

Designing a Model of Auditors' Perceptions Regarding the Adoption of Emerging Technologies from the Perspective of Members of the Iranian Association of Certified Public Accountants

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ABSTRACT

The present study aimed to design a model of auditors' perceptions regarding the adoption of emerging technologies from the perspective of members of the Iranian Association of Certified Public Accountants. In this regard, the main research question was formulated as follows: How can a model of auditors' perceptions regarding the adoption of emerging technologies be designed from the perspective of members of the Iranian Association of Certified Public Accountants? To answer the research question, a mixed-methods approach incorporating both qualitative and quantitative methods was employed. Research data were collected through interviews. The statistical population consisted of experts, university faculty members, and specialists in the field of accounting with no predetermined limit, among whom 23 participants were selected until theoretical saturation was achieved. The sampling method was snowball sampling, and the primary data were collected through interviews. The findings indicated that four categories emerged as the core categories, including technological health and efficiency, the relationship between technology and auditing standards, organizational culture within the accounting community, and the level of organizational support and collaboration. The remaining categories were classified into five groups for the presentation of the conceptual model, including causal conditions (4 categories), contextual conditions (4 categories), intervening conditions (4 categories), strategies (4 categories), and consequences (4 categories). Subsequently, based on the indicators, dimensions, concepts, and categories of the proposed model, a 96-item questionnaire was developed. Based on the collected data, the relationships within the proposed model were examined, and the results ultimately demonstrated the significance of the relationships and components of the proposed model.

Keywords: Auditors' perceptions, adoption of emerging technologies, members of the Iranian Association of Certified Public Accountants.

Introduction

The rapid advancement of emerging technologies has fundamentally transformed the operational, strategic, and decision-making structures of organizations across various industries. In recent years, digital transformation has become one of the central drivers of organizational competitiveness, operational efficiency, and sustainable development. Technologies such as artificial intelligence, blockchain, machine learning, big data analytics, cloud computing, robotic process automation, and intelligent information systems have altered traditional organizational



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processes and significantly affected managerial and professional practices (1, 2). Within this evolving environment, the accounting and auditing profession has also experienced substantial changes, as traditional auditing procedures are increasingly being replaced or supplemented by automated and technology-based systems (3, 4). The emergence of advanced digital infrastructures has created new opportunities for improving audit quality, increasing transparency, enhancing risk assessment, and accelerating data processing capabilities (5, 6). Consequently, understanding auditors' perceptions regarding the acceptance and utilization of emerging technologies has become an important area of inquiry in contemporary auditing research.

Technological transformation in auditing is not limited to operational automation; rather, it involves a broader restructuring of professional judgment, audit evidence evaluation, fraud detection, internal control assessment, and risk management processes (7, 8). Artificial intelligence technologies are capable of analyzing large volumes of financial data in real time and identifying anomalies that may remain undetected under traditional audit approaches (6, 9). Similarly, blockchain technology has introduced decentralized and immutable accounting records that can improve transparency, security, and traceability of financial transactions (10, 11). Studies have indicated that the integration of blockchain within accounting and auditing environments can reduce information asymmetry and improve trust in financial reporting systems (12). Furthermore, machine learning and intelligent analytical systems can improve predictive auditing models and enhance auditors' ability to identify financial risks and irregularities (13). Such developments demonstrate that the auditing profession is entering a new technological era that requires adaptation at both organizational and individual levels.

Despite the advantages associated with emerging technologies, the adoption and implementation of these technologies within auditing environments remain highly dependent on auditors' perceptions, attitudes, and behavioral intentions (14, 15). Technology acceptance theories suggest that individuals' willingness to adopt new technologies is influenced by factors such as perceived usefulness, perceived ease of use, organizational support, social influence, and trust in technological systems (1, 14). The Technology Acceptance Model has been extensively employed to explain the behavioral intentions of users toward technological systems and has demonstrated considerable explanatory power in accounting and auditing contexts (2, 16). Research has shown that auditors are more likely to adopt emerging technologies when they perceive such technologies as capable of improving audit efficiency, reducing workload, increasing accuracy, and supporting professional judgment (17, 18). However, resistance to technological change, concerns regarding reliability, lack of technical knowledge, and uncertainty about professional implications may reduce auditors' willingness to embrace technological innovation (19, 20).

Auditors' perceptions are shaped not only by technological characteristics but also by cognitive, psychological, environmental, and organizational factors. Cognitive theories emphasize that professional judgment and decision-making are influenced by mental processes, prior experiences, and perceptual biases (21, 22). Auditing, as a profession heavily reliant on analytical reasoning and judgment, is particularly vulnerable to cognitive influences during the evaluation of evidence and assessment of financial information (23, 24). Emerging technologies may alter the cognitive structure of auditing tasks by changing the nature of information processing and reducing manual intervention in audit procedures (22). At the same time, technological complexity may create uncertainty and anxiety among auditors, especially when individuals lack sufficient technological literacy or perceive technology as a threat to professional autonomy (20). Therefore, understanding auditors' perceptions requires attention to both cognitive dimensions and technological determinants.

Environmental and organizational contexts also play a critical role in shaping technology acceptance within auditing institutions. Organizational culture, management support, professional norms, regulatory structures, and institutional readiness significantly influence the successful implementation of technological innovations (19, 24). Organizations characterized by innovation-oriented cultures and supportive managerial structures are generally more successful in facilitating technology adoption among employees (25). Conversely, rigid professional structures, resistance to change, and lack of strategic technological planning may hinder digital transformation initiatives in auditing environments (4, 26). Furthermore, legal and regulatory frameworks may either facilitate or constrain technological adoption depending on the degree to which auditing standards and professional regulations support technological integration (7, 27). In highly regulated professions such as auditing, concerns regarding compliance, accountability, cybersecurity, and ethical implications often influence professionals' perceptions toward emerging technologies.

Recent empirical evidence indicates that artificial intelligence and automation technologies can improve audit quality and efficiency when effectively integrated into auditing processes (6, 18). AI-driven systems can automate repetitive audit tasks, reduce human error, and provide real-time analytical insights that enhance audit reliability (8, 28). Moreover, technology-enabled auditing approaches have been associated with enhanced fraud detection capabilities and more effective risk assessment mechanisms (26, 29). Nevertheless, the successful implementation of such technologies depends largely on auditors' trust in automated systems and their perceptions regarding the compatibility of technology with professional standards and ethical requirements (24, 30). Some auditors may perceive artificial intelligence as a tool for augmenting professional performance, whereas others may interpret it as a disruptive force threatening professional expertise and job security (9, 17). This divergence highlights the importance of investigating auditors' perceptions in technology-oriented auditing environments.

The integration of blockchain technology into accounting systems has also attracted considerable scholarly attention in recent years. Blockchain provides a decentralized and immutable ledger structure capable of enhancing data integrity, transaction verification, and transparency in financial reporting (10, 11). Researchers have argued that blockchain-based auditing systems may reduce the need for traditional audit sampling procedures by enabling continuous auditing and real-time verification of transactions (12). Furthermore, blockchain technology can strengthen trust between stakeholders by reducing opportunities for financial manipulation and fraud (30). However, the implementation of blockchain in auditing requires auditors to acquire new technical competencies and adapt to digitally driven professional practices (29). Lack of technological expertise and insufficient training remain among the most important barriers to blockchain adoption within accounting and auditing professions (27, 31).

Another important issue concerns the relationship between technological transformation and audit quality. Several studies have suggested that technology adoption can positively influence audit quality by improving analytical precision, increasing transparency, and strengthening internal control mechanisms (32, 33). Emerging technologies facilitate the processing of large-scale financial data and enable auditors to conduct more comprehensive examinations of organizational transactions (6). Moreover, digital auditing systems can improve audit documentation, evidence collection, and communication processes between auditors and clients (26). However, concerns remain regarding overreliance on automated systems, algorithmic biases, and reduced professional skepticism among auditors using advanced technological tools (20, 22). These concerns underscore the necessity of balancing technological efficiency with professional judgment and ethical accountability.

The auditing profession in developing countries faces additional challenges regarding technological adoption due to infrastructural limitations, insufficient digital readiness, and lack of specialized training programs (9, 15). In Iran, the accounting and auditing profession has gradually moved toward digital transformation; however, several organizational, cultural, and regulatory barriers continue to affect the acceptance of emerging technologies among auditors (4, 5). Although previous studies have examined technology acceptance and the role of emerging technologies in accounting and auditing processes, limited research has focused specifically on designing a comprehensive model of auditors' perceptions regarding emerging technology adoption within the context of the Iranian Association of Certified Public Accountants (15, 17). Existing studies have often concentrated on isolated technological dimensions without integrating cognitive, organizational, contextual, and professional factors into a coherent conceptual framework (1, 14). Therefore, a comprehensive and context-specific investigation is necessary to identify the causal conditions, contextual factors, intervening variables, strategic dimensions, and consequences associated with auditors' perceptions of emerging technology adoption.

Accordingly, the present study aims to design a model of auditors' perceptions regarding the adoption of emerging technologies from the perspective of members of the Iranian Association of Certified Public Accountants.

Methods and Materials

In terms of purpose, the present study is classified as an applied research study. Regarding data collection and analytical approach, the study employed an exploratory mixed-methods design (qualitative followed by quantitative). Based on the nature and type of investigation, the study was conducted as a cross-sectional survey.

The statistical population of the present study consisted of two sections as follows:

The first section included university faculty members and experts in the field under investigation, namely auditors' perceptions regarding the adoption of emerging technologies. A minimum of 15 and a maximum of 30 experts and specialists were considered sufficient.

The second section consisted of members of the Iranian Association of Certified Public Accountants.

Statistical Sample

In the first section, the snowball sampling method was employed to determine the sample size.

In the second section, due to the extensive nature of the target population and in order to determine the minimum required sample size, Cochran's second formula was utilized. Accordingly, the required sample size was determined to be 385 participants. Furthermore, due to the homogeneity of the members, simple random sampling was employed.

Table 1. Types of Data Used in the Present Study

Row	Type of Data	Frequency
1	In-depth interviews with accounting professors	12
2	In-depth interviews with specialists proficient in the field of accounting	11

Considering that the objective of the present study was to design a model of auditors' perceptions regarding the adoption of emerging technologies from the perspective of members of the Iranian Association of Certified Public Accountants, both library-based and field research methods were employed for data collection. Given the nature of the data collection process, two types of instruments were utilized, namely document analysis and questionnaires. In the document analysis stage, library resources, scholarly articles, relevant books, and online information resources were used to collect information related to the theoretical foundations and literature of the research topic.

For data analysis, thematic analysis was applied in the qualitative section using the MAXQDA software, while structural equation modeling was employed in the quantitative section using SmartPLS software.

Findings and Results

Table 2 presents the descriptive statistics of the variables, including causal conditions, the core category, strategies, contextual conditions, intervening conditions, and consequences.

Table 2. Overall Statistics of the Research Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Causal Conditions	4.24	0.46	3.00	5.00
Core Category	4.10	0.49	3.00	5.00
Strategies	4.21	0.48	1.00	5.00
Contextual Conditions	3.20	0.77	3.00	5.00
Intervening Conditions	3.19	0.83	1.00	5.00
Consequences	3.99	0.52	2.00	5.00

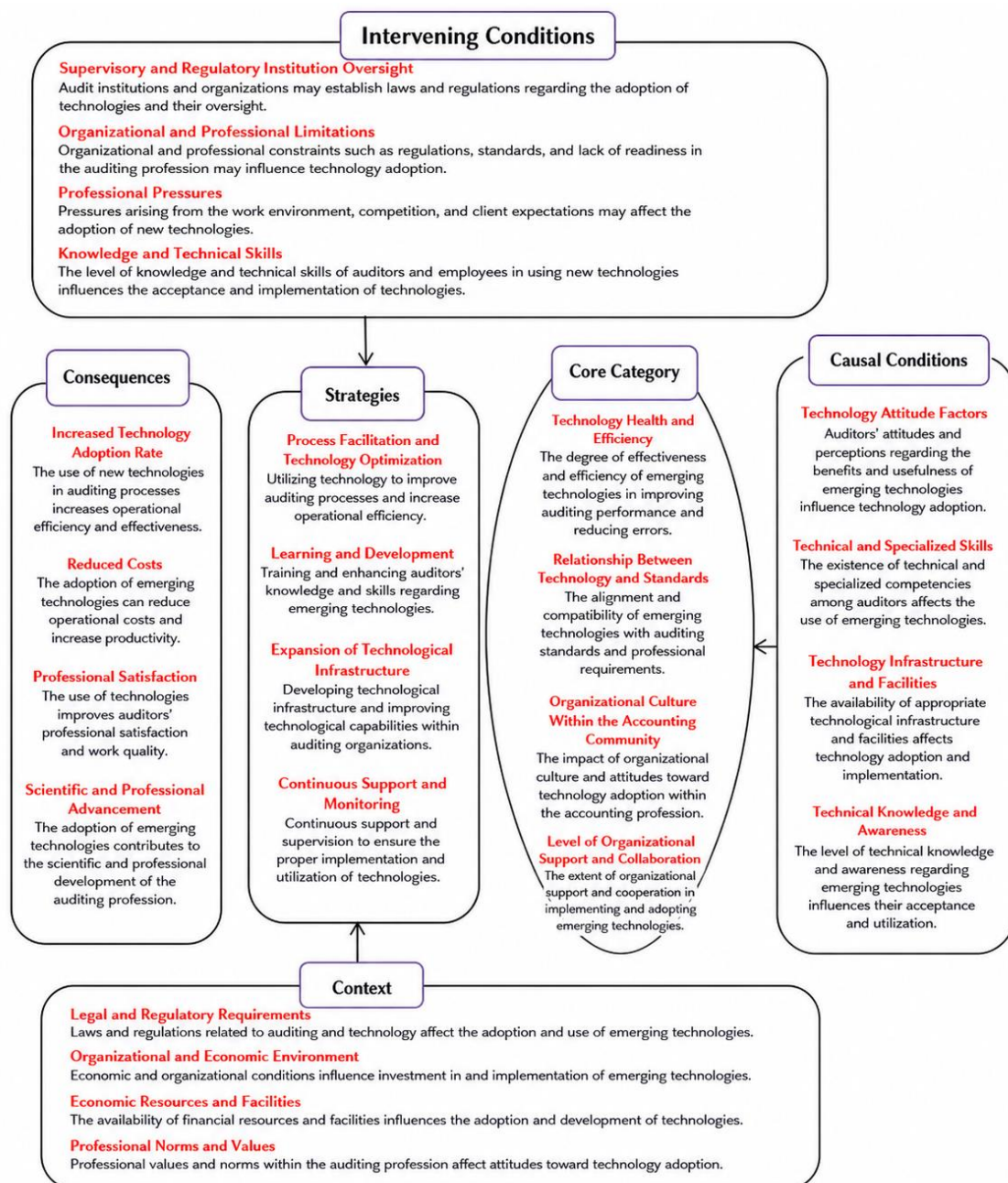


Figure 1. Designing a Model of Auditors' Perceptions Regarding the Adoption of Emerging Technologies from the Perspective of Members of the Iranian Association of Certified Public Accountants

Figure 2 presents the standardized estimation output of the structural equation model for the conceptual model of the study.

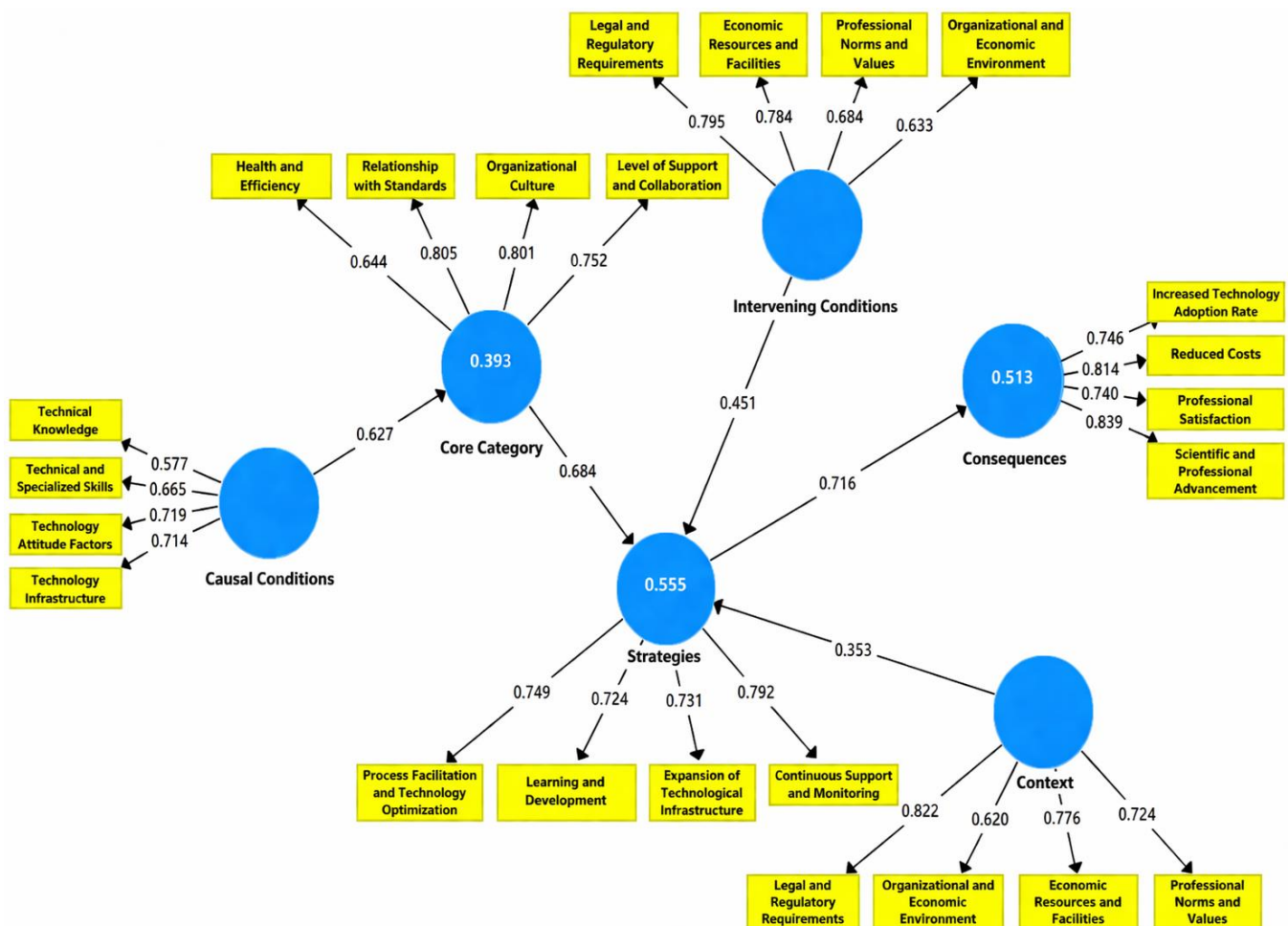


Figure 2. Structural Model in the Standardized Estimation State

It should be noted that Figure 2 illustrates the path coefficients among all variables and categories. The highest path coefficient among the causal conditions was related to technology attitude factors, with a value of 71%, while the lowest path coefficient among the causal conditions was associated with technical knowledge, with a value of 57%.

Furthermore, the highest path coefficient for the core category was related to the technology relationship component, with a value of 80%, whereas the lowest coefficient was related to health and efficiency factors, with a value of 64%.

In addition, the highest path coefficient among the intervening conditions was related to institutional supervision factors, with a value of 82%, while the lowest path coefficient among the intervening conditions was related to professional pressures, with a value of 62%.

Regarding contextual conditions, the highest path coefficient was associated with legal requirements, with a value of 79%, whereas the lowest path coefficient was related to economic and infrastructural factors, with a value of 63%.

Among the strategic factors, the highest path coefficient was related to process facilitation factors, with a value of 0.79, while the lowest path coefficient was related to learning and development factors, with a value of 72%.

The highest and lowest path coefficients among the consequences were respectively associated with scientific advancement and professional satisfaction, with values of 83% and 74%.

It should also be noted that the relationships among the research variables indicated that causal conditions exerted a 62% effect on the core category, and the core category, in turn, exerted a 68% effect on strategies. Furthermore, the path coefficient of strategic factors on consequences was equal to 0.71.

Overall, the path coefficient of intervening conditions on consequences was equal to 35%, while the path coefficient of contextual conditions on consequences was generally equal to 45%.

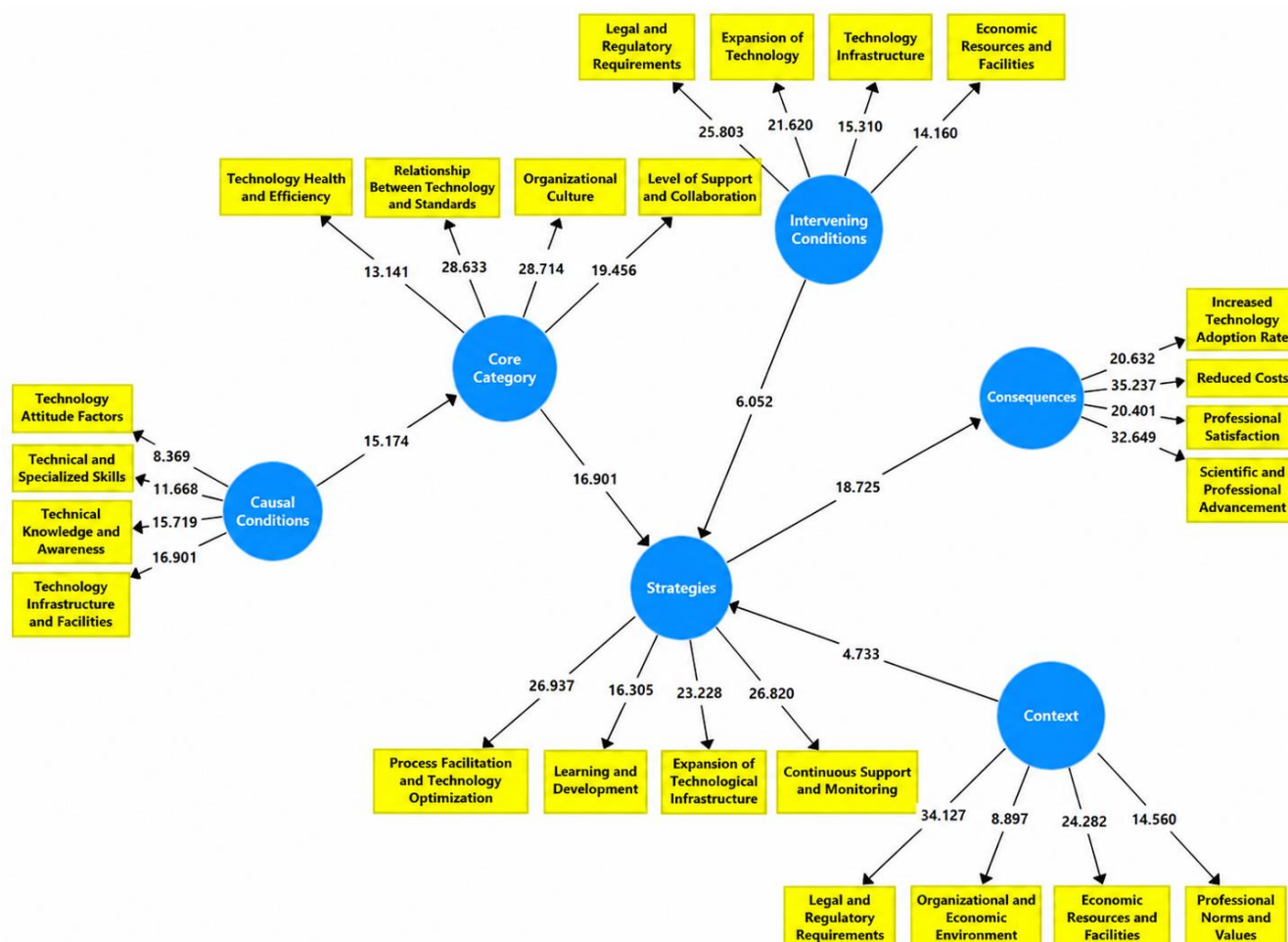


Figure 3. Structural Model in the Significance Coefficients State

According to the results of the confirmatory factor analysis presented in the structural model under the standardized estimation state (Figure 2) and the structural model under the significance coefficients state (Figure 3), all significance values of the model parameters exceeded 1.96. Therefore, the overall results of the confirmatory factor analysis indicate the overall fitness of the proposed model with the observed data and confirm the acceptable fit of the measurement model.

Discussion and Conclusion

The rapid advancement of emerging technologies has fundamentally transformed the operational, strategic, and decision-making structures of organizations across various industries. In recent years, digital transformation has become one of the central drivers of organizational competitiveness, operational efficiency, and sustainable development. Technologies such as artificial intelligence, blockchain, machine learning, big data analytics, cloud computing, robotic process automation, and intelligent information systems have altered traditional organizational

processes and significantly affected managerial and professional practices (1, 2). Within this evolving environment, the accounting and auditing profession has also experienced substantial changes, as traditional auditing procedures are increasingly being replaced or supplemented by automated and technology-based systems (3, 4). The emergence of advanced digital infrastructures has created new opportunities for improving audit quality, increasing transparency, enhancing risk assessment, and accelerating data processing capabilities (5, 6). Consequently, understanding auditors' perceptions regarding the acceptance and utilization of emerging technologies has become an important area of inquiry in contemporary auditing research.

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adhering above given citation style guideline, write the discussion section for this article reporting the results and then explaining the results using aligning studies and support the results with previous studies. use given reference list for it. do in-text citation. . Then, three paragraphs: 1) limitations 2) suggestions for future research 3) suggestions for practice (no citations). (it should be about 1500 words)

Discussion

The findings of the present study demonstrated that auditors' perceptions regarding the adoption of emerging technologies are shaped through a complex interaction of causal conditions, contextual factors, intervening variables, strategic mechanisms, and organizational consequences. The results revealed that technology attitude factors, technical and specialized skills, technological infrastructure, and technical knowledge significantly influenced the core category of auditors' perceptions toward emerging technologies. These findings indicate that auditors' willingness to accept technological innovations is strongly associated with their cognitive readiness, technological literacy, and professional confidence in using digital systems. This result is consistent with the assumptions of technology acceptance theories, which emphasize the importance of perceived usefulness and perceived ease of use in shaping behavioral intention toward technology adoption (1, 14). Similarly, the findings align with the results reported by (15), who concluded that auditors' technological competencies and positive attitudes significantly influence their acceptance of information technologies in auditing environments. The results also support the argument presented by (2) that organizational digital transformation depends heavily on users' psychological acceptance of technological systems.

The study further showed that the relationship between technology and auditing standards emerged as one of the strongest components of the core category. This finding suggests that auditors are more likely to adopt emerging technologies when such technologies are perceived as compatible with professional standards, ethical principles, and regulatory frameworks. In highly regulated professions such as auditing, professional legitimacy plays a central role in shaping attitudes toward innovation. Technologies that are perceived as inconsistent with auditing standards may generate skepticism and resistance among practitioners. This finding is consistent with the conclusions of (7), who argued that adaptive audit structures based on emerging technologies require alignment with professional auditing frameworks and institutional regulations. Likewise, (5) emphasized that the successful implementation of

new technologies in audit information systems depends on the degree of compatibility between technological innovations and financial reporting standards. The present findings also support the view of (27), who highlighted regulatory and compliance challenges as major determinants of AI integration within financial services and auditing systems.

Another important finding of the study was the significant role of organizational culture within the accounting community and organizational support in shaping auditors' perceptions toward emerging technologies. The results demonstrated that supportive organizational environments and collaborative professional cultures positively influence technology acceptance among auditors. These findings confirm that technology adoption is not merely an individual-level phenomenon but also an organizational and institutional process. Organizations characterized by flexible structures, innovation-oriented cultures, and managerial support are more capable of facilitating digital transformation processes. This result aligns with the findings of (25), who found that customer-oriented digital transformation models require supportive organizational environments and adaptive cultural structures. Furthermore, the findings support the arguments of (19), who identified organizational culture as a critical barrier or facilitator in the acceptance of new technologies within professional organizations. Similar conclusions were reported by (24), who emphasized the influence of environmental and organizational factors on auditors' professional decision-making processes.

The results also revealed that intervening conditions, including institutional oversight, organizational limitations, professional pressures, and knowledge-related factors, significantly affected the strategic dimensions of technology adoption. Among these factors, institutional supervision exhibited the strongest influence, suggesting that external regulatory institutions and professional monitoring bodies play a decisive role in directing technological change within the auditing profession. This finding reflects the highly regulated nature of auditing activities, where auditors' professional behavior is substantially influenced by regulatory expectations and compliance requirements. The result corresponds with the findings of (8), who argued that artificial intelligence-driven governance systems require continuous monitoring and regulatory adaptation to ensure effective compliance and risk management. In addition, the findings support the perspective of (28), who emphasized that technological transformation within corporate control systems depends heavily on governance structures and supervisory mechanisms.

The significant influence of professional pressures on technology adoption also reflects the changing expectations within the auditing profession. Competitive environments, client demands, and market expectations increasingly encourage auditors to adopt advanced technological tools to improve efficiency and service quality. This finding is consistent with the arguments of (6), who reported that the adoption of artificial intelligence technologies by audit firms enhances audit efficiency and operational performance. Likewise, (18) found that auditors generally perceive artificial intelligence as a valuable tool for improving audit quality and increasing professional competitiveness. The current findings further support the conclusions of (17), who emphasized that auditors' perceptions of artificial intelligence significantly influence the perceived quality and effectiveness of audit activities.

The findings related to contextual conditions demonstrated that legal requirements, organizational and economic environments, economic resources, and professional norms significantly affect technology adoption strategies and outcomes. Among these factors, legal requirements exhibited the strongest path coefficient, indicating that the existence of supportive legal and regulatory frameworks is essential for the successful integration of emerging technologies into auditing systems. This finding highlights the importance of institutional legitimacy in technological

transformation processes. Auditors tend to perceive technologies more positively when legal infrastructures clearly define the responsibilities, limitations, and standards associated with technological utilization. This result aligns with the findings of (30), who emphasized that regulatory support is a major determinant of blockchain-based financial technology adoption. Similarly, (11) argued that blockchain integration within accounting and auditing practices requires substantial legal and institutional adaptation to address transparency, accountability, and data security concerns.

The study further demonstrated that strategic factors such as process facilitation, learning and development, technological infrastructure expansion, and continuous support significantly influence the consequences of technology adoption. Among these strategies, process facilitation had the strongest effect, suggesting that auditors value technologies that simplify auditing procedures, reduce operational complexity, and improve efficiency. This finding supports the argument proposed by (3), who explained that the automation of audit processes fundamentally transforms the nature of auditing by increasing operational speed and reducing repetitive manual tasks. Furthermore, the findings are consistent with (4), who described digital transformation in accounting and auditing as a process aimed at enhancing organizational efficiency, improving analytical accuracy, and facilitating professional operations through technological innovation.

The significant role of learning and development strategies also indicates that technological transformation in auditing requires continuous professional education and skill enhancement. Auditors who possess higher levels of technological literacy are more likely to develop positive perceptions regarding emerging technologies and integrate such technologies into their professional activities. This finding aligns with the perspective of (31), who emphasized the transformative role of emerging technologies in future educational and professional processes. Likewise, (34) argued that accounting education and professional development systems must evolve continuously to keep pace with rapid technological advancements within the auditing profession. The current findings also support the conclusions of (22), who highlighted the relationship between cognitive adaptation and effective technological integration within professional auditing environments.

The consequences identified in the present study included increased technology adoption rates, reduced operational costs, enhanced professional satisfaction, and scientific and professional advancement. Among these consequences, scientific and professional advancement demonstrated the strongest effect, indicating that auditors perceive emerging technologies as mechanisms for professional growth and modernization. This finding reflects the broader transformation occurring within the auditing profession, where technological competence increasingly constitutes an essential component of professional expertise. The findings correspond with the results of (29), who identified emerging technologies as central drivers of future auditing development. Similarly, (26) concluded that technology-driven internal auditing models significantly improve organizational performance and auditing effectiveness.

The finding regarding reduced operational costs is also important because it demonstrates that auditors perceive technological innovation not only as a professional necessity but also as an economic advantage. Technologies such as artificial intelligence and blockchain can reduce manual processing costs, improve data accuracy, and optimize audit procedures through automation and real-time analysis (10, 12). Moreover, the positive relationship between technology adoption and professional satisfaction suggests that auditors who effectively utilize emerging technologies may experience higher levels of confidence, efficiency, and occupational fulfillment. This result aligns

with the findings of (32) and (33), who emphasized that technological advancement contributes to audit quality enhancement and improved professional performance.

Overall, the findings of the present study indicate that auditors' perceptions regarding the adoption of emerging technologies are multidimensional and influenced by cognitive, organizational, technological, environmental, and professional factors. The results confirm that successful technological transformation in auditing requires more than technological availability; it also requires supportive organizational cultures, adaptive legal structures, professional education, institutional supervision, and strategic technological planning. Furthermore, the study demonstrates that auditors' perceptions play a critical mediating role in determining the effectiveness of digital transformation initiatives within the auditing profession.

One of the limitations of the present study was its reliance on self-reported perceptions collected through interviews and questionnaires, which may have been influenced by subjective interpretations and individual biases. In addition, the study focused specifically on members of the Iranian Association of Certified Public Accountants, which may limit the generalizability of the findings to other professional or international auditing contexts. Another limitation was the cross-sectional nature of the study, which prevented the investigation of changes in auditors' perceptions over time as technologies evolve and organizational adaptation increases.

Future studies are recommended to examine auditors' perceptions regarding specific technologies such as blockchain auditing systems, artificial intelligence-based fraud detection, robotic process automation, and cloud auditing platforms separately in order to identify technology-specific determinants of acceptance. Researchers are also encouraged to conduct comparative studies between public and private auditing institutions or between different countries to investigate the influence of cultural and regulatory differences on technology adoption. Longitudinal studies could further provide deeper insights into the evolution of auditors' perceptions during ongoing digital transformation processes.

From a practical perspective, auditing institutions should invest in continuous technological training programs to improve auditors' digital literacy and professional confidence in using emerging technologies. Professional associations and regulatory organizations should also develop clear legal and ethical frameworks regarding the implementation of artificial intelligence and blockchain technologies in auditing practices. Furthermore, organizational managers should create supportive and innovation-oriented environments that encourage auditors to participate actively in technological transformation initiatives while reducing resistance to change and increasing collaborative learning opportunities.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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