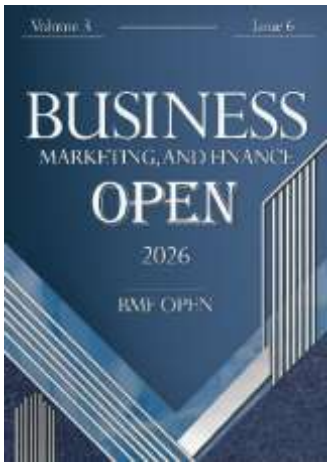
A Model for the Adaptability of Independent Auditors

Ghazaleh Abedini[1], Roya Darabi [2,*] and Shahrzad Seraj [3]

[1] Department of Accounting, ST.C., Islamic Azad University, Tehran, Iran;
[2] Department of Accounting, ST.C., Islamic Azad University, Tehran, Iran;
[3] Department of Accounting, ST.C., Islamic Azad University, Tehran, Iran;

* Correspondence: royadarabi@iau.ac.ir



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Abstract: The importance of auditors' occupational adaptability is reflected in the fact that without adaptable and satisfied auditors, neither audit quality can be achieved, nor investor confidence maintained, nor the auditing profession sustained in the future. Modern auditing requires continuous learning of data mining tools, artificial intelligence, and advanced software applications. Auditors with high levels of occupational adaptability are more likely to embrace technological changes, demonstrate greater creativity and innovation in performing tasks, and welcome automation opportunities to reduce repetitive work. Given the importance of this issue, the present study aimed to develop a model for the adaptability of independent auditors. In terms of methodology, this study was exploratory in nature, and the information collection tools included the review of theoretical foundations, models, documents, records, and related materials. Data collection was conducted through in-depth semi-structured interviews. The subject domain of this study falls within the field of financial accounting. This research was conducted in 2025, and the geographical scope of the study included the Audit Organization of Iran. The study population consisted of 19 experts related to the research topic who possessed auditing expertise. Based on the interviews conducted with these experts, 19 components were identified. The findings of the study resulted in the development of a comprehensive model and the identification of dimensions and components influencing auditors' occupational adaptability. These findings were derived through theoretical studies, synthesis of expert opinions in the auditing field, analysis of the views of the statistical population, and consultation with other specialists in fields related to the research.

Keywords: Occupational adaptability, independent auditors, Audit Organization of Iran.

1. Introduction

The auditing profession has undergone profound transformations in recent decades due to rapid technological developments, increasing regulatory complexity, expansion of financial markets, and the growing expectations of stakeholders regarding transparency and accountability. Traditional auditing approaches that were primarily based on manual procedures and conventional sampling methods are gradually being replaced by technology-oriented auditing systems relying on big data analytics, artificial intelligence, blockchain technologies, cloud computing, and intelligent decision-support systems [1, 2]. These transformations have fundamentally altered the nature of auditors' professional responsibilities and have created new competencies and behavioral expectations for auditors operating in increasingly dynamic and uncertain business environments. In such circumstances, occupational adaptability has emerged as one of the most critical capabilities required for independent auditors, enabling them

to effectively respond to technological, structural, legal, and organizational changes while maintaining professional performance and audit quality [3, 4].

Occupational adaptability refers to an individual's capability to successfully adjust to environmental changes, evolving work conditions, technological innovations, and emerging professional expectations while preserving psychological balance, professional effectiveness, and organizational commitment. In the auditing profession, adaptability is especially important because auditors continuously encounter changing accounting standards, new financial reporting frameworks, technological innovations, regulatory reforms, and sophisticated financial fraud schemes. Consequently, auditors who possess higher levels of adaptability are more capable of integrating technological tools into audit procedures, improving professional judgment, and maintaining audit quality under uncertain and rapidly evolving conditions [3, 5]. Conversely, low occupational adaptability may result in professional burnout, resistance to innovation, reduced audit quality, increased professional errors, and declining stakeholder trust in audit reports.

One of the most influential factors reshaping the auditing profession is the emergence of digital technologies and intelligent auditing systems. Artificial intelligence, machine learning algorithms, blockchain systems, robotic process automation, and data analytics tools have transformed the traditional structure of audit engagements and significantly expanded auditors' responsibilities [1, 2]. These technologies enable auditors to process vast amounts of financial and nonfinancial information, identify anomalies and suspicious patterns more effectively, and improve risk assessment accuracy. However, the integration of such technologies simultaneously creates psychological and professional challenges for auditors who may lack sufficient technological literacy or adaptive capability. Research indicates that auditors' ability to adapt to digital transformation is directly associated with their technological competencies, professional learning orientation, and openness toward innovation [6, 7].

The concept of digital transformation in auditing extends beyond the mere adoption of technological tools and encompasses structural, cultural, and behavioral changes within audit organizations. The implementation of emerging technologies requires auditors to acquire new competencies related to data interpretation, information systems evaluation, cybersecurity, and digital risk assessment. Consequently, audit firms increasingly seek professionals who demonstrate flexibility, continuous learning capacity, and adaptability to technological changes [8, 9]. In this regard, intelligent auditing models emphasize the integration of human expertise and technological capabilities to improve audit effectiveness and decision-making processes. Such models require auditors to possess not only technical accounting knowledge but also cognitive flexibility and adaptive professional behaviors that enable them to function effectively in technology-driven environments.

Another important dimension influencing auditors' occupational adaptability is the role of professional skepticism and behavioral characteristics in audit performance. Professional skepticism has long been considered a fundamental element of high-quality auditing because it enhances auditors' ability to critically evaluate evidence and detect material misstatements or fraud risks. However, maintaining professional skepticism in complex and rapidly changing environments requires strong social and occupational adaptability [10]. Auditors who can effectively adapt to organizational dynamics, interpersonal interactions, and environmental pressures are better positioned to maintain independent judgment and objective evaluation during audit engagements. Furthermore, social compatibility and professional flexibility contribute to auditors' resilience when facing client pressure, ethical dilemmas, and workload stress.

Workplace conditions and organizational climate also play significant roles in shaping auditors' adaptability. Independent auditors often operate under intense time constraints, high workload pressures, strict regulatory

requirements, and demanding client expectations. These conditions can negatively influence psychological well-being and professional performance if adequate organizational support mechanisms are absent. Research suggests that supportive organizational cultures, effective leadership, ethical climates, and collaborative professional environments positively influence auditors' motivation, adaptability, and job satisfaction [11]. Ethical compatibility within audit firms fosters trust, cooperation, and professional commitment among auditors, thereby enhancing their ability to cope with occupational challenges and maintain professional standards.

In addition to organizational factors, behavioral and psychological dimensions significantly affect auditors' responses to professional change. Auditors' intrinsic motivation, self-efficacy, professional identity, and learning orientation influence their willingness to embrace technological innovations and adapt to new work methods. Individuals with higher levels of professional self-confidence and intrinsic motivation tend to perceive change as an opportunity for growth rather than a threat to professional stability [3, 6]. Consequently, fostering adaptive psychological characteristics among auditors may improve organizational readiness for technological transformation and increase the effectiveness of innovation implementation within audit firms.

The rapid expansion of financial technologies (FinTech) has further intensified the need for adaptive competencies among accounting and auditing professionals. FinTech systems have introduced new mechanisms for financial reporting, transaction processing, digital payments, and data exchange that significantly alter the nature of audit evidence and audit procedures [12]. Auditors are increasingly required to evaluate algorithmic transactions, digital platforms, and automated financial systems that differ substantially from traditional accounting environments. These developments necessitate continuous professional learning and adaptive capability because conventional auditing approaches may no longer be sufficient for evaluating technologically sophisticated financial systems.

Big data analytics has also become a transformative force within auditing practices. The increasing availability of structured and unstructured data enables auditors to perform more comprehensive analyses, identify hidden patterns, and improve predictive risk assessments. However, the effective use of big data requires auditors to possess advanced analytical competencies and technological literacy [2, 5]. Auditors who lack adaptability may struggle to integrate analytical tools into audit procedures, thereby limiting the effectiveness of technology-enabled auditing systems. Consequently, occupational adaptability becomes a strategic necessity for sustaining professional relevance and competitiveness in the digital era.

Another factor contributing to the importance of adaptability in auditing is the growing complexity of legal and regulatory environments. Changes in international auditing standards, financial reporting regulations, anti-fraud legislation, and corporate governance requirements continuously reshape the responsibilities of auditors. Foresight-oriented auditing perspectives emphasize that future auditing environments will involve even greater integration of legal technologies, automated compliance systems, and digital governance mechanisms [4]. Therefore, auditors must develop adaptive competencies that enable them to anticipate regulatory changes and align audit procedures with evolving legal expectations.

The role of data analytics within internal and external auditing functions has also received increasing scholarly attention. Studies indicate that audit units utilizing data analytics demonstrate higher performance efficiency and improved decision-making quality [13]. Data-driven auditing enhances auditors' ability to identify risks, detect anomalies, and provide value-added insights to stakeholders. Nevertheless, successful implementation of data analytics depends heavily on auditors' adaptability and willingness to integrate analytical tools into professional

routines. Resistance to change or inadequate technological readiness may hinder the successful adoption of data-driven auditing systems.

Despite the increasing significance of occupational adaptability in the auditing profession, many audit organizations continue to face substantial challenges related to workforce readiness, technological literacy, and organizational resistance to change. Existing research has primarily focused on technological dimensions of auditing transformation or on isolated behavioral variables influencing audit performance. However, there remains limited understanding regarding the comprehensive factors shaping independent auditors' occupational adaptability within emerging technological environments. In particular, the interactions among individual characteristics, organizational conditions, professional competencies, environmental pressures, and technological developments have not been sufficiently integrated into a coherent conceptual framework [7, 8].

Moreover, previous studies have often emphasized technical competencies while paying less attention to psychological, social, and organizational dimensions of adaptability. Auditors' responses to digital transformation are influenced not only by technological expertise but also by professional identity, organizational culture, ethical climate, work–life balance, and perceived job security. Consequently, understanding auditors' occupational adaptability requires a multidimensional perspective capable of integrating behavioral, technological, and organizational factors into a unified model [9, 11].

The Iranian auditing environment presents additional complexities due to evolving regulatory frameworks, increasing economic uncertainties, and ongoing efforts toward digital transformation within financial and supervisory institutions. Independent auditors operating in Iran encounter simultaneous pressures associated with technological modernization, professional accountability, regulatory compliance, and organizational adaptation. These conditions make the study of occupational adaptability particularly important for improving audit quality, professional sustainability, and organizational effectiveness within the Iranian auditing context [4, 12].

Given the accelerating pace of technological change and the increasing importance of adaptive competencies in auditing, developing a comprehensive conceptual model of auditors' occupational adaptability appears essential for both theoretical advancement and practical application. Such a model can assist audit organizations in identifying critical factors influencing adaptability, designing professional development programs, improving organizational support systems, and enhancing auditors' readiness for future professional challenges. Furthermore, understanding the dimensions of occupational adaptability may contribute to improving audit quality, strengthening professional skepticism, reducing resistance to technological innovation, and promoting sustainable professional development within the auditing profession [1, 3, 5].

Accordingly, the present study aims to develop a comprehensive model of independent auditors' occupational adaptability based on data literacy and emerging financial technologies.

2. Methodology

The present study, in terms of approach, is an exploratory mixed-methods study. In the first stage, and in order to examine and identify the components, the semi-structured in-depth interview method with professional experts was employed. It should be noted that in semi-structured interviews, although the researcher prepares in advance the topics and headings necessary to cover the required information, not all questions are predetermined, and the interview process largely depends on questions that emerge spontaneously through the interaction between the interviewer and the interviewee. Following the interviews, the final questions are designed and completed. All interviews were conducted after the necessary coordination with eligible participants, at locations preferred by

them, and by prior appointment in an environment of their choosing. At the outset and prior to the commencement of the interviews, the researcher clarified the benefits of conducting the present study. Subsequently, based on the predefined research objectives, the researcher raised various possible questions according to the interview guide.

The data collection instruments included the review of theoretical foundations, models, documents, records, and other materials related to the topic, academic documents and records, scientific research journals and publications, electronic resources and internet websites, as well as in-depth semi-structured interviews. Regarding the method of data analysis, it can be stated that conceptualization of the data constituted the first step in the analysis process. For this purpose, the interview data were carefully examined and analyzed, and similar data with identical semantic content were coded under common codes, after which appropriate concepts were assigned to each category. Subsequently, in order to form categories, these concepts were compared with one another to determine their similarities and differences. Causal conditions refer to categories (conditions) that influence the core category and lead to the occurrence or expansion of the phenomenon under investigation. In the data, causal conditions are often expressed through terms such as "when," "while," "since," "because," "due to," and "as a result of." Even when such indicators are absent, the researcher may identify causal conditions by focusing on the phenomenon itself and systematically reviewing the data and events that temporally precede the phenomenon under investigation.

The core (central) category refers to the phenomenon of interest, the central idea or thought, event, occurrence, or incident toward which the flow of actions and reactions is directed in order to manage, control, or respond to it. The core category represents the phenomenon that forms the basis and محور of the process. This category is the title (conceptual label or name) assigned to the emerging framework or scheme. The category selected as the core category must possess sufficient abstraction and must be capable of relating the other main categories to itself. Intervening conditions are also structural conditions associated with the phenomenon that influence action/interaction strategies. These conditions facilitate or constrain strategies within a specific context. After examining the potential factors affecting the adaptability of independent auditors from various dimensions, determining the relationships among categories at different levels, and conducting conditional path analysis, the axial coding stage was completed so that, in the final analytical stage, selective coding and the development of the final theory and model could be carried out.

The study population consisted of experts related to the research topic who possessed auditing expertise. In this process, the selected experts were required to meet the following criteria:

- Holding a PhD degree in Accounting.
- Having a minimum of 15 years of work experience.
- Full mastery of accounting and auditing standards.
- Comprehensive knowledge of laws and regulations.
- Ability to update analytical knowledge continuously.
- Analytical thinking ability.
- Investigative capability and professional skepticism.

Subsequently, the sampling procedure in this study began based on the qualitative research process through purposive sampling and continued with theoretical sampling. Accordingly, the researchers initially approached individuals who were purposively selected because they possessed rich information related to auditors' adaptability and were able to contribute effectively to understanding the research problem and the core phenomenon. Thereafter, sampling continued until theoretical saturation was achieved, meaning that additional

samples no longer contributed new insights to the emerging categories and theory. In this study, after interviewing 15 participants, theoretical saturation was relatively achieved for the researcher. However, in order to ensure greater confidence and complete the conceptual gaps of the developed model, four additional experts were interviewed, resulting in a total of 19 participants.

Subsequently, Table 1 presents a detailed explanation of the experts' qualifications and the number of selected participants.

Table 1. Criteria for the Selection of Experts

No.	Expertise Criterion	Interpretation of Expertise Criterion	Number Selected in Initial Stage	Number Selected for Completing Conceptual Gaps
1	Educational Qualification	Holding a PhD degree in Accounting	3	—
2	Work Experience	Having at least 15 years of work experience	1	1
3	Full Mastery of Standards	Mastery of Iranian National Accounting Standards and Auditing Standards, and the ability to apply them in practice	3	1
4	Knowledge Updating Ability	Ability to continuously update knowledge through studying new standards, corporate laws, and participation in continuing education courses	3	—
5	Knowledge of Laws and Regulations	Mastery of relevant laws such as the Commercial Code, Direct Taxation Law, Labor Law, and the Law on Usury-Free Banking Operations	2	1
6	Analytical Thinking Ability	Ability to analyze complex financial data and identify irregularities	2	1
7	Investigative Capability and Professional Skepticism	Possessing a deep, critical, and inquisitive perspective toward evidence and management claims	1	—
	Total		15	4

The research scope defines the thematic, spatial, and temporal boundaries that indicate the overall framework of the intended study. When a researcher presents a research design, the scope of the study must be specified. In this section of the research design, the place, time, and field under investigation are identified. This study was conducted in 2025. The geographical scope of the present study included the Audit Organization of Iran, while the thematic scope of the research was situated within the field of financial accounting and focused on developing a model for the adaptability of independent auditors based on data literacy and emerging financial technologies.

3. Findings and Results

Descriptive statistics are presented in Table 2. This information is classified based on the parameters of gender, membership in the Iranian Association of Certified Public Accountants, position, work experience, education, and type of audit activity. In descriptive statistics, information is summarized in tables and charts, and no inference or generalization of the results to the population is made. In fact, statistics are summarized through charts and tables and provide a general and comprehensive picture of the subject.

Table 2. Frequency Information of Demographic Variables (Experts)

Variable	Category	Frequency	Variable	Category	Frequency
Gender	Male	11	Membership in the Iranian Association of Certified Public Accountants	Employed members	19
	Female	8			
	Total	19		Total	19
Position	Manager	2	Work Experience	Less than 6 years	3
	Audit Supervisor	3		6 to 10 years	4
	Audit Manager	5		11 to 15 years	4
	Audit Partner	9		More than 15 years	8
	Total	19		Total	19
Education	Bachelor's degree	3	Type of Audit Activity	Independent auditing	19
	Master's degree	11			
	PhD	5			
	Total	19		Total	19

According to the Delphi technique, first, a questionnaire including the intended sub-criteria was provided to each member of the group. Then, 19 selected experts who were familiar with all relevant issues examined each indicator individually based on the Delphi method. For the initial screening of the identified indicators, the assigned scores ranged from 1 to 10, and indicators with scores lower than 7 were removed. The Delphi technique continued for three rounds and was stopped in the third round after final consensus was achieved.

The first round of examining the experts' views was conducted as follows. To summarize the data obtained from the first round of the fuzzy Delphi method, A_m, which represents the mean of the experts' views, was calculated.

$$A_m = \left(a^i_{m_1}, a^i_{m_2}, a^i_{m_3}\right) = \left(\frac{1}{n}\sum a_1^{[i]}, \frac{1}{n}\sum a_2^{[i]}, \frac{1}{n}\sum a_3^{[i]}\right)$$

In the above equation, $A_m$represents the mean of the experts' views. The next stage is defuzzification, which is the process of converting a fuzzy set into non-fuzzy values. In this study, the mean value method was used. The defuzzified value based on the mean value method is as follows:

$$S(A) = \frac{1}{2}(SL(A) + SR(A))$$

$$S(A) = \frac{1}{2}\left[\left(a_{2i} - \int_{a_{1i}}^{a_{2i}} \bar{f}_A(x)\right) + \left(a_{2i} - \int_{a_{2i}}^{a_{3i}} \bar{f}_A(x)\right)\right] = \frac{a_{1i} + a_{2i} + a_{3i}}{3}$$

Table 3. Mean of Experts' Views and Defuzzification in the First Round

Sub-Criteria	a3	a2	a1	Defuzzification
Professional self-efficacy	8.909	7.909	7.909	8.242
Intrinsic motivation	8.364	7.364	7.364	7.697
Interest in the profession	8.727	7.727	7.727	8.060
Lifestyle	7.182	7.182	7.182	7.182
Work–life balance	8.636	7.636	7.636	7.969
Ethical climate	8.636	7.636	7.636	7.969
Corporate governance	7.091	7.727	7.727	7.515
Support from supervisors and colleagues	8.727	7.727	7.727	8.060
Job security	8.455	7.455	7.455	7.788
Workload and workload control	8.512	7.451	7.351	7.771
Nature of tasks	8.021	7.542	7.645	7.736

Professional independence	8.141	7.114	7.582	7.612
Standards and emerging technologies	8.231	7.625	7.110	7.655
Client pressure	7.215	6.251	8.514	7.326
Professional supervision	8.265	7.475	8.184	7.974
Economic conditions	8.174	6.965	7.659	7.704
Labor market conditions	7.659	8.184	8.122	7.988
Alignment with organizational cultural values	8.259	7.454	8.521	8.078
Culture-based logic	7.173	6.845	8.195	7.404

Based on the collective consensus of the experts, no factor was removed, and all these indicators had a fuzzy mean score above 7; in other words, they were indicators that the experts expected to be influential.

The second round of examining the experts' views was conducted as follows. The mean of the experts' views and defuzzification in the second round are presented in Table 4.

Table 4. Mean of Experts' Views and Defuzzification in the Second Round

Sub-Criteria	a3	a2	a1	Defuzzification
Professional self-efficacy	9.182	8.182	7.182	8.182
Intrinsic motivation	8.909	7.909	6.909	7.909
Interest in the profession	8.909	7.909	6.909	7.909
Lifestyle	8.818	7.818	6.818	7.818
Work–life balance	9.000	8.000	7.000	8.000
Ethical climate	9.182	8.182	7.182	8.182
Corporate governance	8.909	7.909	6.909	7.909
Support from supervisors and colleagues	8.121	7.541	6.621	7.428
Job security	7.582	7.251	6.321	7.051
Workload and workload control	7.541	7.641	6.002	7.061
Nature of tasks	7.182	7.182	7.182	7.182
Professional independence	8.636	7.636	7.636	7.969
Standards and emerging technologies	7.812	7.551	7.184	7.515
Client pressure	8.111	6.987	8.551	7.883
Professional supervision	8.215	6.154	8.741	7.703
Economic conditions	6.175	7.592	8.912	7.559
Labor market conditions	7.045	7.176	8.059	7.426
Alignment with organizational cultural values	7.695	7.639	8.121	7.818
Culture-based logic	8.006	8.054	6.552	7.537

Table 5. Differences in Experts' Views Between the First and Second Rounds

Sub-Criteria	First Round	Second Round	Difference Between First and Second Rounds
Professional self-efficacy	8.242	8.182	0.060
Intrinsic motivation	7.697	7.909	0.212
Interest in the profession	8.060	7.909	0.151
Lifestyle	7.182	7.818	0.636
Work–life balance	7.969	8.000	0.031
Ethical climate	7.969	8.182	0.213
Corporate governance	7.515	7.909	0.394
Support from supervisors and colleagues	8.060	7.428	0.633
Job security	7.788	7.051	0.737
Workload and workload control	7.771	7.061	0.710
Nature of tasks	7.736	7.182	0.554
Professional independence	7.612	7.969	0.357
Standards and emerging technologies	7.655	7.515	0.140
Client pressure	7.326	7.883	0.557

Professional supervision	7.974	7.703	0.271
Economic conditions	7.704	7.559	0.145
Labor market conditions	7.988	7.426	0.562
Alignment with organizational cultural values	8.078	7.818	0.740
Culture-based logic	7.404	7.537	0.133

The third round of examining the experts' views was conducted as follows. At this stage, after applying the necessary changes to the model indicators, the third version was prepared and, together with each individual's previous viewpoint and the degree of difference between their views and those of other experts, was sent again to the expert group members. The mean of the experts' views and defuzzification in the third round are presented in Table 6.

Table 6. Mean of Experts' Views and Defuzzification in the Third Round

Sub-Criteria	a3	a2	a1	Defuzzification
Professional self-efficacy	9.273	8.273	8.091	8.545
Intrinsic motivation	9.000	7.151	8.221	8.124
Interest in the profession	9.000	8.000	7.909	8.303
Lifestyle	8.909	6.255	8.115	7.759
Work–life balance	9.091	8.182	8.000	8.424
Ethical climate	9.182	6.338	6.922	7.480
Corporate governance	9.000	8.000	7.000	8.000
Support from supervisors and colleagues	8.235	7.541	7.215	7.664
Job security	8.632	7.251	7.632	7.838
Workload and workload control	9.000	8.000	7.000	8.000
Nature of tasks	7.541	7.641	6.002	7.061
Professional independence	7.182	7.182	7.182	7.182
Standards and emerging technologies	8.636	7.636	7.636	7.969
Client pressure	7.211	7.921	9.622	8.251
Professional supervision	8.659	6.221	8.475	7.785
Economic conditions	6.985	8.514	8.193	7.897
Labor market conditions	7.552	7.745	7.556	7.617
Alignment with organizational cultural values	7.041	7.226	8.146	7.471
Culture-based logic	8.662	7.015	8.851	8.176

The difference between the second and third rounds is shown in Table 7.

Table 7. Differences in Experts' Views Between the Second and Third Rounds

Sub-Criteria	Second Round	Third Round	Difference Between Second and Third Rounds
Professional self-efficacy	8.182	8.545	0.363
Intrinsic motivation	7.909	8.124	0.215
Interest in the profession	7.909	8.303	0.394
Lifestyle	7.818	7.759	0.059
Work–life balance	8.000	8.424	0.424
Ethical climate	8.182	7.480	0.702
Corporate governance	7.909	8.000	0.091
Support from supervisors and colleagues	7.428	7.664	0.236
Job security	7.051	7.838	0.787
Workload and workload control	7.061	8.000	0.939
Nature of tasks	7.182	7.061	0.121
Professional independence	7.969	7.182	0.787
Standards and emerging technologies	7.515	7.969	0.454
Client pressure	7.883	8.251	0.368

Professional supervision	7.703	7.785	0.082
Economic conditions	7.559	7.897	0.338
Labor market conditions	7.426	7.617	0.191
Alignment with organizational cultural values	7.818	7.471	0.347
Culture-based logic	7.537	8.176	0.639

According to Table 7 and the calculation of the differences between the means of the second and third rounds, the experts reached consensus on the relevant indicators.

In the results obtained from structural equations, some of the research hypotheses were not confirmed. Moreover, in the validity assessment using confirmatory factor analysis, some questions were removed during the process of estimating latent variables. Therefore, to ensure the accuracy of the results, the robust maximum likelihood method with resampling was used in the tests. The backward method was used for model fitting. To control the effect of environmental conditions on the relationships among third-level latent variables, namely the variables related to the research hypotheses, gender, membership in the Iranian Association of Certified Public Accountants, position, work experience, and education were entered into the third-level equations as dummy variables. The definitions of the dummy variables are presented in Table 8.

Table 8. Definitions of Dummy Variables

Variable	Dummy Variable	Definition
Gender	GEN1	Male
	GEN2	Female
Membership in the Iranian Association of Certified Public Accountants	LOC1	Membership
Education	EDU1	Bachelor's degree
	EDU2	Master's degree
	EDU3	PhD
Work Experience	WSA1	Less than 6 years
	WSA2	6 to 10 years
	WSA3	11 to 15 years
	WSA4	More than 15 years
Position	WOR1	Manager
	WOR2	Audit Supervisor
	WOR3	Audit Manager
	WOR4	Audit Partner

Tables 9 to 11 show the test statistic obtained from bootstrap resampling and its corresponding probability value for each item at the first level and for each latent variable at the second and third levels. As observed, after removing the nonsignificant variables, the remaining items had significant loadings in constructing the first-level latent variables. Moreover, as shown in the following tables, all first-level latent variables had significant loadings in constructing the second-level latent variables. The results of fitting the three-level structural equation model using robust maximum likelihood estimation and/or resampling in the tests at the first level are presented in Table 9.

Table 9. Results of Fitting the Three-Level Structural Equation Model Using Robust Maximum Likelihood Estimation and/or Resampling in the Tests (First Level)

First Level Latent Variable	Item	Test Statistic	Probability Value
GEN1	Q1	5.855	0.4511
GEN2	Q2	3.134	0.0000
LOC1	Q3	2.199	0.3543
EDU1	Q4	10.145	0.0118

EDU2	Q5	11.266	0.7287
EDU3	Q6	2.843	0.0000
WSA1	Q7	1.181	0.9633
WSA2	Q8	8.047	0.0119
WSA3	Q9	9.325	0.0000
WSA4	Q10	6.211	0.0000
WOR1	Q11	5.241	0.0000
WOR2	Q12	6.233	0.0000
WOR3	Q13	1.001	0.8511
WOR4	Q14	7.333	0.0093

The results of fitting the three-level structural equation model using robust maximum likelihood estimation and/or resampling in the tests at the second level are presented in Table 10.

Table 10. Results of Fitting the Three-Level Structural Equation Model Using Robust Maximum Likelihood Estimation and/or Resampling in the Tests (Second Level)

Second Level Latent Variable	Item	Test Statistic	Probability Value
GEN1	Q1	1.220	0.7122
GEN2	Q2	1.151	0.3566
LOC1	Q3	1.003	0.4417
EDU1	Q4	0.925	0.2152
EDU2	Q5	5.251	0.0000
EDU3	Q6	2.901	0.0000
WSA1	Q7	3.012	0.0001
WSA2	Q8	6.315	0.0000
WSA3	Q9	2.001	0.0330
WSA4	Q10	2.512	0.0017
WOR1	Q11	1.115	0.4122
WOR2	Q12	0.999	0.7155
WOR3	Q13	0.514	0.3966
WOR4	Q14	6.558	0.0000

The results of fitting the three-level structural equation model using robust maximum likelihood estimation and/or resampling in the tests at the third level are presented in Table 11.

Table 11. Results of Fitting the Three-Level Structural Equation Model Using Robust Maximum Likelihood Estimation and/or Resampling in the Tests (Third Level)

Third Level Latent Variable	Item	Test Statistic	Probability Value
GEN1	Q1	—	—
GEN2	Q2	—	—
LOC1	Q3	—	—
EDU1	Q4	—	—
EDU2	Q5		
EDU3	Q6	3.225	0.0000
WSA1	Q7	—	—
WSA2	Q8	—	—
WSA3	Q9	—	—
WSA4	Q10	4.141	0.0000
WOR1	Q11	—	—
WOR2	Q12	—	—
WOR3	Q13	—	—
WOR4	Q14	5.712	0.0000

Based on the research findings, the variables of work experience of more than 15 years, the occupational position of audit partner, and holding a PhD degree have significant effects on the occupational adaptability of independent auditors.

In the previous section, the causal relationships among the research variables were examined using structural equations. In this section, first, the probability distribution of the latent variables is examined, and then the relationships among the research variables are tested across each other's subgroups, or quantiles. Figure 1 shows the estimated distribution of the second-level latent variables based on the kernel function method.

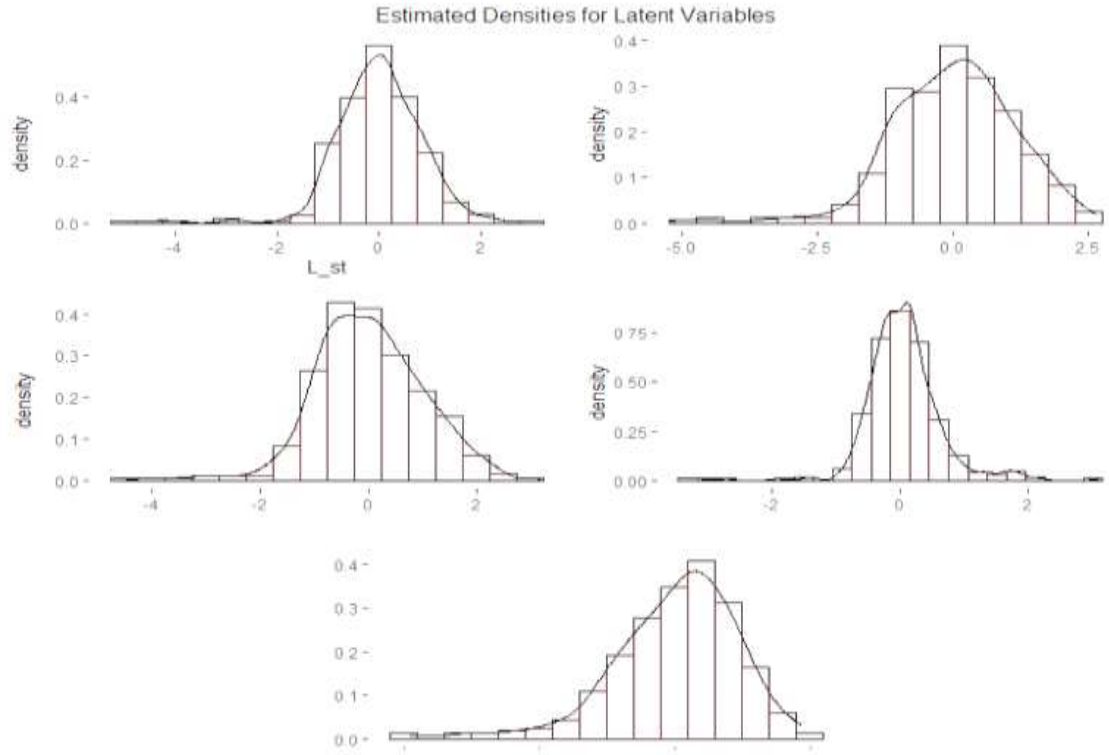


Figure 1. Estimation of the Distribution of Research Variables Using the Kernel Function Method

As observed in Figure 1, the estimated frequency curve in most cases shows skewness or kurtosis. To test the assumption of normality of the variables, the Shapiro–Wilk test was used. The results of the Shapiro–Wilk test are presented in Table 12. Based on the results of this test, the assumption of normality was rejected for all research variables. Therefore, in addition to examining the effects of variables on each other's means, the effects of variables on each other's distributions should also be tested.

Table 12. Results of the Shapiro–Wilk Test

Variable	Symbol	Test Statistic	Test Probability
Gender	GEN	160.669	0.000
Membership in the Iranian Association of Certified Public Accountants	LOC	337.774	0.000
Education	EDU	323.438	0.000
Work Experience	WSA	152.223	0.000
Position	WOR	112.259	0.000

Figures 2 and 3 show the estimated path coefficients and dummy variable coefficients, as well as the 95% confidence intervals in the percentile equations related to the dependent variable in the quantile structural equation model.

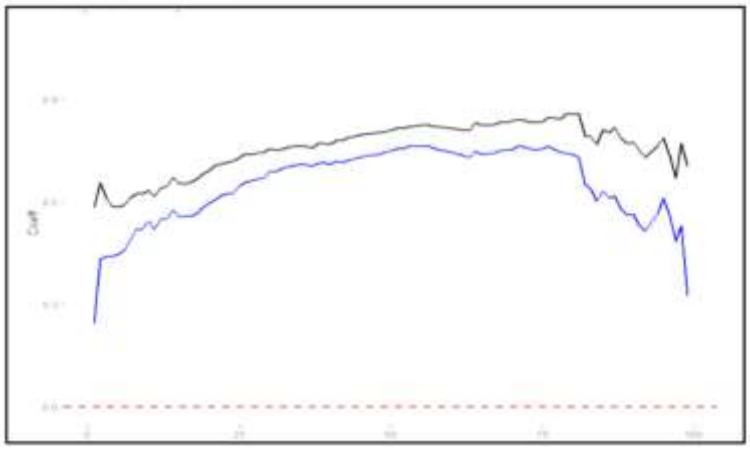


Figure 2. Estimation of Path Coefficients and 95% Confidence Intervals of the Quantile Equations Related to Auditors' Occupational Adaptability

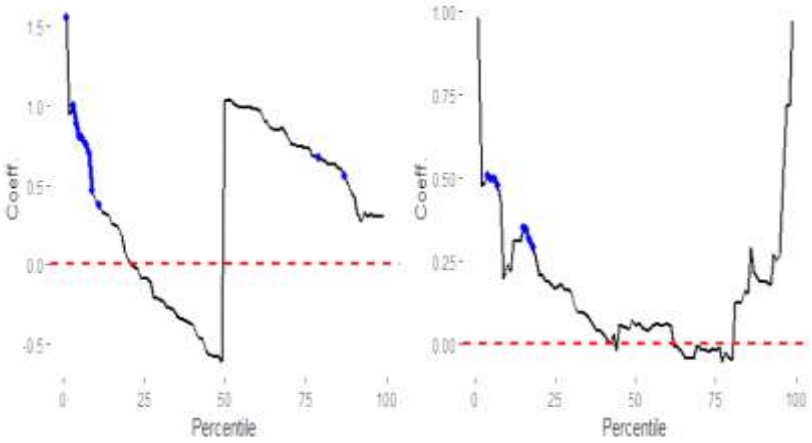


Figure 3. Estimation of Dummy Variable Coefficients in the Quantile Equations Related to Auditors' Occupational Adaptability

In the complementary stage of the study, the research literature and the results obtained from the analysis of qualitative data were used to present the model. At this stage, the required statistical tests were used to determine the degree of model fit. The results of the tests indicated that the difference between the mean of the proposed model in all sections and the expected mean was below the 5% error level. Therefore, the statistical model was confirmed by experts and independent auditors with 95% confidence.

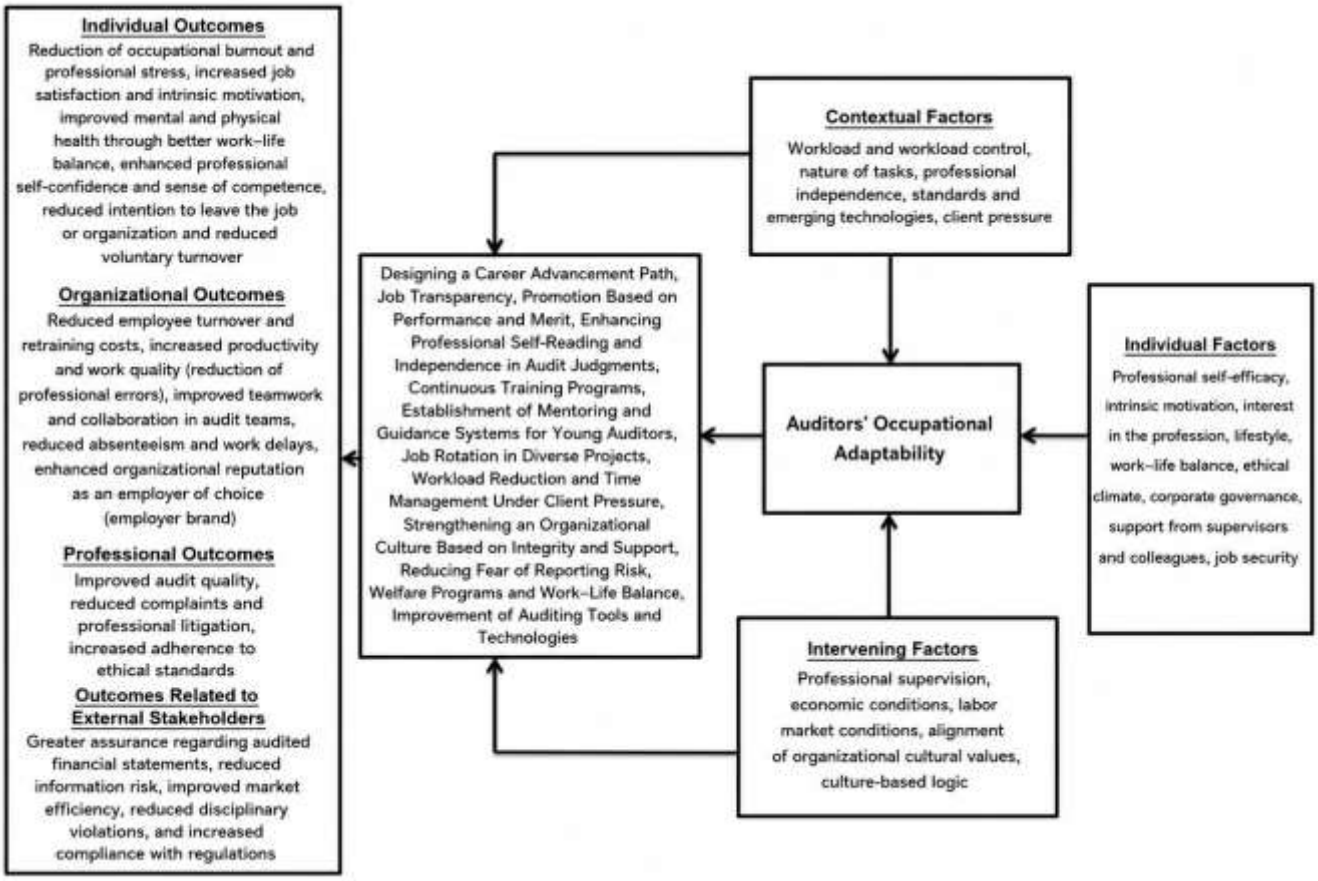


Figure 4. Conceptual Model of the Occupational Adaptability of Independent Auditors

This index has been developed as a general criterion of model fit for partial least squares structural equation modeling. The index is the square root of the product of the average communality values and the average coefficients of determination. However, since the goodness-of-fit index cannot reliably distinguish valid models from invalid ones, and since its application is limited to specific model settings, researchers should avoid using it as an appropriate criterion. Goodness of fit may be useful for multi-group analysis. Henseler and Sarstedt (2012) explain in detail that the goodness-of-fit index is not an appropriate criterion for the fit of partial least squares structural equation models and should not be used. The goodness-of-fit index is related to the overall fit of structural equation models. This means that, using this criterion, the researcher can examine the fit of the overall model after assessing the fit of the measurement model and the structural model. Its formula is presented below.

$$GOF = \sqrt{\bar{Communality} \times \bar{R^2}}$$

Given that $R^2 = 0.79$and $Communality = 0.628$, we have:

$$GOF = \sqrt{0.628 \times 0.79}$$
$$GOF = \sqrt{0.49612}$$
$$GOF \approx 0.70$$

The GOF index of this model was approximately 0.70, indicating the strong desirability of the model.

4. Discussion and Conclusion

The findings of the present study led to the development of a comprehensive model for the occupational adaptability of independent auditors based on data literacy and emerging financial technologies. The results demonstrated that occupational adaptability is a multidimensional construct influenced by individual, contextual, and intervening factors that collectively shape auditors' capacity to respond effectively to technological, organizational, and professional changes. The identified dimensions included professional self-efficacy, intrinsic motivation, interest in the profession, lifestyle, work–life balance, ethical climate, corporate governance, support from supervisors and colleagues, job security, workload and workload control, professional independence, standards and emerging technologies, client pressure, economic conditions, labor market conditions, and alignment with organizational cultural values. These findings indicate that auditors' adaptability cannot be explained solely through technical competencies but rather emerges through the interaction of psychological, organizational, and environmental factors.

One of the most important findings of the study was the significant role of professional self-efficacy and intrinsic motivation in strengthening occupational adaptability among independent auditors. Auditors who possess greater confidence in their professional abilities and stronger internal motivation appear more capable of coping with technological changes, professional pressures, and environmental uncertainties. This finding is consistent with the results reported by [3], who emphasized that auditors' adaptability in digital environments is strongly associated with technological literacy and professional expertise. Similarly, [6] demonstrated that auditors who perceive themselves as technologically competent exhibit greater readiness for integrating innovative technologies into audit processes. From a theoretical perspective, professional self-efficacy enhances cognitive flexibility and reduces resistance to change, thereby enabling auditors to perceive technological transformation as an opportunity for professional development rather than a threat to occupational stability.

The results also highlighted the critical influence of work–life balance and lifestyle on occupational adaptability. Independent auditors often encounter heavy workloads, strict deadlines, and high professional expectations that can negatively affect psychological well-being and occupational sustainability. The findings suggest that auditors who maintain healthier work–life balance conditions are better able to preserve professional motivation, reduce occupational stress, and adapt to organizational and technological changes. This finding aligns with the perspective presented by [4], who argued that the future of auditing depends not only on technological advancement but also on the capacity of audit organizations to manage structural and procedural changes affecting human resources. The importance of work–life balance also reflects broader organizational behavior theories suggesting that employees experiencing lower psychological strain demonstrate higher organizational commitment and adaptive behavior.

Another significant finding of the study concerns the role of ethical climate, corporate governance, and organizational support in enhancing auditors' occupational adaptability. The results showed that supportive professional environments and strong ethical structures contribute substantially to auditors' ability to adapt to professional challenges and technological developments. These findings are consistent with the research conducted by [11], which emphasized the importance of ethical compatibility and partner reliability in improving organizational success within audit firms. Ethical organizational climates appear to create psychological security and trust among auditors, thereby facilitating collaboration, professional learning, and openness toward

innovation. Moreover, support from supervisors and colleagues reduces professional isolation and strengthens auditors' willingness to engage with new technologies and complex auditing procedures.

The study further revealed that contextual factors, including workload and workload control, nature of tasks, professional independence, standards, and emerging technologies, significantly influence auditors' adaptability. The increasing integration of artificial intelligence, blockchain, big data analytics, and intelligent auditing systems has fundamentally altered the nature of audit work and expanded the competencies required from auditors. This finding strongly corresponds with the arguments presented by [1], who explained that Industry 4.0 technologies are transforming accounting and auditing practices by changing the structure of professional tasks and decision-making processes. Similarly, [2] emphasized that digitalization and big data technologies are reshaping audit procedures and requiring auditors to develop advanced analytical and technological capabilities.

The findings also demonstrated that auditors' occupational adaptability is strongly affected by emerging technologies and digital transformation processes. The identified importance of standards and emerging technologies indicates that technological literacy has become an essential component of modern auditing competence. Auditors who are able to effectively understand and utilize data analytics tools, intelligent systems, and digital auditing technologies are more capable of maintaining audit quality and responding to evolving stakeholder expectations. These results align with the studies conducted by [5] and [7], both of whom highlighted the increasing role of artificial intelligence and analytical technologies in shaping the future of auditing. The present findings extend these perspectives by demonstrating that technological adaptability is not solely a technical issue but also a behavioral and organizational phenomenon influenced by motivation, organizational support, and professional culture.

Another important finding concerns the influence of client pressure and economic conditions on auditors' occupational adaptability. Independent auditors frequently operate within environments characterized by financial uncertainty, regulatory complexity, and demanding client expectations. Such pressures may weaken professional independence and increase occupational stress if adequate support mechanisms are absent. However, the findings indicate that auditors possessing stronger adaptive capacities are better able to manage client pressure while maintaining professional skepticism and objective judgment. This finding is consistent with the work of [10], who found that social compatibility and professional characteristics significantly affect auditors' professional skepticism. Adaptive auditors appear more capable of balancing organizational expectations and ethical obligations, thereby preserving audit quality under challenging professional circumstances.

The findings related to labor market conditions and organizational cultural values also provide important insights into the occupational sustainability of auditors. The results suggest that organizational cultures emphasizing integrity, learning, collaboration, and professional development positively influence auditors' willingness to adapt to technological and procedural changes. This finding supports the conclusions reported by [9], who emphasized the necessity of intelligent auditing systems and organizational readiness for digital transformation. Organizations characterized by rigid structures and resistance to innovation may unintentionally weaken auditors' adaptive behaviors and reduce technological integration effectiveness. Conversely, organizations promoting continuous learning and professional flexibility appear better positioned to succeed in digital auditing environments.

The structural equation modeling results revealed that higher work experience, particularly more than 15 years of professional experience, significantly influences occupational adaptability. This finding suggests that experienced auditors possess stronger cognitive frameworks, professional judgment capabilities, and coping

mechanisms that facilitate adaptation to professional change. Experienced auditors may also possess greater exposure to organizational and technological transitions, enabling them to manage uncertainty more effectively. Furthermore, the finding that audit partners exhibited stronger occupational adaptability than other professional positions indicates that leadership roles may encourage broader strategic understanding and greater professional flexibility. These findings align with the perspective advanced by [3], who highlighted the relationship between expertise levels and auditors' adaptability in digital contexts.

The significance of doctoral education in predicting occupational adaptability is another noteworthy finding of the study. Auditors with doctoral degrees demonstrated stronger adaptive capacities, likely due to enhanced analytical thinking, research orientation, and problem-solving capabilities. Higher educational attainment may increase auditors' openness toward innovation, critical thinking, and capacity for continuous professional learning. This finding is consistent with the arguments presented by [10], who noted that graduate education moderates the relationship between social compatibility and professional skepticism. Advanced education appears to strengthen auditors' intellectual flexibility and readiness to engage with complex technological and organizational challenges.

The results of the fuzzy Delphi analysis demonstrated consensus among experts regarding the importance of all identified indicators in explaining auditors' occupational adaptability. None of the indicators were removed during the Delphi rounds because all variables achieved acceptable fuzzy mean scores. This finding reflects the multidimensional and interconnected nature of occupational adaptability within the auditing profession. The consensus among experts also indicates growing professional awareness regarding the importance of technological literacy, organizational support, ethical climate, and psychological resilience in modern auditing environments.

The goodness-of-fit results further confirmed the strong explanatory power of the proposed conceptual model. The obtained GOF value indicated that the model possesses strong structural validity and appropriately explains the relationships among the identified variables. This finding suggests that the proposed framework may serve as a comprehensive theoretical foundation for understanding occupational adaptability in auditing contexts influenced by digital transformation and emerging financial technologies.

Overall, the findings of the present study demonstrate that occupational adaptability has become a strategic necessity for independent auditors operating in technologically dynamic and professionally complex environments. Modern auditing increasingly requires professionals who are not only technically competent but also psychologically resilient, technologically literate, ethically committed, and organizationally flexible. The integration of artificial intelligence, data analytics, blockchain technologies, and intelligent auditing systems has fundamentally altered the professional landscape of auditing, making adaptability essential for sustaining professional effectiveness and audit quality. Consequently, audit organizations seeking long-term competitiveness and professional sustainability must prioritize adaptive capacity development through continuous learning, supportive organizational cultures, and technology-oriented professional training programs [1, 5, 8].

The present study faced several limitations that should be considered when interpreting the findings. First, the study was conducted within the context of the Audit Organization of Iran and involved a relatively limited number of experts, which may restrict the generalizability of the findings to other institutional or international auditing environments. Second, the study relied primarily on qualitative interviews and expert judgments, meaning that some findings may reflect subjective perceptions rather than objective behavioral measurements. Third, because the auditing profession and digital technologies evolve rapidly, some dimensions of occupational adaptability may change over time as new technologies and professional requirements emerge. Additionally, cultural, economic, and

regulatory conditions specific to Iran may have influenced participants' perspectives regarding professional adaptability.

Future research may further investigate occupational adaptability among auditors using quantitative longitudinal designs that examine changes in adaptive behavior over time. Comparative studies across different countries and auditing institutions could provide deeper insights into the cultural and organizational determinants of adaptability. Researchers may also examine the mediating role of technological literacy, emotional intelligence, organizational commitment, and professional burnout in explaining auditors' adaptability. Furthermore, future studies could investigate how specific technologies such as artificial intelligence, blockchain systems, and predictive analytics influence auditors' professional identity and occupational resilience in different auditing environments.

From a practical perspective, audit organizations should develop structured training programs focused on technological literacy, data analytics competencies, and adaptive professional behaviors. Managers should create supportive organizational cultures that encourage innovation, continuous learning, and psychological well-being among auditors. Improving work–life balance, reducing excessive workload pressures, and strengthening mentoring systems for younger auditors may significantly enhance occupational adaptability and professional sustainability. Audit institutions should also invest in intelligent auditing infrastructures and encourage collaborative learning environments that facilitate the integration of emerging technologies into auditing practices. Finally, policymakers and professional associations should revise professional development frameworks to ensure that auditors are adequately prepared for the technological and organizational transformations shaping the future of the auditing profession.

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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