Artificial Intelligence Integration in Accounting Education: A Framework for Enhancing Digital Competencies and Professional Readiness

NASARELDEEN HAMED AHMED ALNOR[1,], MONA M. ELSHAABANY[1],
FATIHELELAH MOHAMMED AHMED MOHAMMED[2], SALIM ELAGAB SALIM ELAGAB[3],
TAHA KHAIRY TAHA IBRAHIM[1].
[1]Department of Accounting, College of Business,
Jouf University,
SAUDI ARABIA

[2]Department of Accounting, Applied College,
King Khalid University, Abha,
SAUDI ARABIA

[3]Department of Accounting, College of Business,
King Khalid University, Abha,
SAUDI ARABIA

Abstract: - This study is designed to find the effect of Artificial Intelligence Integration in Accounting Education (AIIAE) on the digital competence and professional readiness of the students and the interaction of Quality Digital Accounting Education (QDAE) in this process. The research design used was quantitative, and purposive sampling was used in the selection of 283 undergraduate and graduate accounting students, instructors and early career accountants who participated in the study. Partial Least Squares Structural Equation Modelling (PLS-SEM) method was used to test the hypothesised relationships between AIIAE, Digital Competencies (DCA), and QDAE and PR. The results show that there are significant positive relationships between the use of AI in accounting education and digital competencies ($\beta = 0.234$, $p < 0.001$) and professional readiness ($\beta = 0.226$, $p < 0.001$). Furthermore, the correlation between AIIAE and digital competencies and professional readiness is positive and statistically significant ($\beta = 0.309$; $p < 0.001$), which highlights the importance of quality digital accounting education in order to maximise the benefits of the use of AI. The results show good explanatory power, reliability, validity and model fit. The study calls for the need to integrate AI technologies into the accounting education curriculum, enhance digital learning environments, and update educational resources and materials to meet the evolving demands of the accounting profession. The proposed framework further enhances the development of AI-enabled accounting education and supports accounting education providers, policymakers, and accounting professionals in their efforts to build accounting workforce readiness for the future.

Key-Words: - AI Integration in Accounting, Accounting Education, Digital Competencies, Professional Readiness, Digital Accounting Education, PLS-SEM, Educational Technology, Accounting Profession.

Received: August 21, 2026. Revised: September 9, 2026. Accepted: September 22, 2026. Published: November 9, 2026.

1 Introduction

In recent decades, there have been significant changes in accounting education as a result of fast-developing digital transformation and artificial intelligence (AI) technologies [1]. In this way, these developments have introduced new problems to higher education institutions, demanding comprehensive rethinking of accounting courses and teaching approaches to cater for the present requirements of business [2]. The ongoing digital revolution has shifted the focus of accounting from accounting technical skills to digital literacy, analytical skills, and higher-order professional competency and AI, big data analytics, automation and intelligent systems are becoming increasingly important in accounting [3]. It is important that the knowledge, skills and learning abilities (flexibility) required to operate and succeed in the contemporary

workplace, which is digital and technologically advanced, are therefore needed in accounting education [4].

Artificial Intelligence (AI) is certainly one of the most impactful technologies that are transforming the business landscape in today's world, particularly the accounting landscape. [5]. Since its initial use in the 1950sin rule-based expert systems, AI has progressed significantly, and computing power, data processing and analysis techniques have seen huge advances. [6]. This change has brought machine learning, data mining, predictive analytics, and smart automation of bookkeeping within reach. [7]. This has changed the traditional role of accountants from doing repetitive and rote work to developing their skills in the interpretation of complex financial information, professional judgment, strategic decision-making, and analytical reasoning. [8]. The impact of these changes has had substantial ramifications for accounting education, highlighting the need to incorporate AI-driven technologies and digital skills into accounting programs. [9]. This integration is crucial to equip graduates with the knowledge and skills needed to adapt to the changing demands of the job market and thrive in technology-driven workplaces [10].

The changes are accompanied by the development of digital competencies as one of the important aspects of training the modern accountant and preparing him for modern accounting practice, because accounting knowledge and skills are not enough to ensure the preparation of a modern accountant for modern accounting practice [11]. In addition to the ability to learn and adapt to new and emerging technologies, digital competencies involve a range of technical and cognitive skills, such as data analytics, the use of intelligent accounting software, interaction with AI, cybersecurity awareness and digital communication skills [9]. Professional readiness is not only a technical issue; it is a graduate's ability to be effective in a digitally-enabled workplace in terms of practical, adaptive and behavioural competencies [12]. The skills are essential for building professional resilience, employability and ensuring graduates become future-ready in an ever-changing and tech-savvy workforce [13].

The importance of the use of AI and digital technologies in accounting education has been established in previous studies [14]. Previous research has regularly pointed out the fact that there is a severe gap between the skills acquired in academic accounting education and the shifting demands of the digital economy, such as [3]. There have been many requests that traditional accounting programs are based more on theoretical and technical aspects of accounting theory and have less focus on digital literacy, technological skills and practical use of new technologies [15]. Meanwhile, empirical research over the last few years indicates that employers and professional bodies are increasingly interested in graduates from accounting degree programmes with the right kind of knowledge to apply intelligent technologies, advanced data analysis and digital tools to help them solve complex accounting questions and inform decision-making in finance [16]. Even if it is an issue of great academic interest today, the existing literature is fragmented, with parts of it regarding the technological aspects of the issue, while others focus on the impact of digital transformation in a partial and context-specific way [17]. This is why a systematic and comprehensive approach to embedding the use of AI, development of digital competency, and professional readiness within the accounting profession is still missing from accounting education [18].

So, the problem of the study is the pressing need to rethink accounting education to incorporate the use of artificial intelligence in the teaching and learning process while simultaneously establishing a comprehensive framework that could help in enhancing digital skills and professional orientation of students [19]. This challenge is one of the greatest because of the rapid pace of digital transformation and the increasing complexity of technological advancements affecting the accounting profession [20]. An important issue is whether higher education institutions are able to react to these changes in a forward-looking manner and adjust their education to match expectations for the professional world. Specifically, questions remain about the quality of accounting education programs, and how well graduates are prepared with the technical skills, analytical skills, and professional skills needed to be successful in increasingly digitalised, tech-heavy labour markets. This is vital to making accounting education more relevant and sustainable in the age of AI and closing the gap between what students have learned and what is required in the workplace [21].

The importance of this research is that it is aimed at a problem that is relevant to the current times and concerns the future of the accounting profession and accounting education in the wake of the digitalisation of the world [22]. It also helps to facilitate the universities' work of creating more flexible and innovative curricula. In addition, there has been an interest in the development of digital skills of accountants at the International level, evidenced by International professional bodies like the International Federation of Accountants (IFAC),

which have expressed interest in the need to develop digital skills for accountants and improve the integration of technology in the education and training of accountants. On the practical side, the research can help in developing curriculum and training programs at universities, and academic decision makers can use it to respond to the needs of the labour market and the needs of the Fourth Industrial Revolution.

The current research study is primarily focused on the development of a suggested framework for the integration of artificial intelligence (AI) into accounting education in a way that will improve students' digital skills and skills for competency. Furthermore, the study seeks to understand the extent of the use of AI currently in accounting academic programmes, identify the key digital skills that contemporary accountants are expected to have, and shed light on the most pressing challenges encountered by Accounting Higher Education Institutions in effectively integrating intelligent technologies. The study aims to make evidence-informed recommendations to enhance the quality of accounting education and improve its outcomes based on these objectives, and to meet the changing needs of the modern, technology-driven workforce.
The scientific significance of this work is that it is an integrated conceptual model, which more or less systematically links concepts of the use of artificial intelligence, development of digital skills and readiness for professional activity under a single analytical plane. The study builds on previous studies of accounting education in the digital era by addressing a well-defined research gap that did not have a complete model that incorporates the interactions between these constructs in the digital transformation context. Furthermore, the study enriches the field of accounting education from an Arabic perspective by providing insights and conclusions derived from empirical evidence and theoretical analysis in the digital accounting field, where the study's results can help contribute to the field of accounting education in a time of digital transformation and the need for new skills. It also provides a reference point for the policy makers and curriculum designers in the higher education environment and for future research related to the continuing digital transformation of the accounting discipline and its effects on education practice and professional development.

2 Literature review

2.1 Integrating artificial intelligence into accounting education and the digital competencies of accountants

Artificial intelligence (AI) in business accounting education is a game-changer for digital skills, preparing accountants for a technologically driven future [23]. Traditional accounting education focused more on manual bookkeeping, financial reporting and auditing processes [24]. The use of AI tools and technologies, however, in accounting courses can help students learn some high digital skills that are becoming a necessity in today's organisations [16]. These include knowledge of data analysis, automation management, digital communication, cybersecurity awareness and skills around intelligent accounting software [25].

Using AI also allows accountants to better analyse large financial sets with accuracy and effectiveness [26]. Students gain knowledge of machine learning systems, cloud-based accounting software, and predictive analytics tools, equipping them with the skills needed to understand intricate financial data and provide informed decision-making [27]. Through exposure to machine learning systems, cloud-based accounting systems and predictive analytics tools, students gain insight into how to process information to make intelligent decisions [28]. This enhances analytical and critical thinking abilities, enabling accountants to go beyond mere calculations and make meaningful contributions to business planning and risk management [29].

Moreover, the use of AI in accounting training fosters adaptability and lifelong learning among future accounting professionals [30]. Students become more comfortable accepting new technologies as they evolve as rapidly as they are invented, and more knowledgeable about learning new digital systems in their work [31]. As the accounting profession changes rapidly in today's world and positions are becoming more flexible with the introduction of automation, it is important to keep up with the profession [3]. Thus, it is crucial for Accountants to be digitally competent to be relevant and competitive in the job market [4].

Earlier research has shown that professors of accounting are less successful in adapting to AI in their teaching, such as [32]. From the above discussion and previous studies on the subject, the following hypothesis is formed:

H1: There is a positive relationship between integrating artificial intelligence into accounting

education and the digital competencies of accountants.

2.2 Integrating artificial intelligence into accounting education and professional readiness

Artificial Intelligence (AI) in Accounting Education does a great deal to make students more professionally ready [33]. It is worth mentioning that the use of Artificial Intelligence (AI) in accounting education highly contributes to the professional readiness of students, as it equips them with relevant technology skills to be used in today's workplaces [9]. As the use of AI in the accounting field becomes more common in the workplace, students will be better prepared to meet the standards of the accounting industry if they have been exposed to these tools in their studies [34]. They get practical experience on using automation systems and learn how to interpret complicated monetary data better, which increases their confidence and competence in the career [35].

In addition, AI integration enhances students' critical thinking and problem-solving skills. Learners can focus on analysing the financial information, making strategic decisions and understanding the risks of the business rather than repetitive calculations and manual bookkeeping [29]. Students can use AI tools to simulate real-world accounting situations, enabling them to practice in dynamic environments [36]. This exposure equips future accountants to adapt to technological shifts and function effectively with intelligent systems. [30].

Moreover, the adoption of AI in accounting education promotes lifelong learning and innovation [37]. Technology is evolving rapidly, and this requires accounting professionals to constantly keep their knowledge and skills up-to-date. Exposing students to AI at an early age prepares them for technological change and their acceptance of lifelong learning [38]. Such a state of mind is crucial to continue to be competitive in the changing global economy.

Moreover, education for accounting success with AI enhances employability. Graduates with accounting skills and computer skills are sought by employers more and more [9]. These students will be more attractive to any organisation because they help to enhance efficiency, reduce errors and assist in data-driven decision-making, all of which involve the use of AI [39]. By leveraging AI in accounting education, educators can create a more enriching learning experience and prepare students for the evolving needs of the accounting profession in the future [36]. Overall, the introduction of AI in accounting education will greatly improve the learning experience and help bridge the gap between the classroom and the real world, ensuring that students are equipped with the skills they need for the future of the profession [40]. Given the above discussion and previous research on the subject, the following hypothesis is set:

H2: There is a positive relationship between integrating artificial intelligence into accounting education and professional readiness.

2.3 The mediating role of the quality of digital accounting education in integrating artificial intelligence into accounting education, digital competencies of accountants, and professional readiness.

Digital accounting education plays a crucial intermediary role between the introduction of artificial intelligence (AI) to accounting education and the digital capabilities of accountants and accounting professionals [3]. The application of AI technologies provides tools and innovative learning opportunities, but they will be effective only in a quality educational environment. The essential digital accounting skills encompass more than just comprehending the potential uses of AI; they also encompass the ability to effectively apply AI to accounting-related tasks [32]. High-quality digital accounting education ensures that learners not only learn about the theoretical aspects of AI's applications but also acquire the practical skills to effectively use AI in accounting-related tasks [41].

These platforms need to be meticulously designed to incorporate AI’s tools and capabilities in accounting education, introducing students to advanced accounting software, automated auditing tools, data analytics platforms, and smart financial systems [42]. Without good teaching, modern curricula and hands-on approaches to learning, however, students may not grasp or be able to use these technologies as well. Therefore, digital accounting education acts as a bridge, enabling the integration of AI into meaningful learning outcomes [36]. It enhances students' reading skills of financial information, problem-solving abilities in accounting, and adaptability to technological advancements in the field [43].

Furthermore, quality digital accounting education enhances the digital competencies of accountants through the development of technical, analytical and communication skills [44]. Students develop greater skills to be able to use digital technologies effectively and responsibly through virtual simulations, online collaborative tools and AI-driven learning platforms

[45]. These skills are becoming increasingly vital in the accounting field, where companies anticipate workers to communicate through digital platforms, handle big data volumes, as well as engage in strategic decision-making [46]. Digital skills help students to be more confident and adaptable in the workplace as they acquire and develop these skills [47].

Moreover, the combination of AI integration, digital capabilities, and the quality of education plays a significant role in professional readiness [48]. Students with good quality digital accounting education can better acquire critical thinking and problem-solving skills, and cultivate attitudes towards lifelong learning [29]. They are more equipped to contribute to the labour market and to function well within work environments that make use of technology [49]. By aligning the integration of AI with accounting education, this approach acts as a catalyst for meaningful learning and equips future accountants with enhanced skills and knowledge [38]. This way, the quality of digital accounting education becomes a key factor in how well AI is integrated, ensuring that the technology leads to real-world capabilities and preparedness [50]. The above discourse and previous studies on the topic lead to the formulation of the following hypothesis:

H3: The relationship between the application of AI in accounting education and accountants' professional preparedness is mediated by the quality of digital accounting education.

3 Methodology

3.1 Research Design

A quantitative, cross-sectional research design is used in this study to investigate the relationship between the artificial intelligence (AI) integration in accounting education, quality of digital accounting education, digital competencies and professional readiness. This research is descriptive and uses a survey method with partial least squares structural equation modelling (PLS-SEM) analysis.

The study is quantitative because it is designed to test some hypothesised relationships between latent constructs and to evaluate the mediation effects within some theoretical context [51]. The objective of the study is not the development of a model or a dynamic simulation, but the estimation of direct relationships between variables and testing the hypotheses with the proper statistical model. Longitudinal data or interactive data among individuals or institutions is not available in the present study and is needed for using agent-based modelling or network analysis.

3.2 Measures

The measures of the constructs in this study are taken from previously validated scales from prior literature and modified to suit the context of accounting education. All items have a 5-point Likert scale from: (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

3.3 Constructs and Measurement Dimensions

The study includes four main variables that are assessed using a number of dimensions and indicators that are applicable to the context of accounting in the digital learning environment. The first variable is Artificial Intelligence Integration in Accounting Education (AIIAE), which refers to the extent of the integration of A.I. tools and technologies in the learning and teaching process related to accounting. It is assessed using markers of the implementation of accounting courses with AI tools, students' exposure to AI applications in accounting practices, and the impact of AI technologies on the accounting learning process. The second variable is the quality of digital accounting education (QDAE), which corresponds to the quality of digital accounting education effectiveness based on the interactivity of digital education, the accessibility of digital education, the relevance of digital education content and the efficiency of the digital education teaching process. This is done via indicators measuring the capacity of digital platforms to create interactive learning environments, the modernity and relevance of the e-learning resources, and the contribution of digital education to improving learning efficiency. The third one is Digital Competencies of Accountants (DCA), which refers to the students' technical and analytical ability to operate in digital accounting environments. This is measured in terms of indicators for the efficient use of accounting software and digital platforms, as well as the ability to analyse accounting data and adapt to contemporary accounting technologies. The fourth variable is Professional Readiness (PR), which measures the students' readiness for entering into contemporary, technology-based accounting professions. It encompasses a series of indicators which assess students' perceptions of being prepared to meet the demands of the modern accounting profession, the impact of their education on the development of employability skills and students'

confidence in the execution of technology-based accounting tasks.

3.4 Procedures for Data Gathering and Sampling Design

The population of this study includes four categories: Undergraduate Accounting students, Graduate Accounting students, accounting faculty and early-career accountants. The categories were chosen because they are directly related to the digital environment of accounting education and the application of modern technologies in accounting. Purposive sampling was used since the participants had to have knowledge and experience in accounting education and digital technology to make the data relevant to the study's goals. As for the sample size, the study investigated the recommended rule of ten times the number of variables in a partial least squares (PLS-SEM) based structural equation modelling, with a minimum sample size of 300 participants. Twenty-eight of these (94% response rate) were returned, allowing for statistical power and stability of the analytical model. For data collection, an online questionnaire was developed using online tools such as Google Forms or Qualtrics. To ensure clarity and relevance of the items on the questionnaire, the questionnaire was initially tested by academic and professional accounting experts. All ethical aspects were considered, and informed consent was obtained from all individuals before participating in the study. The questionnaires were then distributed through universities, professional accounting networks, social media groups and by invitation via e-mail. 6-8 weeks of data collection were used until 283 participants were achieved. The sample size was determined using statistical power analysis to provide adequate power to identify the anticipated effects. The robustness of the results was also evaluated by comparing the results of the different specifications, and mention was made of the possible future research on Bayesian estimation and machine learning classifiers.

4 Data Analysis and Findings

4.1 Demographic Profile of Respondents

The demographic and professional features of the 283 subjects that participated in this study are presented in Table 1 (Appendix). As can be seen in Panel A, the majority of respondents were male (72%, 203 respondents) and female (28%, 80 respondents), making the sample mainly male. As for age distribution in Panel B, the majority of respondents were aged 41-50 (40%), with 26% aged 51-60 and 24% under 30. 2% indicated that they were over 60, which would be a high percentage of middle-aged professionals. Generally, the level of education for the participants was rather high, with 50% having a postgraduate diploma, 20% a diploma, 17% a bachelor's degree, 10% a master's degree and only 4% having a PhD (as shown in Panel C). In terms of professional qualifications (Panel D), the highest number of respondents reported that they obtained the American Fellowship (49%), followed by the British Fellowship (21%) and Arab Fellowship (10%), with 12% indicating that they didn't hold any professional qualification. From Panel E, it is observed that the majority of the respondents were in Business Administration (36%) and Accounting (34%), while 21% each were in Banking Sciences and Information Technology. The final variable is the number of years of experience in Panel G, where 31% of panellists reported over 20 years of experience and 30% reported less than 5 years of experience, indicating a mix of both highly experienced and newer professionals in the panel. Generally, it was concluded that the respondents were mostly men, of middle age, and qualified in professional and higher education, mostly with business- and accounting-related courses.

4.2 Measurement Model Evaluation

Table 2. (Appendix) shows the results of the evaluation of the measurement model, which includes factor loading, reliability, convergent and multicollinearity statistics. Validities and reliabilities of all constructs were considered to be acceptable. The factor loadings obtained for most items were above the recommended value of 0.70, indicating strong internal consistency of the items; only a few items had relatively low factor loadings (e.g., AIIAE1 (0.511) and QDAE2 (0.530)), which were good enough for exploratory studies. The Cronbach alpha reliability of all constructs was reasonable, ranging from 0.754 to 0.978. Furthermore, rhoA for each scale (0.790-0.998) and composite reliability (rhoC) values (0.871-0.990) add further evidence of the reliability of the scales used to measure the different concepts. Convergent validity was also achieved with all constructs having Average Variance Extracted (AVE) values above 0.50 (0.535 to 0.754). This suggests that the constructs accounted for a considerable amount of the variance in their indicators. Also, the values of Variance Inflation Factor (VIF) were between 1.151 and 4.887, all below the value of 5, and the values of the reciprocal

of VIF (1/VIF) were above 0.20, indicating that there were no multicollinearity problems among the indicators. The results generally indicated that the measurement model had good reliability, convergent validity, and a good collinearity diagnosis, which is suitable for further analysis of the structural model

The Fornell–Larcker criterion results are presented in Table 3 to determine the discriminant validity of the constructs of this study, which include: AIIAE, DCA, PR, and QDAE. The square root of the Average Variance Extracted (AVE) for each construct is provided along the main diagonal, and correlations between constructs are provided off the diagonal in this criterion. Discriminant validity is achieved when the square root of AVE of each construct is higher than its correlations with other constructs. The results indicate that the square root of AVE of AIIAE is 0.794, higher than its correlations with DCA (0.663), PR (0.270) and QDAE (0.305). Like DCA, the value of 0.848 is greater than its correlations with PR (0.204) and QDAE (0.269). The square root of AVE is the highest in PR (0.896) compared with the correlation of PR with QDAE (0.627). Finally, QDAE is higher with its square root of AVE (0.755) than with the other constructs. The results suggest that there is sufficient discriminant validity for the measurement model, with each construct measuring a different construct.

Table 3. The Fornell and Larcker criterion is called discriminant validity

	AIIAE	DCA	PR	QDAE
AIIAE	0.794			
DCA	0.663	0.848		
PR	0.270	0.204	0.896	
QDAE	0.305	0.269	0.627	0.755

Source: created by the authors.

Table 4. shows the Heterotrait-Monotrait (HTMT) Ratio used to assess discriminant validity between the constructs AIIAE, DCA, PR and QDAE. The HTMT values indicate to what degree the different constructs are similar, and lower values indicate higher degrees of discriminant validity. Well-established threshold values are 0.85 or 0.90, suggesting that values below these thresholds validate the difference between the constructs to be sufficient. The findings show that the HTMT value between AIIAE and DCA is 0.844, which is slightly lower than the strict criteria of 0.85, indicating good discriminant validity between AIIAE and DCA. The HTMT values for AIIAE and PR (0.309), DCA and PR (0.221), AIIAE and QDAE (0.322), DCA and QDAE (0.296), and PR and QDAE (0.600) are far below the suggested threshold values. This means that the conceptions are conceptually separate and there is no significant overlap when judging the same idea. The findings confirm the presence of adequate discriminant validity of the study constructs. The HTMT values were below 0.90, indicating good discriminant validity [52]

Table 4. Discriminant validity: HTMT ratio

	AIIAE	DCA	PR	QDAE
AIIAE				
DCA	0.844			
PR	0.309	0.221		
QDAE	0.322	0.296	0.600	

Source: created by the authors.

4.3 Structural Model Analysis: Findings and Interpretation: Model Fit Summary

Variance Inflation Factor (VIF) of all underlying variables was below 5 (Hair et al., 2019b), which shows that there is no multiple linear correlation. Cohen's f2 values were calculated to assess the effect of extrinsic variables on intrinsic variables. The results found that AI-assisted accounting learning practices showed a moderate to significant effect on digital competencies ($f2 = 0.39$) and that the quality of accounting education was moderate to significant for career readiness ($f2 = 0.31$). This is reflected in the impact that it had and the reality of it. The Root Standard Mean Residue (RSMRE) of the model was 0.065 indicating good fit to the data (threshold < 0.08). The NFI (Non-Firm Fit Index) was 0.962, indicating a good fit of the model (lower bound < 0.90). The coefficients of determination (R^2) for the most significant dependent variables (e.g. digital proficiency: 0.55, career readiness: 0.51) were quite high, with the model accounting for a large proportion of the variance. The results of these indicators indicate that the model is reliable and can be used to predict accurately.

The results of the direct relationship and hypothesis testing analysis are shown in Table 5 (Appendix). The results showed that all the suggested hypotheses were accepted since all the beta coefficients were positive, the t-values were high, and the p-values were statistically significant. H1 looked at the relationship between AIIAE and DCA, with a beta coefficient of 0.234, thus indicating a positive relationship between AIIAE and DCA. This value of $t = 5.596$ is larger than the recommended value of $t = 1.96$, and the value of $p = 0.000$ ($p < 0.05$), confirms that the level of significance is statistically significant. Likewise, H2 found the beta coefficient of 0.226 for the effect of AIIAE on PR, suggesting

that an increase in AIIAE results in an increase in PR. The correlation was also significant, with a 't' value of 5.225 and a 'p' value of 0.000. Moreover, H3 was tested for the interaction between AIIAE and QDAE on DCA and PR and resulted in the highest beta coefficient of 0.309 out of all other hypotheses. An interaction or mediating effect is strong and statistically significant when the t-value is high (8.083), and the p-value is significant (0.000). In general, the results show that AIIAE is positively related to DCA and PR, and QDAE strengthens the relationship between DCA and PR.

5 Discussion

The purpose of this study was to examine the impact of Artificial Intelligence Integration in Accounting Education (AIIAE) on Digital Competencies of Accountants (DCA) and Professional Readiness (PR) and the mediating effect of Quality of Digital Accounting Education (QDAE). The findings indicated that the application of AI technologies in accounting education is beneficial for students' digital skills and their skills in their careers. The findings are consistent with those of other studies which have established that using AI in the learning process is crucial for enhancing students' analytical, technological and problem-solving skills, which are vital for effective accounting practices today. There is a clear positive correlation between AIIAE and DCA, which indicates that with the use of AI tools, accounting software and digital technologies, it would be helpful to enhance students' technological skills and help students adapt to digital accounting systems.

The results also confirmed that AIIAE significantly and positively influenced professional readiness. This indicates that students learning accounting with the help of AI technology are more confident and better equipped to face the challenges of the technologically advanced accounting field. A digital accountant is a much sought-after accounting professional in today's age. A digital graduate is a more knowledgeable accounting professional today than ever. The integration of AI into accounting education is therefore crucial in developing the employability skills and readiness of students in the workplace.

In addition, the research revealed that the connection between AI integration and digital competencies and professional readiness outcomes is strengthened through the use of QDAE. The effectiveness of the integration of AI is very much dependent on the quality of digital learning platforms, digital course materials, and teaching practices. Quality digital learning environments, including interactive learning platforms, course content that is relevant, and efficient teaching processes, play a key role in the success of AI in education. By incorporating AI into the learning process, high-quality digital accounting education boosts engagement and learning outcomes, reinforcing the benefits of this integration. High-quality digital accounting education maximises benefits from AI integration, enhancing learning and engagement. This study's findings are in line with the concept that educational institutions should adopt AI technologies and make efforts to improve the quality and efficacy of digital learning systems.

The outcomes of the measurement also showed the reliability and validity of the research framework as well as the results of the structural model. The constructs were highly reliable, highly convergent and discriminant valid, and the structural model was highly predictive and had good model fit indices. To conclude, the research is useful for the growing number of studies in the field of digital transformation in accounting education as it empirically confirms the relevance of the accountant's digitalisation process and the quality of digital accounting education in preparing future accountants.

This indicates the integration of AI-related skills into an organisation's learning framework and the potential for continuous training, sharing, and faculty-student engagement to further cultivate these skills. The processes of skill transfer and factors that influence the rate of dissemination within an educational and/or professional context could also be explored using agent modelling to simulate such processes.

6 Conclusion

The study examined the relationship between Artificial Intelligence Integration in Accounting Education (AIIAE), Digital Competencies of Accountants (DCA), Professional Readiness (PR) and the mediating role of Quality of Digital Accounting Education (QDAE). Based on the findings, the use of AI has a positive and significant relationship with digital competencies and professional readiness. The results proved that the use of AI in accounting education has a positive and significant relationship with digital competencies and professional readiness. Moreover, it was noted that these relationships were strengthened during digital accounting education, indicating that a strong digital learning environment will affect the effectiveness of accounting education from the perspective of AI.

The results underscore the need to incorporate AI tools into accounting programs to prepare students with the technical and professional skills demanded by the ever-changing accounting field. The study's findings suggest that accounting education institutions need to focus on digital transformation and enhance the quality of digital learning systems to equip graduates to embark on technology-driven accounting professions.

7 Implications of the study

Theoretical Implications: This research adds to the body of knowledge in the field of accounting education and digital transformation by further understanding the impact of AI integration on students' abilities and job preparedness. It also enriches the existing educational technology theories by presenting that the quality of digital education serves as a mediating factor to enhance the learning outcomes in accounting education.

Practical Implications: The results have implications for universities, accounting educators, accounting regulators and policymakers. The use of smart technology applications, accounting analytics tools and AI in accounting programs must be brought into universities so as to enhance the digital skills of students. The interactive approach to learning using digital technology should be used in the classroom and course content should be continually updated in line with developing technologies within the accounting profession.

The findings from these studies can be used by researchers, professional accounting bodies, and policymakers to create training and education policies regarding digital transformation in accounting education. Furthermore, the establishment of higher-quality digital accounting education platforms will be able to significantly improve students' preparation for digital accounting careers.

To realise the effective application of digital accounting education, educational administrators should pay attention to the digital infrastructure, AI-assisted learning system and faculty development program. It's also important that companies that are hiring accounting graduates can work with universities to ensure that graduates are prepared with the skills that are needed in the industry and emerging technologies.

8 Limitations of the study and future suggestions

But there are also a number of drawbacks to the study. The first problem of the present study is the cross-sectional method of research, which makes it hard to make conclusions with regard to the interaction of the variables within a time frame. Longitudinal studies can be used to track student skills and preparedness for employment over the course of their educational journeys to help monitor the impact of the use of AI at various educational and training levels.

Second, self-reports on questionnaires were the data used in this study and might have been prone to response bias and self-perception of the respondents. Moreover, the study could incorporate qualitative methods for data collection, such as interviews or case studies, to explore the impact of AI on accounting education further in the future.

Thirdly, the study included a small sample of students and staff in some educational and professional environments, which may constrain the extent to which the findings can be generalised. It would be better to have more heterogeneous samples, bigger (other countries, universities, etc. or other professional groups) to externalise the results for further investigation.

Last but not least, other factors can be investigated, such as technological readiness, institutional support, learning motivation, or resistance towards the use of technology. Research into the effects of specific AI tools, like machine learning, intelligent tutoring systems, and data analytics tools, on outcomes of accounting education and the profession can be examined as well. Also, it is recommended in this study that future investigations can be conducted by implementing the art of artificial intelligence in the educational field, particularly in accounting education, and the use of alternative evaluation techniques based on Multi-Criteria Decision Analysis (MCDA) methods and Constraint Satisfaction models to improve the accuracy and objectivity of educational decisions. The study suggests that future longitudinal studies should be carried out to validate the development of digital competencies and career readiness, as well as the presence of feedback loops and their effect on the acquisition of skills, and should gather data at several time points.

Acknowledgement:
"The authors extend their appreciation to the Deanship of Research and Graduate Studies at King Khalid University for funding this work through the Large Research Groups Program under grant number RGP2/382/47."

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this work, the author(s) utilized artificial intelligence (AI) technologies solely for the purpose of linguistic refinement and grammatical correction. Following the application of these tools, the author(s) comprehensively reviewed, verified, and edited the resulting text. The author(s) maintain full accountability and responsibility for the accuracy, integrity, and final content of the publication.

References:

[1] Alnor, N.H.A., et al., The Impact of Artificial Intelligence Technologies on Audit Quality. Global Business and Finance Review, 2026. 31(7): p. 175-189. https://doi.org/10.17549/gbfr.2026.31.7.175

[2] Kelly, O., T. Hall, and C. Connolly, PACE-IT: Designing blended learning for accounting education in the challenging context of a global pandemic. Accounting Education, 2023. 32(6): p. 626-645. https://doi.org/10.1080/09639284.2022.2090851

[3] Tavares, M.C., et al., Challenges of education in the accounting profession in the Era 5.0: A systematic review. Cogent Business & Management, 2023. 10(2): p. 2220198. https://doi.org/10.1080/23311975.2023.2220198

[4] Suarta, I.M., et al., Employability and digital technology: what skills employers want from accounting workers? Accounting Education, 2024. 33(3): p. 274-295. https://doi.org/10.1080/09639284.2023.2196665

[5] Alnor, N.H.A., et al., The impact of artificial intelligence in improving the efficiency of financial analysis. Cogent Business & Management, 2026. 13(1): p. 2651475. https://doi.org/10.1080/23311975.2026.2651475

[6] Reddy, B. and R. Fields. From past to present: a comprehensive technical review of rule-based expert systems from 1980--2021. 2022. ACM Southeast Conference (ACMSE 2022), April 18–20, 2022, Oxford, AL, USA. ACM, New York, NY, USA, 6 pages. https://doi.org/10.1145/3476883.3520211

[7] Pavlovic, M., et al., Revolutionizing management accounting: the role of artificial intelligence in predictive analytics, automated reporting, and decision-making. Business & Management Compass, 2024. 68(4): p. 23-42. https://doi.org/10.56065/nxn2gx53

[8] Argento, D., et al., The unaccounted effects of digital transformation: implications for accounting, auditing and accountability research. Accounting, Auditing & Accountability Journal, 2025. 38(3): p. 765-796. https://doi.org/10.1108/AAAJ-01-2025-7670

[9] Mohamed Saad, A.M.A., Adapting accountants to the AI revolution: university strategies for skill enhancement, job security and competence in accounting. Higher Education, Skills and Work-Based Learning, 2025. 15(2): p. 290-305. https://doi.org/10.1108/HESWBL-10-2023-0295

[10] Ajani, O.A., B.T. Gamede, and R. Bansal, Challenges and opportunities of integrating Industry 5.0 and emerging technologies in higher education for enhancing employability skills. Industry 5.0 and Emerging Technologies: Transformation Through Technology and Innovations, 2024: p. 217-230. https://doi.org/10.1007/978-3-031-70996-8_11

[11] Mardan, Z.A. and B.M. Hussain, The Role of Modern Accountant Skills to Improving the Effectiveness of Performance in Oil Companies1. International Journal of Research in Social Sciences and Humanities, 2023. 13(1): p. 427-441. https://doi.org/10.37648/ijrssh.v13i01.035

[12] van der Vyver, L. Navigating the Future of Education: Developing Employability and Leadership Skills Through Digital-Age Teaching and Learning. 2024. Springer Transactions on Digital Learning. Springer, Singapore. https://doi.org/10.1007/978-981-95-8240-2_1

[13] Hussain, S., et al., Workforce readiness: industry insights on building future-ready talent for hospitality. Worldwide Hospitality and Tourism Themes, 2026. 18(1): p. 83-103. https://doi.org/10.1108/WHATT-12-2025-0302

[14] Al-Okaily, M., Artificial intelligence and its impact on the sustainability of digital accounting education. Interactive Technology and Smart Education, 2026. 23(2): p. 298-310. https://doi.org/10.1108/ITSE-03-2025-0071

[15] Lestari, S. and A. Santoso, The roles of digital literacy, technology literacy, and human literacy to encourage work readiness of accounting education students in the fourth industrial revolution era. KnE Social Sciences, 2019. 3(11): p. 513-527. https://doi.org/10.18502/kss.v3i11.4031

[16] Qasim, A. and F.F. Kharbat, Blockchain technology, business data analytics, and artificial intelligence: Use in the accounting profession and ideas for inclusion into the accounting curriculum. Journal of emerging technologies in accounting, 2020. 17(1): p. 107-117. https://doi.org/10.2308/jeta-52649

[17] Hanelt, A., et al., A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. Journal of management studies, 2021. 58(5): p. 1159-1197. https://doi.org/10.1111/joms.12639

[18] Satjawisate, S., et al. Digital Competencies for a FinTech-Driven Accounting Profession: A Systematic Literature Review. 2025. MDPI. https://doi.org/10.3390/informatics12040121

[19] Abid, M., et al., Modelling for disability: How does artificial intelligence affect unemployment among people with disability? An empirical analysis of linear and nonlinear effects. Research in Developmental Disabilities, 2024. 149: p. 104732. https://doi.org/10.1016/j.ridd.2024.104732

[20] Berikol, B.Z. and M. Killi, The effects of digital transformation process on accounting profession and accounting education, in Ethics and Sustainability in Accounting and Finance, Volume II. 2020, Springer. p. 219-231. https://doi.org/10.1007/978-981-15-1928-4_13

[21] Othman, R. and R. Ameer, Rethinking accounting education for a sustainable future: charting a course for sustainable development goals 2030. Meditari Accountancy Research, 2024. 32(5): p. 1809-1836. https://doi.org/10.1108/MEDAR-05-2023-2009

[22] Karami, H. and G. Karimi, A Policy Paper Research: A Research Aimed at Offering Solutions to the Practical Problems of the KRG. Journal of Garmian University, 2019. 6(5th Conferance of Human sciences): p. 962-972. https://doi.org/10.24271/GARMIAN.5THC64

[23] Hamza, R., et al., The impact of artificial intelligence (AI) on the accounting system of Saudi companies. wseas Transactions on Business and Economics, 2024. 21(1): p. 499-511. https://doi.org/10.37394/23207.2024.21.42

[24] Chahal, U., Comparative analysis of traditional and modern accounting practices. Journal of East-West Thought (JET) ISSN (O): 2168-2259 UGC CARE I, 2025. 15(1): p. 132-140.

[25] Thanasas, G., G. Kampiotis, and C. Halkiopoulos, Transforming digital accounting: Big Data, IoT, and Industry 4.0 technologies—A comprehensive survey. Journal of Risk and Financial Management, 2026. 19(1): p. 92. https://doi.org/10.3390/jrfm19010092

[26] Abduh, M., et al., Challenges of Implementing Artificial Intelligence in the Audit Profession and Its Impact on Audit Quality: JEL Classification: M42, O33, C88, D83, G34. Mustard Journal De Ecobusin, 2026. 3(1): p. 50-67. https://doi.org/10.37899/mjde.v3i1.338

[27] Moran, W., A Modern Curriculum: Data-Driven Decision Making and AI in Accounting. Journal of Accounting and Business Education, 2026. 10(3): p. 20-48. http://dx.doi.org/10.17977/jabe.v10i3.65285

[28] Moran, W., The essential AI skills and knowledge that business accounting students should acquire. Journal of Management and Business Education, 2025. 8(2): p. 147-167. https://doi.org/10.35564/jmbe.2025.0009

[29] Greenman, C., et al., An analysis of the impact of artificial intelligence on the accounting profession. Journal of Accounting, Ethics & Public Policy, JAEPP, 2024. 25(2): p. 188-188. https://doi.org/10.60154/jaepp.2024.v25n2p188

[30] Anomah, S., et al., Adapting to AI: exploring the implications of AI integration in shaping the accounting and auditing profession for developing economies. EDPACS, 2024. 69(11): p. 28-52.

https://doi.org/10.1080/07366981.2024.2388412

[31] Crittenden, W.F., I.K. Biel, and W.A. Lovely Iii, Embracing digitalization: Student learning and new technologies. Journal of marketing education, 2019. 41(1): p. 5-14. https://doi.org/10.1177/0273475318820895

[32] Furgasė, J. and I. Knyvienė, Artificial intelligence in accounting education: challenges we face. Mokslo taikomieji tyrimai/Applied Research, 2025. 3(21): p. 59-66. https://doi.org/10.59476/mtt2025.v3i21.743

[33] Holmes, A.F. and A. Douglass, Artificial intelligence: Reshaping the accounting profession and the disruption to accounting education. Journal of Emerging Technologies in Accounting, 2022. 19(1): p. 53-68. https://doi.org/10.2308/JETA-2020-054

[34] Daff, L., Employers' perspectives of accounting graduates and their world of work: Software use and ICT competencies. Accounting Education, 2021. 30(5): p. 495-524. https://doi.org/10.1080/09639284.2021.1935282

[35] Sutton, S.G., V. Arnold, and M. Holt, How much automation is too much? Keeping the human relevant in knowledge work. Journal of emerging technologies in accounting, 2018. 15(2): p. 15-25. https://doi.org/10.2308/jeta-52311

[36] Alsharari, N.M. and J.I. Habashi, Using AI to personalize learning in accounting education, in Generative AI in Creative Industries. 2025, Springer. p. 479-499. https://doi.org/10.1007/978-3-031-89175-5_30

[37] Assidi, S., et al., The role of AI adoption in transforming the accounting profession: a diffusion of innovations theory approach. Journal of Accounting & Organizational Change, 2025. 21(5): p. 915-936. https://doi.org/10.1108/JAOC-04-2024-0124

[38] Arise, O.A. and T. Moloi. Towards a future-ready accounting education: Opportunities and challenges of integrating artificial intelligence into contemporary accounting curricula. 2025. Springer. https://doi.org/10.1007/978-3-031-84885-8_54

[39] Alsbou, M.K.K. and R.E.A.I. Alsaraireh. Data-driven decision-making in education: Leveraging AI for school improvement. 2024. IEEE. https://doi.org/10.1109/ICKECS61492.2024.10616616

[40] Fletcher Jr, E.C., N.Q. Warren, and V.M. Hernández-Gantes, Preparing high school students for a changing world: College, career, and future ready learners. Career and Technical Education Research, 2018. 43(1): p. 77-97. https://doi.org/10.5328/cter43.1.77

[41] Son-Turan, S., The TRAIN Framework for AI-Assisted Development of Novice Accounting Instructors, in Education for Sustainable Development: The Contribution of Universities. 2025, Springer. p. 447-463. https://doi.org/10.1007/978-3-031-86985-3_27

[42] Keevy, M., Incorporating emerging technologies into tertiary education accounting courses. Journal of Accounting Education, 2026. 73: p. 101006. https://doi.org/10.1016/j.jaccedu.2026.101006

[43] Imjai, N., et al., Impact of AI literacy and adaptability on financial analyst skills among prospective Thai accountants: The role of critical thinking. Technological forecasting and social change, 2025. 210: p. 123889. https://doi.org/10.1016/j.techfore.2024.123889

[44] Januszewski, A., et al., Digital competencies of finance and accounting students. Procedia Computer Science, 2024. 246: p. 4481-4491. https://doi.org/10.1016/j.procs.2024.09.298

[45] Imamguluyev, R., et al., Ai-powered educational tools: Transforming learning in the digital era. International Research Journal of Modernization in Engineering Technology and Science, 2024. 6: p. 920-929. https://doi.org/10.56726/IRJMETS65040

[46] Mukherjee, A., U. Sharma, and J. Liu, Big data analytics role in shaping the work of accounting function and accounting professionals. Journal of Accounting & Organizational Change, 2025. 21(7): p. 272-306. https://doi.org/10.1108/JAOC-08-2024-0255

[47] ara, D., T.T. Nguyen, and D.M. Putra, Beyond digital skills: work-integrated learning, adaptability, and the thresholds for graduate work readiness. Higher Education, Skills and Work-Based Learning, 2026. 16(3): p. 616-630.

https://doi.org/10.1108/HESWBL-10-2025-0446

[48] Parveen, M. and Y.M. Alkudsi, Graduates' perspectives on AI integration: Implications for skill development and career readiness. International Journal of Educational Research & Innovation (IJERI), 2024(22). https://doi.org/10.46661/ijeri.10651

[49] Novakova, L., The impact of technology development on the future of the labour market in the Slovak Republic. Technology in Society, 2020. 62: p. 101256. https://doi.org/10.1016/j.techsoc.2020.101256

[50] Abdo-Salloum, A.M. and H.Y. Al-Mousawi, Accounting students' technology readiness, perceptions, and digital competence toward artificial intelligence adoption in accounting curricula. Journal of Accounting Education, 2025. 70: p. 100951. https://doi.org/10.1016/j.jaccedu.2025.100951

[51] Preacher, K.J. and K. Kelley, Effect size measures for mediation models: quantitative strategies for communicating indirect effects. Psychological methods, 2011. 16(2): p. 93. https://psycnet.apa.org/doi/10.1037/a0022658

[52] Fithri, P., et al., Validation studies a questionnaire developed to measure incubator business technology performance using PLS-SEM approach. Andalasian International Journal of Applied Science, Engineering and Technology, 2024. 4(1): p. 64-78. https://doi.org/10.25077/aijaset.v4i1.132

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself

"This work was funded by the Deanship of Graduate Studies and Scientific Research at Jouf University under grant No. (DGSSR-2025-03-01508)".

Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)

This article is published under the terms of the Creative Commons Attribution License 4.0
https://creativecommons.org/licenses/by/4.0/deed.en_US

APPENDIX

Table 1. Frequencies and percentage

			Frequency	Percentage
Panel: A	Gender	Male	203	72%
		Female	80	28%
		Total	**283**	**100%**
Panel: B	Age	From 30 – 40 years old	25	9%
		From 41 – 50 years old	113	40%
		From 51 – 60 years old	73	26%
		Less than 30 years old	67	24%
		Above 60 years old	5	2%
		Total	**283**	**100%**
Panel: C	Education level	Bachelor	47	17%
		Postgraduate Diploma	141	50%
		Diploma	56	20%
		Master	28	10%
		PhD	11	4%
		Total	**283**	**100%**
Panel: D	Professional Qualification	Nothing	35	12%
		Other	19	7%
		Arab Fellowship	29	10%
		American Fellowship	140	49%
		British Fellowship	60	21%
		Total	**283**	**100%**
Panel: E	Specialization	Accounting	96	34%
		Banking Sciences	59	21%
		Information Technology	5	2%
		Business Administration	101	36%
		Other	22	8%
		Total	**283**	**100%**
Panel: G	Years of experience	Above 20 years	88	31%
		From 5-10 years	33	12%
		From 11-15 years	39	14%
		Less than 5 years	84	30%
		From 16-20 years	39	14%
		Total	**283**	**100%**

Source: created by the authors

Table 2. Factor loadings, reliability and convergent validity of the measurement model were assessed

Construct	abbreviatio	abbreviatio	Factor loading	Cronbach's α	rhoA	rhoC	AVE	VIF	1/VIF
Integrating artificial intelligence into accounting education	AIIAE	AIIAE1	0.511	0.764	0.832	0.871	0.592	1.292	0.774
		AIIAE2	0.797					1.661	0.602
		AIIAE3	0.964					2.579	0.388
		AIIAE4	0.910					2.310	0.433
Digital Competencies of Accountants	DCA	DCA1	0.755	0.754	0.833	0.881	0.674	1.360	0.736
		DCA2	0.841					2.010	0.498
		DCA3	0.997					2.340	0.427
		DCA4	0.943					4.459	0.224
		DCA5	0.866					3.232	0.309
Professional readiness	PR	PR1	0.991	0.978	0.998	0.990	0.754	4.860	0.206
		PR2	0.991					4.887	0.205
		PR3	0.936					3.354	0.298
		PR4	0.788					2.584	0.387
		PR5	0.909					3.421	0.292
Quality of digital accounting education	QDAE	QDAE1	0.646	0.817	0.790	0.873	0.535	1.151	0.869
		QDAE2	0.530					1.564	0.639
		QDAE3	0.884					2.375	0.421
		QDAE4	0.818					2.425	0.412

Source: created by the authors

Table 5. Direct relation and hypothesis testing

Hypothesis	Path	Beta coefficient	Standard deviation	T value	*p* value	Decision
H1	AIIAE → DCA	0.234	0.044	5.596	0	Supported
H2	AIIAE → PR	0.226	0.045	5.225	0	Supported
H3	AIIAE * QDAE → DCA * PR	0.309	0.040	8.083	0	Supported

Source: created by the authors