Organizational Culture Management*, vol. 19, no. 4, pp. 707-734, 2021.
- [18] N. A. M. Ali, S. Shahimi, and Z. Shafii, "Knowledge, Skills and Characteristics Requirements for Shari'ah Auditors," (in English), *Asian Journal of Accounting and Governance*, vol. 9, pp. 171-185, 2018, doi: 10.17576/AJAG-2018-09-15.
- [19] A. Daryaei and A. Azizi, "The Relationship of Ethics, Experience, and Auditors' Professional Competence with Audit Quality: The Moderating Role of Professional Skepticism," (in English), *Financial Accounting Knowledge*, vol. 5, no. 1, pp. 79-99, 2018.
- [20] A. A. Rezaei Rajani, H. Mohammadi Khoshouei, and A. Mehdad, "Examining the Effects of Auditor Competence, Independence, Integrity, Due Professional Care, and Experience on Audit Quality while Considering Personality Dimensions," (in English), *Promotion of Science*, vol. 15, no. 1, pp. 285-301, 2024.
- [21] S. Seifi, D. Gorjizadeh, and F. Khoshkar, "The Effects of Auditor Competence, Professional Ethics, and Diversity among Auditors Signing Audit Reports on Financial Reporting Quality in the Stock Exchange: The Perspective of Tehran Audit Organization Employees," (in English), *Accounting and Management Perspectives*, vol. 7, no. 88, pp. 43-70, 2024.
- [22] E. Kazempour and Y. Hassas Yeganeh, "The Relationship between Auditors' Skill Levels and Ethical Sensitivity and Judgment," (in English), *Empirical Accounting Research*, vol. 3, no. 4, pp. 53-70, 2013.
- [23] M. Momeni, A. Zabihi, and K. Faghani, "Examining the Effect of Role Ambiguity on Auditors' Integrity and Competence with the Moderating Role of Spiritual Intelligence," (in English), *Biannual Journal of Value and Behavioral Accounting*, vol. 8, no. 15, pp. 175-210, 2023.
- [24] T. Lira, F. Gomes, and N. Musial, "Professional Skills and Competencies Required of Accountants: What Are the Requirements in Employment Advertisements?," (in English), *Revista Catarinense da Ciência Contábil*, vol. 20, pp. 1-26, 2021, doi: 10.16930/2237-7662202132272.
- [25] T. H. D. Nguyen, L. E. Van Luyen, N. Van Hau, D. Tai, and N. T. T. Thao, "Evaluation of Auditors' Professional Skills in Local Auditing Firms in Hanoi," (in English), *The Journal of Asian Finance, Economics and Business*, vol. 7, no. 9, pp. 583-591, 2020, doi: 10.13106/jafeb.2020.vol7.no9.583.
- [26] O. K. Yudin, A. M. Cherniak, V. Y. Artemov, O. V. Matviichuk-Yudina, and V. Y. Ivannikova, "Competence Approach to Academic and Professional Training of Auditors of Information Systems and Technologies," (in English), *Information Technologies and Learning Tools*, vol. 86, no. 6, p. 373, 2021, doi: 10.33407/itlt.v86i6.3983.
- [27] H. Arsar and M. Mohammadi, "Evaluating the Impact of Emerging Information Technologies on the Professional Skills of Internal Auditors," (in English), *Quarterly Journal of Management and Commerce*, vol. 11, no. 1, pp. 20-42, 2014.
- [28] V. Y. Fabiianska, "Improving the Professional Requirements for Auditors in the Context of Independent Audit Reform in Ukraine," (in English), *Business Inform*, no. 7, pp. 189-199, 2020, doi: 10.32983/2222-4459-2020-7-189-199.
- [29] D. M. Lopez and G. F. Peters, "The Effect of Workload Compression on Audit Quality," (in English), *Auditing: A Journal of Practice & Theory*, vol. 31, no. 4, pp. 139-165, 2012, doi: 10.2308/ajpt-10305.

- [30] M. Eisazadeh and S. Aghaei, "Examining the Impact of Information Technology on Internal Audit Quality in Government Organizations," (in English), *Quarterly Journal of Accounting Research*, vol. 12, no. 2, pp. 45-67, 2018.
- [31] G. Soepriyanto, "The Influence of Audit Quality, Information Technology Use, Management Support, and Guideline Application on Internal Audit Effectiveness in Preventing and Detecting Fraud in Hospitals," (in English), *Pakistan Journal of Life & Social Sciences*, vol. 22, no. 2, 2024, doi: 10.57239/PJLSS-2024-22.2.001693.
- [32] J. R. Kadim, Y. M. Sabti, G. Ali, W. A. Khdair, and K. H. Shaltag, "The Impact of the Professional Competence of the Internal Auditor in Improving the Quality of Accounting: An Analytical Study," (in English), *South Asian Journal of Social Sciences and Humanities*, vol. 2, no. 5, pp. 85-99, 2021, doi: 10.48165/sajssh.2021.2506.
- [33] R. Monti, "The Role of Internal Auditors' Professional Competencies in Improving Financial Reporting Quality," (in English), *Financial Management Research*, vol. 5, no. 3, pp. 112-135, 2017.
- [34] D. Setyaningrum and C. Kuntadi, "The Effects of Competence, Independence, Audit Work, and Communication on the Effectiveness of Internal Audit," (in English), *Journal of Economics, Business, & Accountancy Ventura*, vol. 22, no. 1, pp. 39-47, 2019, doi: 10.14414/jebav.v22i1.879.
- [35] J. Jansson, J. Nilsson, F. Modig, and G. Hed Vall, "Commitment to Sustainability in Small and Medium-Sized Enterprises: The Influence of Strategic Orientations and Management Values," (in English), *Business Strategy and the Environment*, vol. 26, no. 1, pp. 69-83, 2017, doi: 10.1002/bse.1901.
- [36] A. Lento and M. Pando, "The Impact of Information Technology on the Effectiveness of Internal Auditing: The Mediating Role of Audit Quality," (in English), *Journal of Accounting and Information Systems*, Advance online publication 2025.