The Impact of Internal Control System and Artificial Intelligence on the Quality of Accounting Information System and the Accuracy of Financial Reporting

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Abstract

This study aimed to investigate the impact of the internal control system and artificial intelligence on the quality of the accounting information system and the accuracy of financial reporting and financial data reporting. The statistical population consisted of all accountants and auditors working in technology-based companies. According to the Morgan Table, a sample of 384 questionnaires was distributed and collected from the statistical population. The collected data were analyzed using SPSS version 24 and AMOS version 24 software through structural equation modeling (SEM). The results of hypothesis testing revealed that the internal control system has a positive and significant effect on the quality of the accounting information system. Artificial intelligence also has a positive and significant effect on the quality of the accounting information system. Furthermore, the internal control system has a positive and significant effect on the accuracy of financial reporting. Artificial intelligence has a positive and significant effect on the accuracy of financial reporting as well. Additionally, the quality of the accounting information system has a positive and significant effect on the accuracy of financial reporting.

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1. Introduction

An effective and integrated system for managing all accounting activities under modern computational technologies is a critical factor in businesses [1]. Technology and innovation must be utilized to achieve progress and improve performance in these businesses. In contexts marked by uncertainty, the development of information technology, rapid scientific advancement, and the complexities of the business environment are among the most significant factors that have emerged from new business standards and diverse economic conditions, leading to intensified local and global competition among firms [2]. Therefore, the accounting profession cannot be considered in isolation from these transformations. At the same time, ignoring such changes would render the accounting profession incapable of responding to stakeholders' needs in the modern business environment. Consequently, the accounting field must remain aware of these shifts and reorganize economic entities accordingly. It must also accompany these transformations and exploit them through the implementation of artificial intelligence (AI) models [3].

Artificial intelligence is rapidly developing. AI, through the creation of computer programs designed to simulate intelligent human behavior and electronically process operations, provides financial data and information to internal and/or external users and contributes to various decision-making processes quickly and in a timely manner.

AI has become an essential component of management tools in companies and a critical resource relied upon for improving administrative and financial operations, supporting decisions, and enhancing performance [3].

Furthermore, AI is a highly significant and unique topic. In light of IT developments and changes in the functions of the accounting profession and governance, the application of AI in its various dimensions (expert systems, neural networks, genetic algorithms, intelligent agents) has become essential to keeping pace with the electronic business requirements in companies. The accounting domain now faces substantial challenges due to scientific advancements, technological evolution, and the emergence of AI techniques. As a result, companies struggle to offer accounting systems aligned with these new technologies, requiring them to develop customized software solutions and train accountants equipped with the necessary competencies. Additionally, companies must maintain and update these programs continuously while fulfilling accountants' material needs, including storage facilities, which are often costly and risky [2].

In the second half of the 20th century, the expansion of IT-based industries increased the economic importance of industrialization. Technology-based businesses increasingly relied on research and development and network relationships rather than physical assets and exclusive connections. In fact, with technological evolution, firms began depending heavily on innovative ideas that are intrinsically linked to science and technology. The advent of the internet, along with computers and technological development, transformed industrial structures and generated new business models. While change is sometimes perceived as disruptive, the broader reality is that organizations tend to adapt to technological advancements, necessitating a reformation of the entire organizational chain [4].

The conceptualization of modern industry has introduced a broad array of fundamental new concepts: (1) smart factories—production structures fully equipped with sensors, actors, and autonomous systems; (2) cyber-physical systems—integrating physical and digital layers; (3) increasingly decentralized production systems; (4) increasingly individualized distribution and logistics; (5) open innovation approaches, product intelligence, and product memory as exceptionally critical to individualized product development; (6) new production systems designed to meet human needs, and vice versa; and (7) sustainability and resource efficiency at the core of industrial process design. Digital transformation goes far beyond improving productivity and efficiency; it also helps achieve specific social and environmental objectives, making sustainability one of the most relevant goals [5, 6].

The digital transformation of society and organizations has produced enormous volumes of data that are growing rapidly and becoming increasingly diverse, making big data even bigger, broader, and faster. It is, therefore, unsurprising that data has become one of the most valuable assets for modern organizations [3, 7]. However, without analytical tools, data holds little or no value. Since AI systems assist organizations in discovering complex patterns and generating automated insights from large datasets, they have gained increasing importance in accounting and business management [8]. Recently, many accounting researchers have analyzed the advances in AI, given its substantial impact on the field of accounting and related disciplines. As a result, there is a growing trend in studies exploring AI. The relationship between AI and accounting—beyond financial robotics—reflects the evolution of the profession, increasingly tied to AI developments. However, current conceptualizations of accounting theory remain far from a consensus in the accounting literature [3-5, 7-13]. Other studies confirm that the quality of accounting information systems (AIS) and, consequently, the quality of financial information are essential for economic decision-making. Hence, empirical evidence in the literature supports the hypothesis that AI is positively associated with the quality of AIS and the quality of internal control systems, both of which are vital for economic decision-making [11].

The reviewed literature underscores the transformative role of artificial intelligence (AI) in enhancing accounting information systems and financial reporting accuracy. Johari (2025) examined how internal control systems and AI mediate the impact of various dimensions of accounting information system (AIS) quality—namely relevance, accuracy, adaptability, and timeliness—on financial reporting precision, using a sample of 566 financial professionals in India and applying partial least squares structural equation modeling [7]. Odonkor et al. (2024) provided a systematic literature review and bibliometric analysis demonstrating AI's profound reshaping of traditional accounting, auditing, and decision-making processes, while also emphasizing challenges such as data privacy, high implementation costs, and workforce readiness [5]. Zare et al. (2024) explored AI's role in enhancing audit quality, identifying the positive influence of auditors' personal traits on internal control strategies when using AI

systems [6]. Tajvidi and Ahmadi (2020) studied IT governance mechanisms and their effect on AIS performance, showing that CIO leadership fosters competitive advantage through system improvement. Finally, Hashemi Kochaksaraei et al. (2020) applied AI-based predictive algorithms, including nonlinear Gaussian processes and rule-based CART, to assess the value of Tehran Stock Exchange-listed firms, finding performance metrics to be stronger predictors of firm value than governance metrics [13]. These studies confirm that AI integration, especially when aligned with robust internal controls and IT governance, significantly enhances the quality and strategic value of accounting systems and financial decision-making.

The rapid evolution of technology—including AI, data analytics, and cloud computing—has significantly influenced the development and application of accounting information systems. These systems, designed to support organizational accounting and financial functions, are increasingly central to enhancing efficiency, accuracy, and decision-making processes. Recent interdisciplinary accounting research emphasizes AIS as central to processing, storing, and reporting financial data while addressing regulatory and operational complexities [11]. Internal controls are considered essential for ensuring data integrity and mitigating risks of fraud and error, which is particularly vital given the increasing reliance on digital platforms [10].

AIS generates essential financial reports and provides insights that enhance organizational transparency and strategic planning. However, as accounting becomes digitalized, reliance on AIS extends beyond routine tasks to include predictive analytics and data-driven decision-making. AIS faces persistent challenges that impact its quality. Issues such as manual data entry errors, outdated software, and insufficient internal controls compromise the accuracy and reliability of financial reports. Additionally, data integration from diverse sources can lead to inconsistencies, posing obstacles to achieving unified data accuracy. Automated processes—including validation checks and machine learning algorithms—offer solutions to mitigate these risks, but their effectiveness depends on robust internal governance and continuous user training. Moreover, regular assessments and updates of AIS are essential to maintaining compliance and security, emphasizing a proactive approach to technology adoption for improved accountability and reporting quality. These discussions, rooted in critical accounting literature, highlight the need for AIS to balance technological innovations with ethical practices, reinforcing their role as enablers of transparency in a digitally transforming environment [7].

The quality of AIS and the accuracy of financial reporting, as foundational elements of economic decision-making, are influenced by multiple factors. Internal control systems play a critical role in enhancing information quality and report reliability by providing frameworks to monitor financial processes, reduce errors, prevent fraud, and increase transparency. However, challenges such as the complexity of financial transactions, human limitations in data processing, and inefficiencies in traditional control mechanisms highlight the need for advanced technologies like AI. AI, with its ability to analyze massive datasets, detect anomalies, and predict financial risks, can complement internal control systems and enhance reporting accuracy. Yet, integrating AI with existing systems introduces challenges, including the need for technical infrastructure, personnel training, and managing cybersecurity risks. This raises the question of how the combination of internal controls and AI can strike a balance between operational efficiency and information integrity, and whether such integration can effectively reduce systematic errors in financial reporting.

2. Methodology

This study is an applied research project, and due to the use of questionnaires for data collection, it falls under the category of descriptive-survey research. Furthermore, based on its objective, this study qualifies as applied research, and based on its method, it is classified as correlational. In this study, data related to the theoretical framework and research background were gathered through a library-based approach. Additionally, data related to the research variables for hypothesis testing were collected using a survey method through questionnaires. The statistical population of the research includes accountants and auditors of technology-based companies utilizing artificial intelligence in Iran. Since the population size is unknown, it was not feasible to collect data from all members of the statistical population; therefore, a sample was selected. For this study, a non-probability convenience sampling method was used. The sample size was determined using the Morgan Table, which, given the undefined population, resulted in a sample size of 384 individuals. Accordingly, 384 questionnaires were distributed and collected from accountants and auditors of AI-using technology firms in Iran.

The primary data collection tool in this research was the questionnaire. A standardized questionnaire was employed to collect the data. Each question included a set of options, from which the respondent had to select one. The options were designed so that each response logically matched the respective question and was distinct from other questions. The questionnaire was designed based on a 5-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree." The questionnaire was distributed in person among respondents and comprised two sections. The first section pertained to demographic characteristics, including age, gender, and educational level. The second section addressed the research variables and included 15 questions. To assess the reliability of the questionnaire, Cronbach's alpha coefficient was calculated using SPSS software. Given that the minimum acceptable reliability coefficient for research questionnaires is 0.70, the results showed that the Cronbach's alpha values for all variables exceeded this threshold. Therefore, it can be claimed that the reliability and validity of the research questionnaire were satisfactory. Table 1 presents the results of the Cronbach's alpha coefficients.

Table 1. Cronbach's Alpha Coefficients

Cronbach's Alpha	Number of Items	Variable
0.875	4	Quality of Accounting Information System
0.738	3	Internal Control System
0.808	4	Artificial Intelligence
0.911	4	Financial Reporting Accuracy
0.945	15	Overall Questionnaire

3. Findings and Results

In this study, both descriptive and inferential statistical methods were used to analyze the data obtained from the sample. Initially, SPSS software was used to describe each variable in terms of statistical indices and tables. Subsequently, for hypothesis testing and generalizing results from the sample to the broader population, the structural equation modeling (SEM) approach was employed using Amos version 24. Table 2 presents the descriptive statistics of the research variables.

Table 2. Descriptive Statistics of Research Variables

Variable	Mean	Std. Deviation	Skewness	Kurtosis	Min	Max	N
Quality of Accounting Information System	3.654	0.711	-0.315	0.635	1.00	5.00	384
Internal Control System	3.347	0.632	-0.155	-0.175	1.00	5.00	384
Artificial Intelligence	3.498	0.687	0.098	0.112	1.00	5.00	384
Financial Reporting Accuracy	3.375	0.623	-0.217	-0.523	1.00	5.00	384

Based on the results in the table, the skewness and kurtosis of all variables fall within the acceptable range of -2 to +2, indicating that the variables are normally distributed.

In this study, the hypotheses were examined using structural equation modeling. To test the hypotheses, the conceptual model of the research was fitted using SEM via Amos version 24. The appropriateness of the model was then evaluated, and if confirmed, the results were used to draw conclusions about the research hypotheses. Prior to model fitting, it was necessary to assess whether the 20 observed indicators (i.e., questionnaire items) could adequately support the overall measurement model through confirmatory factor analysis (CFA). If poor model fit was observed at this stage, it indicated the need to refine the measurement model before examining the structural model with latent variables.

At this stage of the analysis, CFA was conducted to determine the model fit indices, adequacy of factor loadings, standardized residuals, and the variance explained for the observed variables. The following figure illustrates the final measurement model for this study. In this model, both observed and latent variables are labeled accordingly.

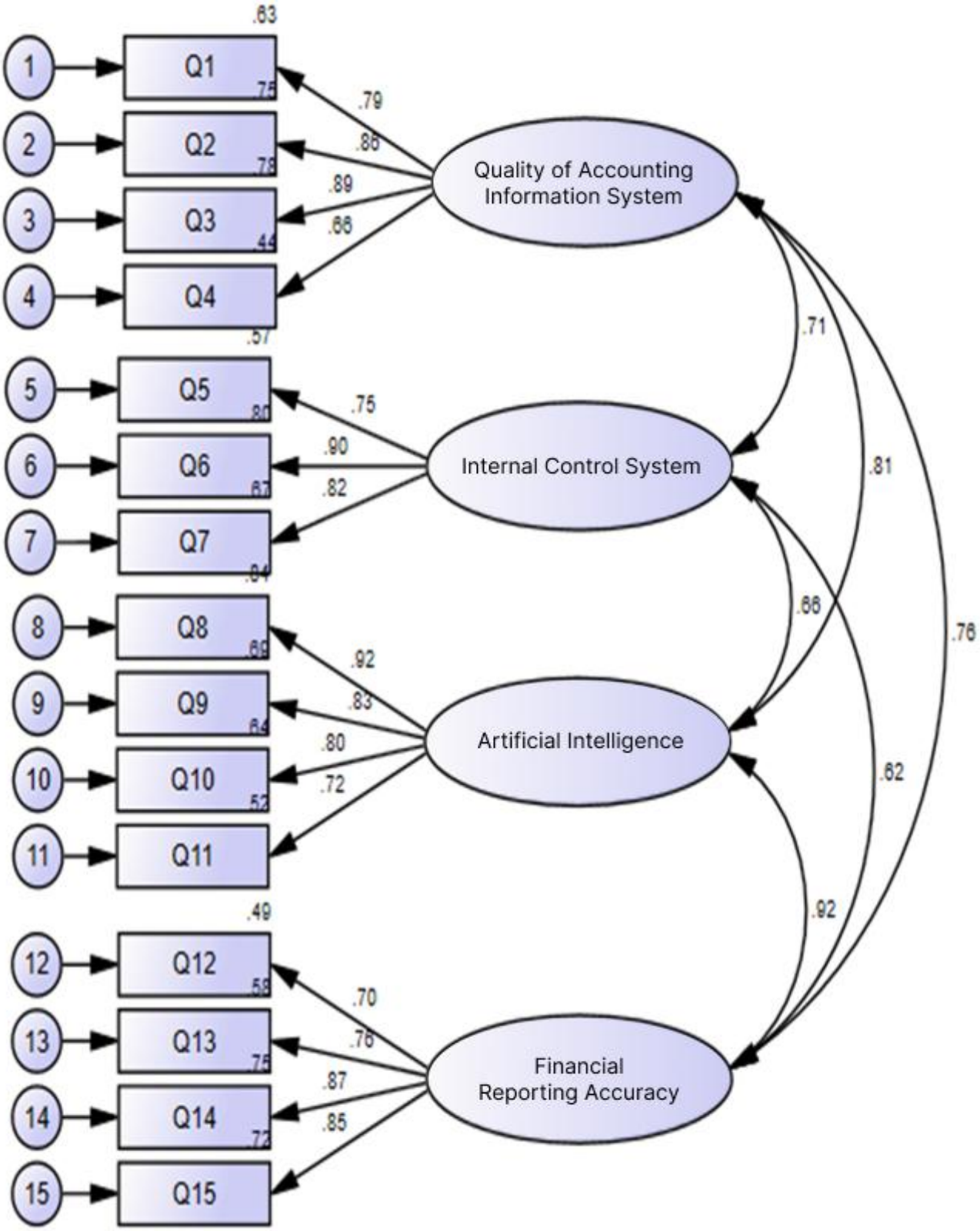

Figure 1. Measurement Model after Modifications

Before testing the hypotheses, it is essential to ensure the validity and accuracy of the measurement models for the

research variables so that structural relationships can be examined afterward. For this purpose, model fit indices are utilized, which are presented in Table 3.

Table 3. Model Fit Indices for the Measurement Model

Model	CMIN/df	GFI	IFI	TLI	CFI	NFI	RMSEA
Main Model	2.919	0.925	0.942	0.986	0.991	0.945	0.011
Acceptable Level	1–5	>0.90	>0.90	>0.90	>0.90	>0.90	<0.08

As shown in the above table, all fit indices fall within acceptable ranges. Therefore, the confirmatory factor analysis (CFA) model is considered to have a good fit with the collected data. In the next stage, the structural model of the research is fitted to test the main hypotheses. This model is presented in Figure 2.

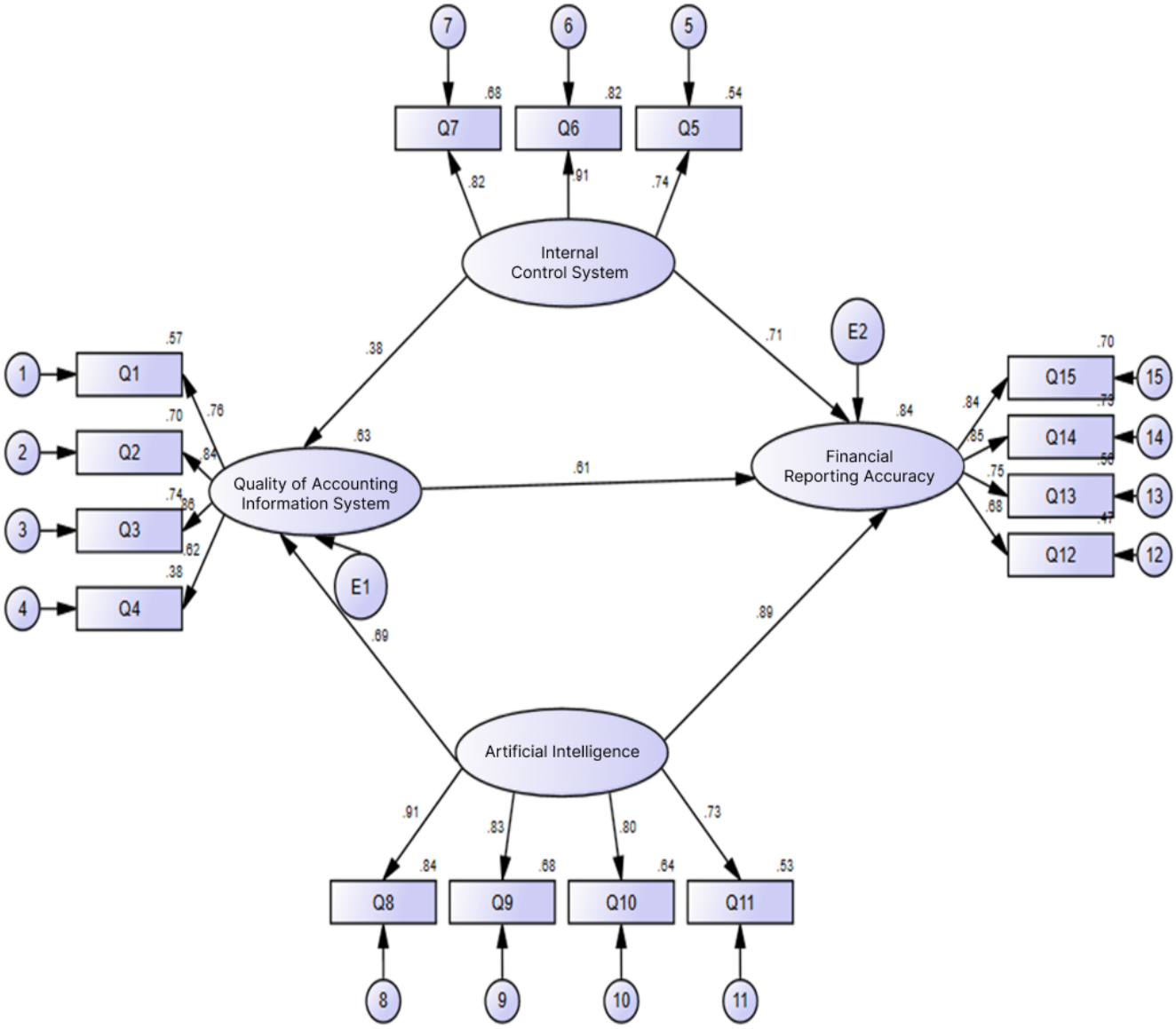

Figure 2. Structural Model of the Research

Based on the results of this model and the coefficients obtained from the structural analysis of the research data, the results of the structural path analysis (i.e., the relationships among latent variables) are presented below.

Table 4. Structural Path Analysis Results

Path	Standardized Coefficient	Standard Error	t-value	p-value
Internal Control System → Quality of Accounting Information System	0.383	0.033	7.614	0.000
Artificial Intelligence → Quality of Accounting Information System	0.694	0.061	9.897	0.000
Internal Control System → Financial Reporting Accuracy	0.612	0.106	5.396	0.000
Artificial Intelligence → Financial Reporting Accuracy	0.711	0.126	6.515	0.000
Quality of Accounting Information System → Financial Reporting Accuracy	0.891	0.109	11.470	0.000

According to the results in Table 4, the effect of the internal control system on the quality of the accounting information system is 0.383, and the p-value obtained (0.000) is less than 0.05. Therefore, the internal control system has a positive and significant effect on the quality of the accounting information system. Thus, at a 95% confidence level, the first hypothesis—stating that the internal control system significantly influences the quality of the accounting information system—is supported.

The effect of artificial intelligence on the quality of the accounting information system is 0.694, and the p-value obtained (0.000) is less than 0.05. Therefore, artificial intelligence has a positive and significant effect on the quality of the accounting information system. Thus, at a 95% confidence level, the second hypothesis—stating that artificial intelligence significantly influences the quality of the accounting information system—is supported.

The effect of the internal control system on financial reporting accuracy is 0.612, and the p-value obtained (0.000) is less than 0.05. Therefore, the internal control system has a positive and significant effect on the accuracy of financial reporting. Thus, at a 95% confidence level, the third hypothesis—stating that the internal control system significantly influences financial reporting accuracy—is supported.

The effect of artificial intelligence on financial reporting accuracy is 0.711, and the p-value obtained (0.000) is less than 0.05. Therefore, artificial intelligence has a positive and significant effect on financial reporting accuracy. Thus, at a 95% confidence level, the fourth hypothesis—stating that artificial intelligence significantly influences financial reporting accuracy—is supported.

The effect of the quality of the accounting information system on financial reporting accuracy is 0.891, and the p-value obtained (0.000) is less than 0.05. Therefore, the quality of the accounting information system has a positive and significant effect on financial reporting accuracy. Thus, at a 95% confidence level, the fifth hypothesis—stating that the quality of the accounting information system significantly influences financial reporting accuracy—is supported.

4. Discussion and Conclusion

Based on the results of the structural analysis, it can be stated that the findings of the present study demonstrate that the internal control system has a positive and significant effect on the quality of the accounting information system. This finding is consistent with recent studies such [7, 12, 14]; for example, the study by Moradi (2024) shows that strengthening internal controls through the use of modern technologies leads to increased accuracy and reliability of accounting data. Strong internal controls reduce errors and fraud, contributing to improved information quality, which ultimately results in more accurate financial reporting [12].

The impact of artificial intelligence on the quality of the accounting information system, with a higher coefficient, highlights the prominent role of intelligent technologies in enhancing accounting processes. This result aligns with recent findings such as the study by Zare et al. (2024), which examined the impact of AI utilization on the quality of financial statement audit processes. Their study indicated that AI, through automation, anomaly detection, and the reduction of human errors, significantly enhances the quality of financial information [6].

The internal control system also has a positive and significant effect on financial reporting accuracy. This result is in line with prior research, such as the report by Hearn (2023), which showed that effective internal controls—particularly in large organizations—improve the reliability of financial reports [10]. Strong internal controls ensure transparency and data integrity and prevent inaccurate financial reporting.

Artificial intelligence also has a significant impact on financial reporting accuracy, which indicates a fundamental transformation in accounting and auditing. Studies such as that by Johari (2025) show that machine learning algorithms and deep neural networks effectively detect errors and fraud,

supporting auditors' artificial intelligence tools in delivering more accurate reports [7].

Ultimately, the quality of the accounting information system, with the strongest coefficient, is the most influential factor on financial reporting accuracy. This finding underscores the critical role of accurate and reliable information systems in ensuring the integrity of financial reports. Similar studies, such as that by Johari (2025), have also shown that improving the quality of information systems—particularly through the use of modern technologies—leads to increased accuracy and transparency in financial reporting [7].

Overall, these findings indicate that a combination of a robust internal control system and the application of artificial intelligence can significantly enhance the quality and accuracy of financial reporting. These results are aligned with Abbas (2025), who emphasized the global trend toward the use of advanced technologies in accounting and auditing and highlighted the need for investment in these areas [14]. Given the importance of these factors, organizations must prioritize the development of technological infrastructure and the strengthening of internal control systems to leverage the benefits of artificial intelligence in improving accounting information quality and financial reporting accuracy. Additionally, the training and adoption of new technologies by staff are key elements for the successful implementation of this transformation.

Considering the study's results, which indicate the positive and significant impact of internal control systems and artificial intelligence on the quality of accounting information systems and financial reporting accuracy, several practical recommendations are proposed for organizations and financial institutions.

First, organizations should pay particular attention to strengthening and improving their internal control systems. This can be achieved through the design of more precise control processes, continuous employee training in internal controls, and the use of modern technologies for ongoing monitoring and evaluation of control mechanisms. Enhancing internal controls will improve the quality of accounting data and reduce errors and fraud, ultimately leading to more accurate financial reports.

Second, leveraging artificial intelligence should be considered a strategic priority in accounting information systems. Organizations can invest in the development and implementation of intelligent tools such as machine learning, big data analytics, and anomaly detection algorithms to improve the quality of accounting information. These technologies not only increase accuracy but also enhance information processing speed and error detection, thereby boosting stakeholder trust in financial reports.

Finally, attention to the overall quality of the accounting information system—as a foundation for accurate financial reporting—is essential. Organizations should optimize data collection, processing, and storage procedures and adopt global standards in the design of financial information systems. Continuous training for system users and the establishment of feedback mechanisms and continuous improvement frameworks will support the maintenance and enhancement of accounting information system quality, thereby ensuring the accuracy and reliability of financial reports.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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

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