International Journal of Innovative Research and Scientific Studies, 8(6) 2025, pages: 3426-3445

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Accountants' perceptions of digital transformation: Opportunities, challenges, and key drivers

Vasileios Giannopoulos[1*], Spyridon Kariofyllas[2], Dimitrios Koutsouroupas[3], Charalampos Kariofyllas[4]

[1,2,3]*Department of Accounting and Finance, University of the Peloponnese, Kalamata, Greece.*
[4]*Department of Management Science and Technology, Laboratory Teaching Staff, University of the Peloponnese, Greece.*

Corresponding author: Vasileios Giannopoulos (*Email: v.giannopoulos@go.uop.gr*)

Abstract

This study investigates professional accountants' perceptions of the opportunities and challenges of digitalization and examines how demographic and organizational factors shape these views. Survey data were analyzed using correlation analysis and independent samples t-tests to assess the influence of age, education, experience, gender, and company size on perceptions of digital transformation. Higher levels of digital adoption (ALDA) and stronger perceptions of digitalization (PLDA) are positively linked to the recognition of opportunities and challenges. Age and experience correlate strongly, with experienced accountants emphasizing challenges while their younger counterparts show greater adaptability. Advanced degrees increase recognition of opportunities, while gender differences are negligible. Company size significantly affects perceptions, with accountants in larger firms reporting higher recognition of both opportunities and challenges. Perceptions of digitalization vary systematically across demographic and organizational characteristics, with notable effects of age, education, and firm size. The findings underscore the need for targeted upskilling, integrating digital competencies into curricula, supporting smaller firms, and initiatives to bridge generational divides in digital transformation.

Keywords: Accounting profession, Business, Digitalization, Independent samples t-tests, Principal component analysis.

DOI: 10.53894/ijirss.v8i6.10364
Funding: This study received no specific financial support.
History: Received: 06 August 2025 / **Revised:** 09 September 2025 / **Accepted:** 11 September 2025 / **Published:** 29 September 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, but approval from the Institutional Ethics Committee is not required, according to the letter dated 11/08/2025 from the Chair of the Research Ethics and Deontology Committee of the Department of Accounting and Finance, University of the Peloponnese.
Publisher: Innovative Research Publishing

1. Introduction

Technological progress has triggered an irreversible transformation of global society, with the Internet acting as a decisive catalyst [1]. Global connectivity now generates exponential opportunities through networks of people and machines, continually reshaping communication, business models, and organizational processes [2].

Digital transformation involves the integration of physical and digital processes within decentralized systems, producing far-reaching changes in both social and organizational structures. It affects virtually every aspect of human activity, as societies and organizations restructure themselves and economies redefine the way value is created. Jasim and Raewf [3] note that the use of information technologies in accounting to streamline processes and reduce human intervention can be traced back more than 140 years.

Accounting, in particular, is undergoing radical changes as digital technology transforms workplaces and workflows [4-6]. This transformation creates new career opportunities but also demands advanced technological competencies [7, 8]. While technological solutions, such as ERP systems and Accounting Information Systems, have long been utilized [9-11], recent advancements are accelerating rapidly under market and regulatory pressures [12].

Artificial Intelligence (AI) is expected to profoundly reshape accounting, rapidly altering professional roles and responsibilities [8]. Yet, the overall impact of digital transformation on the profession remains only partly clear. Emerging technologies—such as blockchain, big data analytics, and AI-driven cloud platforms—are enabling large-scale automation of decision-making [13-16]. At the same time, concerns grow regarding the reliability of the information produced [17], while the sheer volume of available data may actually increase complexity rather than reduce it [18].

For professional accountants, these advances present both risks and opportunities. Automation threatens traditional tasks, but it also frees accountants to focus on strategic, value-added functions. Meanwhile, changes in the workforce amplify the impact of digitalization. Millennials (Gen Y) and Gen Z, as digital natives, are accustomed to innovative technologies and data usage from an early age, which shapes their different educational and professional expectations [19].

Digitalization is now central across all sectors of the economy, with accounting at its core. The European Union acknowledges its strategic importance for transparency, efficiency, and combating tax evasion. Directive 2014/55/EU introduced standardized e-invoicing for public procurement, reducing administrative burdens. Similarly, the eIDAS Regulation (EU 910/2014) established the legal equivalence of digital and paper-based documents through tools such as digital signatures and timestamps.

The EU's Digital Single Market Strategy further promotes digital solutions for tax compliance (e.g., VAT returns, Intrastat) and accounting automation. The benefits are clear: reduced costs and errors, improved transparency, time efficiency, and enhanced compliance through system interoperability. However, the transition also presents challenges. Cybersecurity remains a primary concern, requiring significant investment in data protection. Moreover, accountants must acquire proficiency in emerging software and tools, while differences in Member States' digital infrastructures complicate cross-border operations.

In Greece, digitalization of accounting is a cornerstone of the broader digital transformation of public administration and business. Legislative reforms have introduced both regulatory and technological measures to reduce bureaucracy and improve transparency. A significant milestone was the launch of the AADE's myDATA (my Digital Accounting and Tax Application) platform in 2021, which mandates the electronic transmission of accounting records. With e-books replacing print, real-time monitoring and cross-checking have become possible. Law 4308/2014 and subsequent regulations also authorize the electronic issuance and exchange of invoices, either directly or via certified providers.

By June 30, 2025, over 6.8 million documents with a total value exceeding €4.3 trillion had been transmitted through myDATA. To encourage compliance, the tax authority offers incentives, such as deductions and expedited VAT refunds, for businesses that use certified e-invoicing providers. The adoption of digital signatures further strengthens the authenticity and legal validity of accounting records, enabling the electronic submission of financial statements and tax returns.

Greek legislation also requires accounting software to be interconnected with the AADE platform, ensuring automatic and reliable data exchange. At the same time, the government is promoting public sector integration through the Unified Public Accounting Architecture, creating a single digital register for revenues and expenditures.

This study explores the opportunities and challenges facing professional accountants and economists in the era of Artificial Intelligence and digitalization. Specifically, it investigates how individual characteristics of these professionals influence their perceptions of digital transformation in accounting. Data were collected from 177 professionals across Greece between June 30, 2025, and July 30, 2025. The findings offer valuable insights for policymakers, professional associations, and organizations, while also guiding universities in redesigning their curricula to align with the digital era.

The paper is structured as follows: Chapter 2 reviews the relevant literature, Chapter 3 outlines the research methodology, Chapter 4 presents the empirical results, and Chapter 5 discusses the main conclusions, limitations, and directions for future research.

2. Literature Review

The integration of new technological tools into the accounting profession has been a subject of academic inquiry for over three decades. Early studies, such as Liang, et al. [20] explored the implications of Artificial Intelligence (AI) for financial accounting. Later, Moll and Yigitbasioglu [15] reviewed 38 articles published between 1992 and 2017 on accounting and information systems, highlighting the growing role of Internet-related technologies but also pointing to an insufficient focus on their practical impact on accountants' daily work. At the same time, concerns arose about the profession's future. Bhimani and Willcocks [21] questioned how accountants could continue adding value to organizations,

while Krumwiede [22] found that among 161 members of the Institute of Management Accountants (IMA), 5% were apprehensive and 42% were somewhat concerned that automation and AI might render them obsolete.

Sector-specific studies have also examined the effects of digitalization. For example, Bakulina, et al. [23] investigated agriculture, where accounting systems were identified as the most digitalized element of the sector. They concluded that the accelerated adoption of robotics would transform accounting from a transactional activity into one focused on management and decision-making. Similar warnings were issued by Frey, et al. [24] who identified accounting as one of the professions most vulnerable to automation. Nevertheless, Gulin, et al. [25] argued that the emergence of new skill sets, especially those related to engineering and technology, could redefine accountants' professional roles.

More recently, attention has shifted toward the impact of advanced AI tools. Kurt [26] examined the implications of ChatGPT for accounting and auditing, concluding that continuous learning and technological adaptation are essential for accountants to remain competitive. Other scholars Hacker [27]; Lanier [28]; Mcgee [29] and Farhan and Kawther [30] expressed diverging views, debating whether AI will enhance or diminish the profession. Parallel research has also focused on future accountants. Shuhidan, et al. [31] and Sudaryanto, et al. [32] investigated technology readiness among accounting students in Malaysia and Indonesia, respectively. Both studies found moderate readiness: students were optimistic about AI's potential but reported discomfort and insecurity regarding its adoption.

The role of digital skills in accounting education has been emphasized in multiple studies. Bilal, et al. [33] highlighted ICT competencies as a core requirement for graduates, while Awang, et al. [34] stressed the need for curricula to integrate real-world digital applications. Kokina, et al. [35] further argued that accountants are increasingly expected to act as "digital innovators," focusing on higher-value analytical tasks as automation takes over routine work. This shift is also reflected in evolving recruitment criteria, which increasingly prioritize STEM-related and data analytics skills.

Al-Htaybat, et al. [36] called for curriculum reforms that integrate modern technological tools while preserving traditional analytical and advisory competencies. Several studies Earley [37]; Jackling and De Lange [38]; Rebele and Pierre [39] and Watty, et al. [40] criticized accounting education for insufficient emphasis on technological training, often due to educators' limited expertise. Nonetheless, tacit professional knowledge gained through experience remains important Quattrone [13]. Tsiligiris and Bowyer [41] added that future accountants will need not only technical skills—ranging from IT literacy to advanced data analytics—but also the ability to understand the broader organizational and societal implications of technology.

Soft skills have also gained prominence in this debate. Adaptability, communication, critical thinking, and teamwork are increasingly viewed as essential complements to digital competencies. Moreover, principles of inclusivity and sustainability are seen as critical dimensions of professional development. Damerji and Salimi [16] emphasized the need for universities to assess students' readiness to adopt emerging technologies, while Gonçalves, et al. [42] highlighted the efficiency gains and reduction in errors enabled by automation, which allow accountants to focus on value-added services.

Large-scale survey studies reinforce these findings. Awang, et al. [43] surveyed 546 accounting interns in Malaysia, identifying both the opportunities and risks of digitalization, as well as gender-related differences in perceptions. Abhishek, et al. [44] surveyed 482 professionals in India, confirming that digitization improves the accuracy of accounting, enhances compliance, and streamlines financial reporting, in line with the findings of Andreeva [45] and Munfaredi, et al. [46]. However, these studies also noted that auditors cannot be replaced, as human judgment remains essential [47-49].

The literature also highlights the transformative role of emerging technologies. Herath and Herath [50] pointed to AI, Machine Learning (ML), cloud computing, Robotic Process Automation (RPA), blockchain, and big data analytics as key drivers of digital transformation in accounting. These technologies enable automation of routine processes, enhance accuracy, support fraud prevention, and provide deeper insights for decision-making.

Finally, from a functionalist perspective, Leitner-Hanetseder, et al. [51] and Wright and Schultz [52] argue that while AI may displace specific roles, it will also create new opportunities for highly skilled professionals. Their findings support the view that AI complements rather than replaces human judgment [53-55] suggesting that the future of accounting lies in human–machine collaboration.

3. Methodology

The present survey targeted professional accountants and economists working in Greece. The questionnaire design was informed by previous studies [43, 56, 57]. Data collection was conducted between June 30, 2025, and July 30, 2025. The questionnaire was created using Google Forms and distributed electronically via email and social networks (LinkedIn and Facebook). In parallel, professional associations of accountants across different regions of Greece were contacted to enhance participation within the target group.

An estimated 1,000 professionals received the questionnaire, of which 177 provided fully complete responses, yielding a response rate of approximately 18%. The collected data were processed and analyzed using IBM SPSS Statistics (Version 29.0.1.0).

The questionnaire comprised seven demographic questions and nineteen substantive questions, organized into the following dimensions: Perception of Digitalization in Accounting, Adoption of Digitalization in Accounting, Opportunities for Future Accountants, and Challenges for Future Accountants.

Table 1 presents the definitions of components.

Table 1.
Definitions of Components.

Components	Definition
Perception Level of Digitalization in Accounting	The perception regarding the impact of digitalization on the accounting profession.
Adoption Level of Digitalization in Accounting	The level of adoption of digital transformation at the national level and in the EU.
Opportunities for Future Accountants	A set of attempts on how accountants accept and use new technology.
Challenges for Future Accountants	Evaluate, access, analyze, create, and participate in understanding the role of digitalization in accounting.

The questionnaire evaluated both demographic characteristics and respondents' views on the digitalization of the accounting profession. Specifically, five questions examined opinions regarding the opportunities and challenges that future accountants will face. In addition, three items assessed the perceived level of digitalization in accounting, while six items focused on the adoption level of digitalization. All questions, adapted from Voss and Riede [58] were measured on a five-point Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). The complete list of items corresponding to each variable is presented in Table 2.

Table 2.
List of Questions.

Category	Questions
Opportunities for Future Accountants	Digitalization creates more new jobs.
	Digitalization reduces working time.
	Digitalization increases work autonomy.
	Digitalization provides better agronomics (Support in performing heavy, dangerous, or complex work).
	Digitalization enhances gender equality for women in the workplace.
Challenges for Future Accountants	The cost of adopting new technologies is a major barrier.
	The lack of proper education and skills is a challenge.
	The lack of support/guidance from professional bodies or the state is a challenge.
	Resistance to change by staff/customers is a barrier.
	Data security and privacy are major concerns.
Perception Level of Digitalization in Accounting	Digital transformation exerts a profound influence on the accounting profession.
	Embracing new technologies is essential for the continued viability of accounting offices and departments.
	The digitalization of the public sector is driving more citizens to seek support from accountants and financial advisors.
Adoption Level of Digitalization in Accounting	I consider myself well-informed about technological developments in accounting (e.g., AI, Blockchain).
	The Greek accounting market is advancing toward digitalization at a satisfactory pace.
	European initiatives (such as e-invoicing) positively contribute to Greece's digitalization efforts.
	The current legislative and regulatory framework in Greece and Europe is sufficient to support digital accounting.
	Greece's MyData system has played a pivotal role in accelerating digital transformation.
	My business/office has implemented a comprehensive digital transformation strategy.

The research questions of this study are as follows:

$H_{1:}$ Gender is related to perceived opportunities in the digitalized accounting profession.

$H_{2:}$ Education is related to perceived opportunities in the digitalized accounting profession.

$H_{3:}$ Age is related to perceived opportunities in the digitalized accounting profession.

$H_{4:}$ Years of experience are related to perceived opportunities in the digitalized accounting profession.

$H_{5:}$ The Size of the Company is related to perceived opportunities in the digitalized accounting profession.

$H_{6:}$ The Adoption Level of Digitalization in Accounting is related to perceived opportunities in the digitalized accounting profession.

$H_{7:}$ The Perception Level of Digitalization in Accounting is related to perceived opportunities in the digitalized accounting profession.

$H_{8:}$ Gender is related to perceived challenges in the digitalized accounting profession.

$H_{9:}$ Education is related to perceived challenges in the digitalized accounting profession.

$H_{10:}$ Age is related to perceived challenges in the digitalized accounting profession.

H_{11}: Years of experience are related to perceived challenges in the digitalized accounting profession.

H_{12}: The Size of the Company is related to perceived challenges in the digitalized accounting profession.

H_{13}: The Adoption Level of Digitalization in Accounting is related to perceived challenges in the digitalized accounting profession.

H_{14}: The Perception Level of Digitalization in Accounting is related to perceived challenges in the digitalized accounting profession.

First, the reliability of the questionnaire items was assessed. Next, principal component analysis (PCA) was applied to examine whether the items could be meaningfully grouped into the predefined categories. Once the statistical tests confirmed the validity of this categorization, correlation analysis was conducted to detect potential multicollinearity issues. Then, multiple linear regression was employed to test and validate the research hypotheses. In addition, we used independent sample t-tests to determine whether there is a statistically significant difference in opportunities and challenges associated with digitalization between different categories of respondents. Finally, using multiple linear regression, we investigate whether the perception and Adoption of Digitalization in Accounting positively influence opinions about opportunities and challenges for future accountants.

4. Demographics

Table 3 presents the demographics of the dataset.

Our sample consists of 177 participants, who answered all questions. Of these, 85 (48%) were women, 91 (51.4%) were men, and 1 (0.6%) stated other/NA.

Regarding the years in the profession, the majority, or 31.6%, have been in the profession for over 20 years, while 28.2% have been in the profession for 11 to 20 years. Therefore, approximately 60% of the participants have been working in the field for over 11 years, resulting in extensive experience among the participants. On the other hand, from 0 to 5 years, we have 20.3% and from 6 to 10, another 19.8%. That is, from 0 to 10 years, we have approximately 40% of the participants; therefore, a significant contribution is made by young professionals from the new generations of accounting.

In terms of Age, 14.7% are under 30 years old, 31.1% are between 31 and 40 years old, 30.5% are between 41 and 50 years old, 18.6% are between 51 and 60 years old, and 5.1% are over 60 years old. In other words, 80.2% were between 31 and 50 years old, and 19.8% were under 30 and over 60 years old.

Regarding the educational level of the participants, 49.7% are university graduates, 42.9% hold a master's degree, and 2.8% have a doctorate. Only 8, on the other hand, are graduates of High School or Vocational Training Institutes (4.5%).

Table 3.
Demographics of the dataset.

Gender			**Years of Professional Experience in Accounting**			**Educational Level**		
	Freq.	**%**		**Freq.**	**%**		**Freq.**	**%**
Female	85	48	0-5 years	36	20.3	Bachelor	88	49.7
Male	91	51.4	6-10 years	35	19.8	High School / Vocational training institute	8	4.5
Other/NA	1	0.6	11-20 years	50	28.2	MSc	76	42.9
Total	177	100	>20 years	56	31.6	Phd	5	2.8
			Total	177	100.0	Total	177	100.0
Age Group			**Type of Employment**			**Size of Company (Number of employees)**		
	Freq.	%		Freq.	%		Freq.	%
< 30 years	26	14.7	Accountant in a company	34	19.2	Large (>250 employees)	18	10.2
31-40 years	55	31.1	Accountant in an accounting office (providing services to external clients)	47	26.6	Medium (51-250 employees)	20	11.3
41-50 years	54	30.5	Economic/Financial Advisor	21	11.9	Small (11-50 employees)	33	18.6
51-60 years	33	18.6	Freelance Accountant (self-employed. without staff)	37	20.9	Micro (1-10 employees)	79	44.6
> 60 years	9	5.1	Other	38	21.5	Self-employed	27	15.3
Total	177	100.0	Total	177	100.0	Total	177	100.0

The type of employment of the participants is also evenly distributed, with 19.7% being accountants in a company, 26.6% being accountants in an accounting office, 19.7% being self-employed freelance accountants, and 22% being in other roles. Finally, 12.1% told us that they are financial or financial advisors.

Concluding the review of the demographics of our survey, 44.5% work in companies with up to 10 employees, 19.1% in companies with 11 to 50 employees, 14.5% are self-employed, 11.6% work in medium-sized businesses with 51-250 employees, and 10.4% in large companies with more than 250 employees.

Geographically, 44 responders (25.4%) are professionally active in large urban centers, while the remaining 129 (74,6%) work in regional units.

5. Empirical Results

5.1. Descriptive Statistics

First, we present the descriptive statistics of the questions grouped by category. Table 4 presents the values of the questions in the category Perception Level of Digitalization in Accounting (PLDA). The mean of this PLDA category is relatively high (4.36), demonstrating respondents' strong belief in the impact of digitalisation on the accounting profession. The question "Digital transformation exerts a profound influence on the accounting profession" has the highest mean (4.51).

Table 4.
Perception Level of Digitalization in Accounting Mean Scores.

	N	Mean	Median	S.D.	Min	Max
Digital transformation exerts a profound influence on the accounting profession.	177	4.51	5.00	0.72	2.00	5.00
Embracing new technologies is essential for the continued viability of accounting offices and departments.	177	4.31	4.00	0.83	1.00	5.00
The digitalization of the public sector is driving more citizens to seek support from accountants and financial advisors.	177	4.25	4.00	0.89	1.00	5.00
Perception Level of Digitalization in Accounting (Average)	***177***	***4.36***	***4.33***	***0.63***	***2.00***	***5.00***

Note: N = Number of questionnaires, Mean = Average of dataset, Median = The value separating the higher half from the lower half of the dataset, S.D. = Standard Deviation, Min = Minimum, Max = Maximum.

Table 5 presents the values of the questions in the Adoption Level of Digitalization in Accounting (ALDA) category. The mean of the ALDA category is 3.62, indicating a relatively modest perception among respondents regarding the level of digital transformation adoption at the national level and in the EU. The question "The current legislative and regulatory framework in Greece and Europe is sufficient to support digital accounting" yields the lowest mean (3.15). In contrast, the question "Greece's MyData system has played a pivotal role in accelerating digital transformation" recorded the highest mean (3.94).

Table 5.
Adoption Level of Digitalization in Accounting Mean Scores.

	N	Mean	Median	S.D.	Min	Max
I consider myself well-informed about technological developments in accounting (e.g., AI, Blockchain).	177	3.51	4.00	1.04	1.00	5.00
The Greek accounting market is advancing toward digitalization at a satisfactory pace.	177	3.56	4.00	1.02	1.00	5.00
European initiatives (such as e-invoicing) positively contribute to Greece's digitalization efforts.	177	3.77	4.00	1.02	1.00	5.00
The current legislative and regulatory framework in Greece and Europe is sufficient to support digital accounting.	177	3.15	3.00	1.21	1.00	5.00
Greece's MyData system has played a pivotal role in accelerating digital transformation.	177	3.94	4.00	1.00	1.00	5.00
My business/office has implemented a comprehensive digital transformation strategy.	177	3.79	4.00	0.94	1.00	5.00
Adoption Level of Digitalization in Accounting (Average)	177	3.62	3.67	0.78	1.50	5.00

Note: N = Number of questionnaires, Mean = Average of dataset, Median = The value separating the higher half from the lower half of the dataset, S.D. = Standard Deviation, Min = Minimum, Max = Maximum.

Table 6 presents the characteristics of the questions in the "Opportunities for Future Accountants" (OFA) category. The mean of OFA is 3.55. The question "Digitalization creates more new jobs" has the lowest mean (3.08). In contrast, the questions "Digitalization increases work autonomy" and "Digitalization provides better agro-nomics (support in performing heavy, dangerous, or complex work)" have the highest means (3.74 and 3.73, respectively).

Table 6.
Opportunities for future accountants mean scores.

	N	Mean	Median	S.D.	Min	Max
Digitalization creates more new jobs.	177	3.08	3.00	1.24	1.00	5.00
Digitalization reduces working time.	177	3.64	4.00	1.20	1.00	5.00
Digitalization increases work autonomy.	177	3.74	4.00	1.02	1.00	5.00
Digitalization provides better agronomics (support in performing heavy, dangerous, or complex work).	177	3.73	4.00	1.01	1.00	5.00
Digitalization enhances gender equality for women in the workplace.	177	3.55	4.00	1.19	1.00	5.00
Opportunities for future accountants (Average)	177	3.55	3.60	0.94	1.00	5.00

Note: N = Number of questionnaires, Mean = Average of dataset, Median = The value separating the higher half from the lower half of the dataset, S.D. = Standard Deviation, Min = Minimum, Max = Maximum

Table 7 presents the characteristics of the questions in the "Challenges for Future Accountants" (CFA) category. The mean of CFA is 4.08, indicating strong concerns among professional accountants and economists regarding the challenges faced by future accountants. The questions "The lack of proper education and skills is a challenge" and "The lack of support/guidance from professional bodies or the state is a challenge" have the highest mean (4.21 and 4.18, respectively).

Table 7.
Challenges for future accountants Mean Scores.

	N	Mean	Median	S.D.	Min	Max
The cost of adopting new technologies is a major barrier.	177	3.91	4.00	1.04	1.00	5.00
The lack of proper education and skills is a challenge.	177	4.21	4.00	0.84	1.00	5.00
The lack of support/guidance from professional bodies or the state is a challenge.	177	4.18	4.00	0.88	2.00	5.00
Resistance to change by staff/customers is a barrier.	177	3.99	4.00	0.97	1.00	5.00
Data security and privacy are major concerns.	177	4.12	4.00	1.00	1.00	5.00
Challenges for future accountants (Average)	177	4.08	4.20	0.71	1.80	5.00

Note: N = Number of questionnaires, Mean = Average of dataset, Median = The value separating the higher half from the lower half of the dataset, S.D. = Standard Deviation, Min = Minimum, Max = Maximum.

5.2. Principal Component Analysis and Reliability Test

The results of the Principal Component Analysis (PCA) applied to the grouping of questionnaire items within each category are presented below.

The analysis initially included the nine items corresponding to the PLDA and ALDA categories. PCA was conducted on all items to examine the validity of the proposed categorization. As shown in Table 8, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.813, which exceeds the recommended threshold of 0.8, indicating that the dataset is highly suitable for factor analysis. Furthermore, Bartlett's test of sphericity is statistically significant ($p < 0.05$), confirming the appropriateness of the data for such analysis. The evaluation of Eigenvalues indicates the extraction of two components, as subsequent values fall below 1. The rotated component matrix reveals that the first factor comprises the six items from the ALDA category.

In comparison, the second factor comprises the three items from the PLDA category. This outcome provides empirical support for the proposed grouping. Collectively, the two principal components account for 60.45% of the total variance in the data.

Table 8.
Principal Component Analysis for ALDA and PLDA.

KMO and Bartlett's Test					
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.813	
	Bartlett's Test of Sphericity	Approx. Chi-Square		603.673	
		Df		36	
		Sig.		<0.001	
Total Variance Explained					
	Initial Eigenvalues			**Extraction Sums of Squared Loadings**	
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.981	44.235	44.235	3.981	44.235	44.235
2	1.459	16.211	60.446	1.459	16.211	60.446
3	0.886	9.844	70.290			
4	3.981	44.235	44.235			
		Rotated Component Matrix				
			Component			
			1	2		
		ALDA_1	0.732			
		ALDA _2	0.770			
		ALDA _3	0.736			
		ALDA _4	0.757			
		ALDA _5	0.667			
		ALDA _6	0.731			
		PLDA_1		0.811		
		PLDA _2		0.706		
		PLDA _3		0.720		

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 3 iterations.

Table 9 presents the results of the Principal Component Analysis (PCA) for the construction of Opportunities for Future Accountants (OFA). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.845, exceeding the recommended threshold of 0.8, thereby indicating that the dataset is highly suitable for factor analysis. In addition, Bartlett's test of sphericity is statistically significant ($p < 0.001$), further confirming the appropriateness of the variables for such analysis. The Eigenvalue criterion supports the extraction of a single component for the OFA construction, which accounts for 69.84% of the total variance.

Table 9.
Principal Component Analysis for OFA.

KMO and Bartlett's Test					
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.845	
	Bartlett's Test of Sphericity	Approx. Chi-Square		533.085	
		df		10	
		Sig.		<0.001	
Total Variance Explained					
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**	
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.492	69.841	69.841	3.492	69.841	69.841
2	0.581	11.624	81.465			
3	0.455	9.101	90.566			

Note: Extraction Method: Principal Component Analysis.

Table 10 reports the results of the Principal Component Analysis (PCA) for the Construction Challenges for Future Accountants (CFA). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.812, exceeding the threshold of 0.8 and indicating that the dataset is well-suited for factor analysis. In addition, Bartlett's test of sphericity is statistically significant ($p < 0.001$), confirming the suitability of the variables for such analysis. The Eigenvalue criterion supports the extraction of a single component for CFA, which explains 57.48% of the total variance.

Table 10.
Principal Component Analysis for CFA

KMO and Bartlett's Test				
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,812	
	Bartlett's Test of Sphericity	Approx. Chi-Square	293.594	
		df	10	
		Sig.	<0.001	

Total Variance Explained						
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.889	57.787	57.787	2.889	57.787	57.787
2	0.722	14.434	72.221			
3	0.571	11.423	83.644			

Note: Extraction Method: Principal Component Analysis.

Table 11 reports the reliability assessment of the questionnaire items based on Cronbach's alpha coefficient. Cronbach's alpha is a widely employed statistic for evaluating the internal consistency of survey constructs. In all instances, the coefficient values exceed the threshold of 0.8, which is generally considered indicative of strong reliability. Moreover, the Hostelling's T-Squared Test scored a p-value < 0.001 for all categories. These results confirm that the items within each category demonstrate consistency and effectively capture the same underlying construct.

Table 11.
Reliability Statistics for Principal Components

	Cronbach's Alpha	**Cronbach's Alpha Based on Standardized Items**	**Hotelling's T-Squared Test**	**N of Items**
PLDA	0.832	0.834	216.02***	3
ALDA	0.832	0.834	216.02***	6
OFA	0.885	0.890	26.232***	5
CFA	0.809	0.815	73.763***	5

In Table 12, we list the correlations of the variables. We observe that all correlations are less than 0.8; therefore, there is no issue of multicollinearity in our sample. At the same time, we observe a low positive correlation between the Education variable and the OFA variable. Therefore, the level of education has a positive influence on the respondents' views on opportunities for future accountants. We also observe a medium positive correlation between the Size variable and the CFA and OFA variables. That is, the Size of the company for which the respondent is employed, as reflected by the Number of employees, positively influences the participants' perceptions regarding the Opportunities and the Challenges for future accountants. ALDA demonstrates a positive and statistically significant correlation with both CFA (moderate) and OFA (high). This finding suggests that the extent of digitalization adoption in accounting is positively correlated with respondents' perceptions of both the opportunities and challenges associated with the future of the accounting profession. Furthermore, PLDA is positively and significantly correlated with CFA (moderate), suggesting that the perceived level of digitalization is related to respondents' assessments of the challenges that future accountants are likely to encounter.

Table 12.
Correlations matrix.

	Gender	**Age**	**Education**	**Years of experience**	**Size**	**ALDA**	**PLDA**	**CFA**	**OFA**
Gender	1								
Age	-0.143	1							
Education	0.020	0.055	1						
Years of experience	-0.093	0.747**	0.068	1					
Size	-0.044	-0.002	0.252**	-0.048	1				
ALDA	-0.031	0.087	0.142	0.049	0.214**	1			
PLDA	-0.045	-0.085	0.099	-0.017	0.038	-3.3E-16	1		
CFA	0.061	0.099	0.129	0.124	0.231**	0.330**	0.343**	1	
OFA	-0.012	0.018	0.207**	-0.038	0.205**	0.654**	0.073	0.313**	1

Note: Gender: Responders' Gender, Age: Responders' Age, Years of experience: The number of years of professional experience in accounting, Size: The Number of employees worked in the company of responders, ALDA: Factor of Adoption Level of Digitalization in Accounting, PLDA: Factor of Perception Level of Digitalization in Accounting, OFA: Factor of Opportunities for future accountants, CFA: Factor of Challenges for future accountants.
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Regarding the independent variables, a strong positive correlation is observed between Age and years of professional experience, a result that is entirely expected. Additionally, a moderate positive correlation is found between company size,

level of education, and the degree of adoption of digital accounting tools. This implies that larger, digitally oriented companies are more likely to employ accountants with higher educational qualifications and to implement a greater number of digital tools in the execution of accounting tasks.

Although the Gender variable does not present statistically significant correlations, certain tendencies may be discerned. Specifically, women appear to adopt a more cautious stance toward digitalization in accounting, as evidenced by a weak positive correlation with CFA and a weak negative correlation with OFA.

5.3. Multiple Linear Regression

Subsequently, the research hypotheses were tested using linear regression analysis. In particular, the constructs "Opportunities for Future Accountants" and "Challenges for Future Accountants" were examined as dependent variables in separate models.

Table 13 presents the results of the linear regression analysis with Opportunities for Future Accountants as the dependent variable. The independent variables include gender, level of education, years of professional experience, company size (measured by the Number of employees), as well as the ALDA and PLDA factors. The adjusted R^2 is 0.43, indicating that the model explains 43% of the variance in the dependent variable. The F-test is statistically significant at the 1% level ($p < 0.01$), confirming the overall validity of the model.

With respect to the coefficients, the ALDA factor has a positive and statistically significant effect at the 1% level, suggesting that higher levels of digitalization adoption in accounting are associated with stronger perceptions of opportunities for future accountants. Similarly, the level of education is positively and significantly related to the dependent variable, indicating that respondents with higher educational attainment perceive greater opportunities for advancement. All Variance Inflation Factor (VIF) values are below 3, confirming the absence of multicollinearity. The remaining independent variables do not have a statistically significant effect on the construct Opportunities for Future Accountants.

Table 13.
Multiple Linear Regression for Technology Adoption

Coefficients[a]	**B**	**Std. Error**	**Sig.**	**VIF**
(Constant)	-0.345	0.290	0.236	
ALDA	0.633***	0.059	0.000	1.065
PLDA	0.063	0.058	0.278	1.027
Gender	0.011	0.115	0.921	1.029
Age	0.036	0.080	0.653	2.340
Education	0.169*	0.095	0.077	1.096
Years of experience	-0.091	0.077	0.239	2.297
Size	0.031	0.051	0.547	1.117
R2	0.453			
Adj.R2	0.430			
F-stat	19.955***			

Note: a. Dependent Variable: OFA
Gender: Responders' Gender, Age: Responders' Age, Years of experience: The number of years of professional experience in accounting, Size: The Number of employees worked in the company of responders, ALDA: Factor of Adoption Level of Digitalization in Accounting, PLDA: Factor of Perception Level of Digitalization in Accounting, OFA: Factor of Opportunities for future accountants.

Table 14 presents the results of the linear regression analysis, with "Challenges for Future Accountants" as the dependent variable. The independent variables include Gender, Age, level of education, years of professional experience, company size, as well as the ALDA and PLDA factors. The adjusted R^2 is 0.246, indicating that the model explains 24.6% of the variance in the dependent variable. The F-test is statistically significant at the 1% level ($p < 0.01$), confirming the overall adequacy of the model.

Regarding the coefficients, both ALDA and PLDA have positive and statistically significant effects at the 1% level, showing that higher adoption and perception of digitalization in accounting are associated with stronger perceptions of challenges for future accountants. Additionally, company size demonstrates a positive and statistically significant relationship with the dependent variable, indicating that respondents employed in larger organizations perceive greater challenges. All VIF values are below 3, verifying the absence of multicollinearity. The remaining independent variables do not exert a statistically significant influence on the construct of "Challenges for Future Accountants."

Table 14.
Multiple Linear Regression for Challenges for Future Accountants.

Coefficients[a]	B	Std. Error	Sig.	VIF
(Constant)	-0.818**	0.334	0.015	
ALDA	0.289***	0.068	0.000	1.065
PLDA	0.347***	0.066	0.000	1.027
Gender	0.216	0.132	0.104	1.029
Age	0.040	0.092	0.663	2.340
Education	5.433E-05	0.109	1.000	1.096
Years of experience	0.090	0.089	0.309	2.297
Size	0.140**	0.059	0.018	1.117
R2	0.276			
Adj.R2	0.246			
F-stat	9.211***			

a. Dependent Variable: CFA

Note: Gender: Responders' Gender, Age: Responders' Age, Years of experience: The number of years of professional experience in accounting, Size: The Number of employees worked in the company of responders, ALDA: Factor of Adoption Level of Digitalization in Accounting, PLDA: Factor of Perception Level of Digitalization in Accounting, CFA: Factor of Challenges for future accountants.

Based on the results of the linear regression analyses, Hypotheses 5, 6, 12, 13, and 14 are supported. Specifically, the level of digitalization adoption in accounting significantly influences perceptions of both opportunities and challenges for future accountants. This finding is consistent with expectations, as professionals who have more extensively adopted digital tools are better positioned to recognize not only the potential benefits but also the challenges associated with the digital transformation of the accounting profession.

Furthermore, educational attainment exerts a positive effect on the perception of opportunities. Accountants with higher levels of education appear to have a greater capacity to appreciate the advantages offered by emerging technologies, including those developed through artificial intelligence. Finally, company size is positively associated with the perception of challenges. Accountants employed in larger organizations are more likely to perceive difficulties as increased, a result that may be explained by the greater complexity of accounting tasks in larger firms, where the implementation of digitalization, despite its advantages, introduces additional layers of difficulty.

5.4. Independent Samples T-Test

To further evaluate the research hypotheses, independent samples t-tests were applied to assess mean differences in the dependent variables across groups defined by Gender, Age, level of education, years of professional experience, and company size.

5.4.1. Gender Differences with Opportunities and Challenges for Future Accountants

Table 15 reports the outcomes of the independent samples t-test conducted to examine gender differences. Male accountants demonstrated a marginally higher perception of opportunities (M = 3.56, SD = 0.95) relative to their female counterparts (M = 3.52, SD = 0.94). This difference, however, was not statistically significant (t = 0.268, df = 174, p = 0.789), with the mean difference being negligible (0.04, 95% CI: -0.24 to 0.32).

With respect to perceived challenges, male accountants reported slightly lower scores (M = 4.05, SD = 0.71) than female accountants (M = 4.11, SD = 0.73). Yet, this difference also failed to reach statistical significance (t = -0.598, df = 174, p = 0.551). The associated mean difference was minimal (-0.06, 95% CI: -0.28 to 0.15). Moreover, Levene's Test for Equality yielded a p-value exceeding the 0.1 threshold, thereby supporting the assumption of homogeneity of variances.

Taken together, these findings provide no evidence of statistically significant gender-based differences in perceptions of either opportunities or challenges related to the digitalization of the accounting profession. Accordingly, Hypotheses 1 and 8 are rejected.

Table 15.
Independent t-test results for Gender.

		Group Statistics				
		Gender	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Opportunities for Future Accountants from Digitalization in Accounting (OFA)		Male	91	3.5604	0.9453	0.0991
		Female	85	3.5224	0.9371	0.1016
Challenges for Future Accountants from Digitalization in Accounting (CFA)		Male	91	4.0484	0.7051	0.0739
		Female	85	4.1129	0.7286	0.0790

Independent Samples Test

		Levene's Test for Equality of Variances		**t-test for Equality of Means**						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
OFA	Equal variances assumed	0.059	0.808	0.268	174	0.789	0.0381	0.1420	-0.2422	0.3183
	Equal variances not assumed.			0.268	173.377	0.789	0.0381	0.1420	-0.2421	0.3183
CFA	Equal variances assumed	0.000	0.997	-0.598	174	0.551	-0.0646	0.1081	-0.2779	0.1487
	Equal variances not assumed.			-0.597	172.231	0.551	-0.0646	0.1082	-0.2782	0.1490

These findings are consistent with the results of Awang, et al. [43] but diverge from prior research, which has identified gender differences in the adoption of technology. In the broader context of information technology, including computers, email services, electronic data management systems, and other related tools, Gender has traditionally been considered a determinant of adoption, with men generally exhibiting greater technological proficiency than women [59]. Similarly, gender differences have been shown to moderate the adoption of multimedia for learning [60]. For instance, the effect of task–technology fit on perceived usefulness is more substantial among men, suggesting that when the alignment between task requirements and technological tools is high, men are more likely to perceive the technology as beneficial.

In contrast, the present study contributes to the growing body of evidence suggesting that male and female accountants now compete on equal terms for career advancement, and that women no longer perceive technological developments as inherently disadvantageous.

5.4.2. Education Differences with Opportunities and Challenges for Future Accountants

Table 16 presents the results of the independent samples t-test, which assesses potential education-related differences. Accountants holding an MSc or PhD reported a higher perception of opportunities (M = 3.80, SD = 0.82) compared with those having a BSc or lower degree (M = 3.34, SD = 0.98). This difference was statistically significant at the 1% level (t = 3.338, df = 175, p = 0.001), with a mean difference of 0.46 (95% CI: 0.19 to 0.73). Moreover, Levene's Test for Equality indicated a significant difference in variances at the 10% level (p = 0.087).

In contrast, no statistically significant difference was observed in the perception of challenges. Respondents with an MSc or PhD reported slightly higher scores (M = 4.16, SD = 0.71) compared with those holding a BSc or less (M = 4.02, SD = 0.72). However, this difference was not statistically significant (t = 1.295, df = 175, p = 0.197), with a negligible mean difference of 0.14 (95% CI: –0.07 to 0.35).

Overall, the results confirm statistically significant education-related differences in the perception of opportunities, supporting Hypothesis 2. Conversely, no evidence was found for education-related differences in the perception of challenges, leading to the rejection of Hypothesis 9.

These findings suggest that accountants with higher levels of education are more likely to recognize the opportunities arising from digitalization. This outcome is consistent with expectations, as highly educated accountants are generally more receptive to technological change and more capable of understanding and applying advanced tools such as artificial intelligence and machine learning. By contrast, accountants without a university degree often face greater difficulties in adapting to technological transformations and, as a result, perceive fewer opportunities from digitalization.

5.4.3. Age Differences with Opportunities and Challenges for Future Accountants

Table 17 presents the results of the independent samples t-test, which assesses potential age-related differences. Accountants aged 40 years or older exhibited a marginally higher perception of opportunities (M = 3.61, SD = 0.88) compared with those under 40 years (M = 3.47, SD = 1.01). This difference, however, was not statistically significant (t = 0.962, df = 175, p = 0.338), with the observed mean difference being negligible (0.14, 95% CI: -0.14 to 0.42).

In contrast, a statistically significant difference emerged in the perception of challenges. Accountants over 40 years reported higher scores (M = 4.18, SD = 0.64) than their younger counterparts (M = 3.96, SD = 0.78). This difference reached significance at the 5% level (t = 2.064, df = 175, p = 0.041), with a mean difference of 0.22 (95% CI: 0.01 to 0.43). Furthermore, Levene's Test for equality of variances indicated a significant difference (p = 0.034).

Overall, the results provide no evidence of statistically significant age-related differences in perceptions of opportunities associated with the digitalization of the accounting profession; therefore, Hypothesis 3 is rejected. Conversely, the findings confirm the existence of statistically significant age-related differences in the perception of challenges, thereby supporting Hypothesis 10. Specifically, older accountants appear more cautious regarding digital transformation, as evidenced by their heightened awareness of potential challenges.

Table 16.
Independent t-test results for Age.

		Group Statistics				
		Education	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Opportunities for Future Accountants from Digitalization in Accounting (OFA)		MSc or Phd	81	3.7975	0.8237	0.0915
		BSc or less	96	3.3375	0.9829	0.1003
Challenges for Future Accountants from Digitalization in Accounting (CFA)		MSc or Phd	81	4.1580	0.7083	0.0787
		BSc or less	96	4.0188	0.7168	0.0732

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
OFA	Equal variances assumed	2.97	0.087	3.338	175	0.001	0.4600	0.1378	0.1880	0.7321
	Equal variances not assumed.			3.388	174.994	<.001	0.4600	0.1358	0.1920	0.7280
CFA	Equal variances assumed	0.007	0.934	1.295	175	0.197	0.1393	0.1076	-0.0730	0.3516
	Equal variances not assumed.			1.296	170.671	0.197	0.1393	0.1075	-0.0728	0.3514

Table 17.
Independent t-test results for Age.

		Group Statistics				
		Age	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Opportunities for Future Accountants from Digitalization in Accounting (OFA)		> 40 years	96	3.6104	0.8804	0.0899
		≤40 years	81	3.4741	1.0057	0.1117
Challenges for Future Accountants from Digitalization in Accounting (CFA)		> 40 years	96	4.1833	0.6408	0.0654
		≤40 years	81	3.9630	0.7798	0.0866

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
OFA	Equal variances assumed	1.427	0.234	0.962	175	0.338	0.1363	0.1418	-0.1435	0.4162
	Equal variances not assumed.			0.951	160.42	0.343	0.1363	0.1434	-0.1468	0.4195
CFA	Equal variances assumed	4.557	0.034	2.064	175	0.041	0.2204	0.1068	0.0096	0.4311
	Equal variances not assumed.			2.03	154.81	0.044	0.2204	0.1086	0.0059	0.4348

This outcome is consistent with the concept of generational dynamics. Younger accountants, primarily belonging to Generation Z, tend to be more receptive to digitalization and inclined to embrace its opportunities. Generation Z—defined as individuals born after 1995—has grown up in a globally interconnected environment where technology was widely available and deeply integrated into social interaction [61-63]. Consequently, this generation is more accustomed to digital technologies and demonstrates a greater willingness to adapt to the demands of a rapidly evolving professional environment [64].

5.4.4. Years-of-experience Differences with Opportunities and Challenges for Future Accountants

Table 18 presents the results of the independent samples t-test, which examines potential differences related to years of professional experience. Accountants with more than 10 years of experience reported virtually identical perceptions of opportunities (M = 3.55, SD = 0.91) compared with those with less than 10 years of experience (M = 3.55, SD = 0.99). This difference was not statistically significant (t = –0.015, df = 175, p = 0.988), with a negligible mean difference of –0.002 (95% CI: –0.29 to 0.28).

In contrast, a statistically significant difference was observed in the perception of challenges. Accountants with more than 10 years of experience reported higher scores (M = 4.18, SD = 0.64) than those with less experience (M = 3.94, SD = 0.80). This difference was statistically significant at the 5% level (t = 2.271, df = 175, p = 0.024), with a mean difference of 0.25 (95% CI: 0.03-0.46). Levene's Test for Equality further indicated a significant difference in variances at the 10% level (p = 0.068).

Overall, the findings provide no evidence of statistically significant experience-related differences in perceptions of opportunities arising from digitalization, thereby rejecting Hypothesis 4. Conversely, the results confirm statistically significant experience-related differences in the perception of challenges, thereby supporting Hypothesis 11.

These findings align with the earlier analysis of the Age variable, where older accountants also exhibited greater concern regarding the challenges of digital transformation. Taken together, the results suggest that Age and professional experience are interrelated factors shaping perceptions of digitalization: accountants who have spent longer in the profession may have developed established work routines and accumulated tacit knowledge rooted in traditional accounting practices, which makes them more cautious about technological change.

By contrast, less experienced accountants—often younger and at earlier stages of their careers—tend to be more flexible and adaptable to technological advancements, viewing them not as obstacles but as opportunities for professional growth. This interpretation also complements the findings related to educational level, where accountants with higher degrees (MSc/PhD) recognized more opportunities in digitalization, likely due to their stronger familiarity with advanced technologies and greater exposure to innovation.

In sum, the evidence suggests a generational and experiential divide in attitudes toward digital transformation: while highly educated and less experienced accountants are more open to embracing digital tools, more experienced professionals display greater caution, primarily due to the perceived risks and challenges these changes may pose to established practices and career trajectories.

5.4.5. Size Differences with Opportunities and Challenges for Future Accountants

Table 19 reports the results of the independent samples t-test examining potential differences related to the Size of business where respondents work (based on the Number of employees). Companies with more than 10 employees exhibited a higher perception of opportunities (M = 3.76, SD = 0.99) compared with those with fewer than 10 employees (M = 3.40, SD = 0.88). This difference was statistically significant (t = 2.534, df = 175, p = 0.02), with an observed mean difference of 0.36 (95% CI: 0.08-0.64).

In addition, a statistically significant difference was observed in the perception of challenges. Companies with more than 10 employees reported higher scores (M = 4.28, SD = 0.65) than those with fewer than 10 employees (M = 3.95, SD = 0.65). This difference was statistically significant at the 1% level (t = 3.064, df = 175, p = 0.003), with a mean difference of 0.33 (95% CI: 0.12-0.54). However, in both cases, Levene's Test for Equality shows a p-value greater than 0.1, indicating that the assumption of equal variances can be made.

Overall, the findings provide evidence of statistically significant size-related differences in perceptions of opportunities and challenges arising from digitalization, supporting Hypotheses 5 and 12.

Table 18.
Independent t-test results for Years of experience.

	Group Statistics				
	Years of experience	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Opportunities for Future Accountants from Digitalization in Accounting (OFA)	> 10 years	106	3.5472	0.9081	0.0882
	≤ 10 years	71	3.5493	0.9912	0.1176
Challenges for Future Accountants from Digitalization in Accounting (CFA)	> 10 years	106	4.1811	0.6376	0.0619
	≤ 10 years	71	3.9352	0.7977	0.0947

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	**Sig.**	**t**	**df**	**Significance**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
OFA	Equal variances assumed	0.458	0.499	-0.015	175	0.988	-0.0021	0.1445	-0.2873	0.2831
	Equal variances not assumed.			-0.014	141.097	0.988	-0.0021	0.1470	-0.2928	0.2885
CFA	Equal variances assumed	3.383	0.068	2.271	175	0.024	0.2459	0.1083	0.0322	0.4596
	Equal variances not assumed.			2.174	127.196	0.032	0.2459	0.1131	0.0221	0.4698

Table 19.
Independent t-test results for Size.

	Group Statistics				
	Size	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Opportunities for Future Accountants from Digitalization in Accounting (OFA)	> 10 employees	71	3.7634	0.9869	0.1171
	≤ 10 employees	106	3.4038	0.8820	0.0857
Challenges for Future Accountants from Digitalization in Accounting (CFA)	> 10 employees	71	4.2789	0.6489	0.0770
	≤ 10 employees	106	3.9509	0.7286	0.0708

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	**Sig.**	**t**	**df**	**Significance**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
									Lower	**Upper**
OFA	Equal variances assumed	0.84	0.361	2.534	175	0.012	0.3596	0.1419	0.0795	0.6397
	Equal variances not assumed.			2.478	138.5	0.014	0.3596	0.1451	0.0727	0.6465
CFA	Equal variances assumed	1.627	0.204	3.064	175	0.003	0.3279	0.1070	0.1167	0.5391
	Equal variances not assumed.			3.135	161.4	0.002	0.3279	0.1046	0.1214	0.5345

Based on the above findings, professional accountants employed in larger firms (with more than 10 employees) demonstrate a greater awareness of the opportunities associated with applying artificial intelligence models and digital tools in accounting. This outcome is consistent with earlier correlation results, which indicated a positive association between company size, educational level, and the degree of digital tool adoption. Larger firms are generally more advanced in implementing digital transformation initiatives, both because they possess the necessary financial resources and because their operations are more complex, which increases the need for automation and technological integration.

Consequently, accountants working in such environments are more likely to recognize the efficiency gains and strategic advantages that digital technologies offer. At the same time, however, they also display a heightened awareness of the challenges posed by digitalization for the accounting profession. These challenges include the necessity of continuous professional development, the ability to adapt to rapidly evolving technological tools, and the demand for greater flexibility in working methods.

Taken together, these findings suggest that company size plays a significant role in shaping accountants' perceptions of digital transformation. Larger firms not only drive the adoption of advanced technologies but also foster an environment where accountants become more attuned to both the opportunities and the risks that digitalization entails. This highlights the significance of organizational context as a crucial factor in shaping how professionals perceive and respond to technological change.

6. Conclusions

Digitalization has affected almost all professional activities. Technological development has improved our lives and, at the same time, has led to a change in the way many professions operate.

Digitalization has also had a significant impact on the accounting profession. Professional accountants have been called upon to adjust their approach in recent years. Traditional professions, such as bookkeeping, have mainly been replaced by computers. This gives professional accountants more time to deal with decision-making issues. At the same time, the digitalization of public sector processes leads to increasing demands on the digital skills of professional accountants.

The findings of this study provide valuable insights into how professional accountants perceive the opportunities and challenges associated with the digitalization of the accounting profession. The analysis highlights significant variations in perceptions across demographic and professional characteristics, offering both theoretical contributions and practical implications for policymakers, educators, and industry stakeholders.

First, the results demonstrate that the adoption of digital tools (ALDA) and the perception of digitalization (PLDA) are positively associated with accountants' recognition of opportunities (CFA) and challenges (OFA). This suggests that greater engagement with digital technologies fosters both optimism about future benefits and heightened awareness of potential risks. These findings reinforce the dual nature of digital transformation: while it creates new opportunities for efficiency and innovation, it simultaneously introduces new demands for skills and adaptability.

Second, the analysis of independent variables revealed essential patterns. Age and years of experience were strongly correlated, and both groups of more experienced accountants exhibited greater caution toward digital transformation, reflected in their stronger recognition of challenges. By contrast, younger and less experienced accountants appeared more adaptable and less risk-averse. This generational and experiential divide highlights the need for tailored approaches to professional development. While younger professionals may require strategic guidance in harnessing opportunities, more experienced accountants may benefit from targeted upskilling and reskilling programs to mitigate their concerns about technological disruption.

Third, the study found that educational background plays a critical role. Accountants with advanced degrees (MSc/PhD) demonstrated significantly higher recognition of opportunities from digitalization, although no significant differences emerged regarding perceived challenges. This outcome underscores the significance of higher education in cultivating technological literacy and fostering an openness to innovation. It suggests that universities and professional training bodies should continue to integrate digital competencies—such as artificial intelligence, machine learning, and data analytics—into accounting curricula, thereby equipping graduates with the skills required in an increasingly digitalized profession.

Fourth, gender-related differences were not statistically significant. Both male and female accountants reported similar perceptions of opportunities and challenges, contradicting earlier studies that emphasized gender gaps in the adoption of technology. This result is encouraging, as it suggests that female accountants no longer perceive technological advances as inherently disadvantageous and that men and women compete on equal terms in navigating the digital transformation of the accounting industry.

Fifth, company size emerged as an important contextual factor. Accountants working in larger firms (with more than 10 employees) demonstrated greater recognition of both opportunities and challenges. This outcome is logical, as larger firms tend to be more advanced in adopting digital technologies due to greater resource availability and operational complexity. As a result, accountants in such environments are more exposed to digital tools and more aware of the skills required to use them effectively. By contrast, smaller firms may lag in adoption, which can limit both accountants' exposure to digital innovations and their recognition of potential risks.

The results of this study point to several policy and practice-oriented recommendations. Policymakers, professional associations, and firms should prioritize continuous professional education, with a particular focus on more experienced accountants. Tailored training initiatives can help address their cautious attitudes toward digitalization and reduce resistance to change.

Universities and accounting training institutions should expand the integration of digital competencies into accounting programs. Advanced knowledge in AI, machine learning, and data analytics should be systematically included to prepare future professionals for digitalized work environments.

Since larger firms appear more advanced in digital adoption, policymakers should design incentives (e.g., tax credits, grants, or subsidized training) to support smaller firms in investing in digital tools and upskilling their staff. This would help reduce inequalities in digital readiness across organizations.

Although no significant gender differences were identified, continued efforts to ensure inclusivity are warranted. Equal access to training, mentorship, and career development opportunities should remain a priority to sustain gender equity in digital transformation.

Given the differing perceptions between younger and older accountants, firms should adopt a dual approach: encouraging younger professionals to strategically leverage digital opportunities while simultaneously offering experienced professionals targeted support to overcome perceived risks and challenges.

7. Limitations

While this study provides important insights into the perceptions of professional accountants regarding digitalization, several limitations should be acknowledged. First, the data were collected through a survey of accountants in a specific national context. As such, the findings may be influenced by country-specific factors such as regulatory frameworks, cultural attitudes toward technology, and the pace of digital adoption within the accounting profession. Future research should therefore expand the analysis to a broader international context, allowing for comparative studies across different jurisdictions.

Second, the study is based on self-reported perceptions, which may not fully reflect actual behavior or digital competencies. Subjective experiences, organizational culture, or social desirability bias may shape respondents' attitudes. Future research could combine survey data with objective measures of digital skills or case studies of firms implementing digital transformation in practice.

Third, the variables examined focused primarily on demographic and organizational characteristics (e.g., Age, Gender, education, company size, years of experience). While these factors are essential, additional dimensions such as organizational culture, leadership support, and access to resources may also shape accountants' perceptions of opportunities and challenges. Future studies should adopt a more comprehensive framework that incorporates these variables.

Finally, the rapid pace of technological development means that accountants' perceptions are likely to evolve. Longitudinal research would provide valuable insights into how these perceptions change as new digital tools, such as artificial intelligence and blockchain, become more widely adopted in accounting practices.

References

[1] K. Schwab, "We must ensure the digital revolution is a force for good," 2016. https://www.weforum.org/agenda/2016/10/we-must-ensure-the-digital-revolution-is-a-force-for-good

[2] K. Schwab, "The fourth industrial revolution," 2015. https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution

[3] Y. A. Jasim and M. B. Raewf, "Impact of the information technology on the accounting system," *Cihan University-Erbil Journal of Humanities and Social Sciences*, vol. 4, no. 1, pp. 50-57, 2020.

[4] T. Fawcett, "The digital disruption," *Academic Leadership Series*, vol. 6, pp. 34-40, 2015.

[5] J. Guthrie and L. D. Parker, "Whither the accounting profession, accountants and accounting researchers? Commentary and projections," *Accounting, Auditing & Accountability Journal*, vol. 29, no. 1, pp. 2-10, 2016. https://doi.org/10.1108/AAAJ-10-2015-2263

[6] S. Kruskopf, C. Lobbas, H. Meinander, K. Söderling, M. Martikainen, and O. Lehner, "Digital accounting and the human factor: Theory and practice," *ACRN Journal of Finance and Risk Perspectives*, vol. 9, no. 1, pp. 78–89, 2020.

[7] C. Greenman, "Exploring the impact of artificial intelligence on the accounting profession," *Journal of Research in Business, Economics and Management*, vol. 8, no. 3, p. 1451, 2017.

[8] M. P. Neely and J. S. Cook, "Fifteen years of data and information quality literature: Developing a research agenda for accounting," *Journal of Information Systems*, vol. 25, no. 1, pp. 79-108, 2011. https://doi.org/10.2308/jis.2011.25.1.79

[9] H. J. Chen, S. Yan Huang, A. A. Chiu, and F. C. Pai, "The ERP system impact on the role of accountants," *Industrial Management & Data Systems*, vol. 112, no. 1, pp. 83-101, 2012. https://doi.org/10.1108/02635571211193653

[10] Z. Skrbiš and J. Laughland-Booÿ, "Technology, change, and uncertainty: Maintaining career confidence in the early 21st century," *New Technology, Work and Employment*, vol. 34, no. 3, pp. 191-207, 2019. https://doi.org/10.1111/ntwe.12151

[11] S. A. Zeff, "How the US accounting profession got where it is today: Part I," *Accounting Horizons*, vol. 17, no. 3, pp. 189-205, 2003.

[12] S. Hajkowicz *et al.*, *Tomorrow's digitally enabled workforce: Megatrends and scenarios for jobs and employment in Australia over the coming twenty years*. Brisbane, Australia: CSIRO, 2016.

[13] P. Quattrone, "Management accounting goes digital: Will the move make it wiser?," *Management accounting research*, vol. 29, no. 4, pp. 747–750, 2016.

[14] G. Richins, A. Stapleton, T. C. Stratopoulos, and C. Wong, "Big data analytics: opportunity or threat for the accounting profession?," *Journal of Information Systems*, vol. 31, no. 3, pp. 63-79, 2017. https://doi.org/10.2308/isys-51805

[15] J. Moll and O. Yigitbasioglu, "The role of internet-related technologies in shaping the work of accountants: New directions for accounting research," *The British Accounting Review*, vol. 51, no. 6, p. 100833, 2019. https://doi.org/10.1016/j.bar.2019.04.002

[16] H. Damerji and A. Salimi, "Mediating effect of use perceptions on technology readiness and adoption of artificial intelligence in accounting," *Accounting Education*, vol. 30, no. 2, pp. 107-130, 2021. https://doi.org/10.1080/09639284.2021.1872035

[17] T. Korhonen, E. Selos, T. Laine, and P. Suomala, "Exploring the programmability of management accounting work for increasing automation: An interventionist case study," *Accounting, Auditing & Accountability Journal*, vol. 34, no. 2, pp. 253-280, 2021. https://doi.org/10.1108/AAAJ-12-2016-2809

[18] M. Bromwich and R. W. Scapens, "Management accounting research: 30 years of stability and change," *Management Accounting Research*, vol. 31, pp. 1–15, 2016.

[19] C. Seemiller and M. Grace, *Generation Z goes to college*. San Francisco, CA, USA: Jossey-Bass, 2016.

[20] T. P. Liang, J. S. Chandler, I. Han, and J. Roan, "An empirical investigation of some data effects on the classification accuracy of probit, ID3, and neural networks," *Contemporary Accounting Research*, vol. 9, no. 1, pp. 306-328, 1992. https://doi.org/10.1111/j.1911-3846.1992.tb00883.x

[21] A. Bhimani and L. Willcocks, "Digitisation,'Big Data'and the transformation of accounting information," *Accounting and Business Research*, vol. 44, no. 4, pp. 469-490, 2014. https://doi.org/10.1080/00014788.2014.910051

[22] K. Krumwiede, "How to keep your job," 2017. https://asiapac.imanet.org/

[23] G. Bakulina, G. Kalinina, I. Luchkova, M. Pikushina, and A. Gracheva, "Transformation of the accountancy profession during digitalization of agriculture," in *BIO Web of Conferences (Vol. 17, p. 00188). EDP Sciences*, 2020.

[24] L. Frey, C. Botan, and G. Kreps, *Investigating communication: An introduction to research methods*, 2nd ed. Boston, MA: Allyn & Bacon, 1999.

[25] D. Gulin, M. Hladika, and I. Valenta, "Digitalization and the challenges for the accounting profession," *ENTRENOVA-ENTerprise REsearch InNOVAtion*, vol. 5, no. 1, pp. 428-437, 2019.

[26] Y. Kurt, "Digital transformation in accounting and auditing: Insights from the ChatGPT example," *Igdir University Journal of Faculty of Economics and Administrative Sciences*, vol. 10, pp. 11-22, 2023. https://doi.org/10.58618/igdiriibf.1296543

[27] B. Hacker, "Will ChatGPT revolutionize accounting? The benefits of artificial intelligence (AI) in accounting," No. 6/2023. Rosenheim Papers in Applied Economics and Business Sciences, 2023.

[28] J. Lanier, "There ıs no a.ı. The New Yorker," 2023. https://www.newyorker.com/science/annals-of-artificial-intelligence/there-is-no-ai

[29] R. W. Mcgee, "Will chatgpt destroy the accounting profession? Chatgpt replies (April 27, 2023)," 2023. Https://Papers.Ssrn.Com/Sol3/Papers.Cfm?Abstract_İd=4431100

[30] K. A. Farhan and B. I. Kawther, "Accounting audit profession in digital transformation environment between theoretical framework and practical reality 2023," *World Economics And Finance Bulletin*, vol. 22, pp. 120-133, 2023.

[31] S. M. Shuhidan, Y. Awang, A. Taib, N. Rashid, and M. S. Hasan, "Technology readiness among future accountants towards digitalization of accounting profession," *Jurnal Inovasi Perniagaan*, vol. 5, no. 1, pp. 1–13, 2023.

[32] M. R. Sudaryanto, M. A. Hendrawan, and T. Andrian, "The effect of technology readiness, digital competence, perceived usefulness, and ease of use on accounting students artificial intelligence technology adoption," in *E3S Web of Conferences (Vol. 388, p. 04055). EDP Sciences*, 2023.

[33] M. Bilal, M. Ahmad, and S. Khan, "Digital competencies and employability in accounting education: Integrating ICT skills into curricula," *Journal of Accounting Education*, vol. 56, p. 100678, 2021.

[34] Y. Awang, N. E. M. Nasir, A. Taib, S. M. Shuhidan, and L. M. Ifada, "Digitalization of accounting profession: A decade of bibliometric analysis," *Advances in Social Sciences Research Journal*, vol. 11, no. 5, pp. 103-120, 2024. https://doi.org/10.14738/assrj.115.16814

[35] J. Kokina, R. Gilleran, S. Blanchette, and D. Stoddard, "Accountant as digital innovator: Roles and competencies in the age of automation," *Accounting Horizons*, vol. 35, no. 1, pp. 153-184, 2021. https://doi.org/10.2308/HORIZONS-19-145

[36] K. Al-Htaybat, L. von Alberti-Alhtaybat, and Z. Alhatabat, "Educating digital natives for the future: Accounting educators' evaluation of the accounting curriculum," *Accounting Education*, vol. 27, no. 4, pp. 333-357, 2018. https://doi.org/10.1080/09639284.2018.1437758

[37] C. E. Earley, "Data analytics in auditing: Opportunities and challenges," *Business Horizons*, vol. 58, no. 5, pp. 493–500, 2015.

[38] B. Jackling and P. De Lange, "Do accounting graduates' skills meet the expectations of employers? A matter of convergence or divergence," *Accounting Education: An International Journal*, vol. 18, no. 4-5, pp. 369-385, 2009. https://doi.org/10.1080/09639280902719341

[39] J. E. Rebele and E. K. S. Pierre, "Stagnation in accounting education research," *Journal of Accounting Education*, vol. 33, no. 2, pp. 128-137, 2015. https://doi.org/10.1016/j.jaccedu.2015.04.003

[40] K. Watty, J. McKay, and L. Ngo, "Innovators or inhibitors? Accounting faculty resistance to new educational technologies in higher education," *Journal of Accounting Education*, vol. 34, pp. 1–15, 2016.

[41] V. Tsiligiris and D. Bowyer, "Exploring the impact of 4IR on skills and personal qualities for future accountants: A proposed conceptual framework for university accounting education," *Accounting Education*, vol. 30, no. 6, pp. 621-649, 2021. https://doi.org/10.1080/09639284.2021.1938616

[42] M. J. A. Gonçalves, A. C. F. da Silva, and C. G. Ferreira, "The future of accounting: How will digital transformation impact the sector?," *Informatics*, vol. 9, no. 1, p. 19, 2022. https://doi.org/10.3390/informatics9010019

[43] Y. Awang, S. M. Shuhidan, A. Taib, N. Rashid, and M. S. Hasan, "Digitalization of accounting profession: An opportunity or a risk for future accountants?," *Proceedings*, vol. 82, no. 1, p. 93, 2022. https://doi.org/10.3390/proceedings2022082093

[44] N. Abhishek *et al.*, "Digital transformation in accounting: Elevating effectiveness across accounting, auditing, reporting and regulatory compliance," *International Journal of Research Publication and Reviews*, vol. 5, no. 2, pp. 2636–2641, 2024.

[45] S. V. Andreeva, *The accounting system of the company in the context of digitalization. In S. I. Ashmarina & V. V. Mantulenko (Eds.), Lecture notes in networks and systems*. Cham, Switzerland: Springer Science and Business Media Deutschland GmbH, 2022.

[46] A. Munfaredi, N. Sulaiman, R. AlKhatib, and R. A. Wadi, "The impact of digitalization on managerial accounting roles," in *The International Conference On Global Economic Revolutions (pp. 502-511). Cham: Springer International Publishing*, 2021.

[47] E. Pimentel and E. Boulianne, "Blockchain in accounting research and practice: Current trends and future opportunities," *Accounting Perspectives*, vol. 19, no. 4, pp. 325-361, 2020. https://doi.org/10.1111/1911-3838.12239

[48] K. Pajunen, J. Saastamoinen, H. Reijonen, H. Sjögrén, and P. Syrjä, "A digital divide and its determinants: leaders and laggards in the digitalisation of Finnish accounting firms," *International Journal of Accounting, Auditing and Performance Evaluation*, vol. 16, no. 4, pp. 393-414, 2020. https://doi.org/10.1504/IJAAPE.2020.115787

[49] O. Desplebin, G. Lux, and N. Petit, "To be or not to be: Blockchain and the future of accounting and auditing," *Accounting Perspectives*, vol. 20, no. 4, pp. 743-769, 2021. https://doi.org/10.1111/1911-3838.12265

[50] S. K. Herath and L. M. Herath, "Emerging trends and challenges in the digital transformation of accounting: A review of the literature," *Global Journal of Accounting and Economy Research*, vol. 5, no. 2, pp. 121-144, 2024.

[51] S. Leitner-Hanetseder, O. M. Lehner, C. Eisl, and C. Forstenlechner, "A profession in transition: actors, tasks and roles in AI-based accounting," *Journal of Applied Accounting Research*, vol. 22, no. 3, pp. 539-556, 2021. https://doi.org/10.1108/JAAR-10-2020-0201

[52] C. Wright and D. Schultz, "The impact of AI on the future of work and workers," *AI & Society*, vol. 33, no. 3, pp. 371–377, 2018.

[53] A. Agrawal, J. Gans, and A. Goldfarb, *Prediction machines: The simple economics of artificial intelligence*. Boston, MA: Harvard Business Review Press, 2019.

[54] D. Acemoglu and P. Restrepo, *Artificial intelligence, automation, and work. In A. Agrawal, J. Gans, & A. Goldfarb (Eds.), The economics of artificial intelligence: An agenda*. Chicago, IL: University of Chicago Press, 2019.

[55] R. J. Barro and J. M. Davenport, *The future of work: Robots, AI, and automation*. Washington, DC: American Enterprise Institute, 2019.

[56] M. Bowles, S. Ghosh, and L. Thomas, "Future-proofing accounting professionals: Ensuring graduate employability and future readiness," *Journal of Teaching and Learning for Graduate Employability*, vol. 11, no. 1, pp. 1-21, 2020. https://doi.org/10.21153/jtlge2020vol11no1art886

[57] C. A. Zhang, J. Dai, and M. A. Vasarhelyi, "The impact of disruptivetechnologies on accounting and auditing education: how should the profession adapt?," *The CPA Journal*, vol. 88, no. 9, pp. 20-26, 2018.

[58] E. Voss and H. Riede, *Digitalisation and workers participation: What trade unions, company level workers and online platform workers in Europe think*. Brussels: ETUC–European Trade Union Confederation, 2018.

[59] A. Goswami and S. Dutta, "Gender differences in technology usage—A literature review," *Open Journal of Business and Management*, vol. 4, pp. 51-59, 2017.

[60] C. Park, D.-g. Kim, S. Cho, and H.-J. Han, "Adoption of multimedia technology for learning and gender difference," *Computers in Human Behavior*, vol. 92, pp. 288-296, 2019. https://doi.org/10.1016/j.chb.2018.11.029

[61] A. Turner, "Generation Z: Technology and social interest," *The journal of Individual Psychology*, vol. 71, no. 2, pp. 103-113, 2015. https://doi.org/10.1353/jip.2015.0021

[62] E. J. Cilliers, "The challenge of teaching generation Z," *PEOPLE International Journal of Social Sciences*, vol. 3, no. 1, pp. 188–198, 2017.

[63] Z. Kirchmayer and J. Fratričová, "What motivates generation Z at work? Insights into motivation drivers of business students in Slovakia," *Proceedings of the Innovation Management and Education Excellence Through Vision*, vol. 6019, p. 6030, 2020.

[64] K. Gabrielova and A. A. Buchko, "Here comes Generation Z: Millennials as managers," *Business Horizons*, vol. 64, no. 4, pp. 489-499, 2021. https://doi.org/10.1016/j.bushor.2021.02.013