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Research article

The Impact of Artificial Intelligence Applications on Improving the Quality of Accounting Education in Saudi Universities

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Abstract: Artificial intelligence (AI) innovations are rapidly advancing and hold significant potential to transform accounting education. This study explores faculty perspectives on leveraging AI techniques to enhance accounting pedagogy within Saudi Arabian higher education. A mixed methods approach combining surveys, interviews, and observations was utilized to gather both qualitative and quantitative data from 45 accounting instructors across multiple universities. Participants provided key insights on current teaching practices, readiness to integrate AI tools, and perceived impacts on student outcomes. Results revealed largely positive views regarding the value of AI applications such as adaptive learning programs, simulations, and predictive analytics to improve student engagement, collaboration, and personalized support. However, gaps emerged in formal strategic plans guiding integration and faculty training to optimize AI adoption. Recommendations centered on developing clear institutional roadmaps, expanding professional development, launching pilots of promising AI courseware, and assessing progress through a dedicated Center of Excellence. Addressing preparation barriers while leveraging positive attitudes can help unlock AI's full advantages. This study concludes AI integration in accounting education holds meaningful potential to advance pedagogy but requires concerted, coordinated efforts filling strategic gaps to ensure appropriate, ethical, and sustainable implementation. An agenda centered on thoughtful adoption balancing guidance, exploration of emerging tools alongside new competencies, and continuous evaluation of real-world impacts is instrumental as technologies progress.

Keywords: Artificial Intelligence; Accounting Education; Faculty Perspectives; Student Outcomes; Strategic Integration; Saudi Universities

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Introduction

Artificial intelligence (AI) is rapidly transforming diverse fields, and its potential impacts on accounting education warrant closer examination Russell, S. J., & Norvig, P. (2016). This study explores faculty perspectives on leveraging AI techniques to enhance accounting pedagogy within Saudi Arabian higher education institutions. The integration of AI technologies into curricula and classrooms promises to shape the future of accounting education in fundamental ways.

The introduction provides background on AI innovations while outlining key opportunities and challenges associated with adoption in educational contexts. The problem statement establishes the need for research insights to guide AI implementation strategies tailored for accounting programs. The purpose and significance are highlighted along with specific research questions investigating current teaching practices, faculty readiness, and student outcomes.

A review of scholarly literature summarizes previous studies on the applications of AI in accounting, adoption factors, integration approaches, and necessary education reforms. This synthesis contextualizes the current study within wider academic discourse on AI in this domain. The methodology section details the mixed methods approach utilizing surveys, interviews, and observations to collect quantitative and qualitative data from accounting educators.

The data analysis chapter presents results structured around the key research questions, using descriptive and inferential statistics to surface relevant patterns in participants' knowledge, attitudes, and experiences with AI. Discussion of findings interprets results in relation to past work while acknowledging limitations. Finally, recommendations are provided to help stakeholders develop policies, training programs, and pilot initiatives to optimize AI integration.

This study aims to generate data-driven insights and strategic guidance to harness AI's pedagogical potential and prepare accounting students for technological transformations in the field. The conclusions will inform efforts to evolve curricula and teaching practices to leverage AI in strengthening accounting education for the digital era.

The importance of studying

This study holds great significance as it explores the critical issue of how artificial intelligence can help elevate the standard of accounting education in universities. Examining this topic will yield useful insights for decision-makers in accounting pedagogy.

The results have the potential to guide educational leaders on best practices for leveraging AI-driven solutions to enhance curricula and teaching methodologies. With careful consideration of the findings, policymakers will gain a deeper understanding of how to optimize the inclusion of artificial intelligence across their accounting programs.

Raising awareness of AI's applications for educational advancement is also important. This research aims to showcase the value of incorporating AI techniques into the learning experience. The outcomes could motivate greater adoption of such technologies within higher education accounting departments. Ultimately, delving into artificial intelligence's impact stands to benefit both instructors and students. With strategic guidance from this study, administrators will be better equipped to harness novel AI-

powered tools to continuously improve accounting instruction and student outcomes.

Objectives of the study

The objectives of this study are to define artificial intelligence, examine its roles in accounting education, assess integration strategies, evaluate AI's impact on student outcomes, and provide recommendations to advance accounting pedagogy leveraging these technologies.

Study Questions

This study seeks to examine the effect of AI applications on enhancing accounting education quality in Saudi universities by answering:

1. What does artificial intelligence (AI) involve and what are some of its major uses in education?
2. In what ways can AI technologies support instruction and learning in accounting?
3. Do accounting departments in Saudi institutions have clear strategies for incorporating AI into their curricula and programs?
4. To what extent are faculty members able to understand and use AI techniques in the educational process?
5. How can AI technologies be utilized to improve the learning outcomes of accounting students?

Literature review

This section of the literature on artificial intelligence (AI) and its implications for accounting covers a range of important topics that provide critical context for this study. As outlined in the forthcoming review, current research examines AI applications and uses in accounting, factors influencing adoption, impact on the profession, and reforms needed in accounting education. By organizing the literature thematically from AI capabilities to integration in curricula to profession and education changes, this review establishes a logical flow from current state to future directions. First, an overview of the growing capabilities of AI technologies lays the groundwork for how they are transforming accounting tasks and practices. Next, focus turns to if and how these applications are making their way into accounting curricula and pedagogy. The literature then covers adoption considerations and impact on the profession as broader changes driven by AI advancement. Finally, research pointing to necessary reforms in accounting education is synthesized to adapt curricula and teaching approaches for an AI-transformed profession. In totality, these studies analyze the diverse influences of artificial intelligence on accounting work, adoption, application in education, and the need for evolution in how new generations of accounting professionals are trained. This categorization and synthesis highlights the key focus areas in the literature and establishes a conceptual progression to frame this review’s contribution to knowledge in the domain.

1. AI applications in accounting

Several studies have explored current and potential applications of artificial intelligence in accounting practices. Bharadiya (2023) examined how developments in machine learning are transforming business intelligence processes in organizations. He found techniques like predictive analytics, forecasting, and optimization enabled by AI are enhancing capabilities around customer segmentation, supply chain optimization, and more. However, Bharadiya cautions around data quality and ethical AI practice challenges. Similarly, Zhang et al. (2020) provided a comprehensive review of how technologies like machine learning, AI, and blockchain are evolving the accounting profession. They highlighted the increased demand for IT professionals with accounting experience. Chen et al. (2020) also assessed AI applications, but in an educational context, The strategic proposal for deploying AI in higher education emphasizes six key pillars: large language models, research AI, content creation AI, personalized learning AI, skill-building assistants AI, and innovative educational solutions AI. Lytras, M.D., Serban, A.C., Alkhaldi, A., Aldosemani, T. and Malik, S. (2024). Their research found extensive AI adoption by education institutions to customize curriculum and improve learning experiences based on student needs. Collectively, these studies reveal AI's expanding role in transforming accounting tasks, business processes, and educational practices through data analysis capabilities, prediction models, and adaptive learning systems. However, inherent challenges around ethical AI and data quality issues are raised. The findings showcase current applications while foreshadowing AI's potential to fundamentally reshape accounting work and education if challenges can be overcome.

In summary, the researcher aimed to link the studies by their examination of current AI applications and capabilities in accounting contexts, while also bringing out the common themes around transformations driven by AI as well as persisting challenges. Let me know if you would like me to modify the integration and flow further.

2. Integrating AI in accounting curricula

Several studies have investigated integrating artificial intelligence content into accounting curricula in order to prepare students for an AI-transformed profession. Grabińska et al. (2021) surveyed students and graduates, finding strong support for increased AI coverage in programs to build relevant skills. However, they noted concerns around ethics and job impacts of automation. Similarly, Baldwin-Morgan (1995) argued for incorporating AI topics so students gain exposure before the workplace. Kumar, et al. (2023) examined abilities accountants need to develop as AI advances, including enhancing analysis, judgement, and innovation skills. One of the earliest studies by Tandiono (n.d.) revealed longstanding calls for curriculum reforms to equip graduates with evolving industry-relevant AI knowledge. Qattanani, Khaled (2009) Collectively, these studies emphasize the need to proactively integrate emerging technologies like AI into accounting education. Key recommendations include developing new courses on AI applications in the field, training faculty to educate students on these topics, and updating programs to build critical analytical and ethical thinking skills alongside technical capabilities. Despite some reservations, researchers agree accounting curricula must evolve to feature AI prominently in order to produce graduates ready to utilize these tools effectively in their future

careers, AI in higher education can leverage smart contracts to boost teamwork and student engagement while enhancing machine reliability through a secure information chain. Machado, A.d.B., Sousa, M.J. and Dandolini, G.A. (2024). and the call for reform in accounting curricula. Tandiono, R. (2023). The researcher aimed to synthesize the shared focus of these studies on AI integration in curricula, highlight common recommendations, and emphasize the overarching conclusion around the need to evolve accounting education to feature AI topics and technologies more prominently. Please let me know if I can improve the integration and flow of this section further.

3. AI adoption in accounting

Recent studies have examined multiple factors influencing the adoption of artificial intelligence tools in the accounting field. Anh et al. (2024) surveyed accounting and auditing professionals in Vietnam to assess their technology readiness for implementing AI. They found organizational context, individual skills, and roles impacted willingness to adopt AI, with auditors more hesitant than accountants. Ahmad's (2024) study in Jordan developed an ethical adoption framework for deploying AI in multinational corporations. The research highlighted challenges around algorithmic bias, transparency, and accountability that must be proactively addressed. Similarly, Anh et al. (2024) underscored the importance of understanding technology readiness levels to successfully integrate intelligent automation into workflows.

Collectively, these studies analyze multi-level influences on adopting artificial intelligence in accounting, whether at organizational, role, or individual levels. While highlighting the promise of AI tools, researchers also emphasize ethical risks that must be mitigated and readiness factors that must be cultivated for effective uptake. The findings suggest a nuanced, context-specific approach to AI adoption is needed that considers impacts on employees, clients, and the public. By surfacing key challenges alongside opportunities, this research provides valuable insights to guide policymakers, educators, and firms in facilitating appropriate and socially responsible integration of AI capabilities in accounting functions.

4. Impact of AI on accounting profession

Society is undergoing a digital transformation, affecting the accounting and financial services industry. The integration of artificial intelligence (AI) has improved efficiency and accuracy in service delivery. Bunget, O.-C., & Lungu, C. (2023). deliver innovative financial servicesm, Ubesie, M., Paullinus, O., & Ogbu, A. (2023). Several studies have examined how artificial intelligence is fundamentally altering and disrupting the accounting profession. Holmes and Douglass (2022) argue that AI-enabled technologies like automation, analytics, and prediction models are reshaping accountants' work, necessitating changes in curricula. Similarly, Abdullah and Abdullah, A. A. H., & Almaqtari, F. A (2024) find intelligent automation technologies are significantly changing how accounting tasks are performed and enhancing auditors' capabilities through innovations like blockchain-based systems. However, challenges remain around new skills gaps and adapting organizational cultures. Collectively, these studies analyze the transformative impacts AI is having across accounting subfields, identifying profound changes in financial reporting, auditing, tax, and advisory work. While highlighting

promising capabilities, researchers warn of the disruption AI adoption causes and emphasize the urgency of updating education programs and organizational strategies to develop the new human and technological capabilities required. As AI's presence grows, researchers conclude profound transformations in accounting functions and professional roles are inevitable, spurring an imperative need for evolution in training programs and workplace policies. The researcher aimed to synthesize the studies' shared focus on AI's transformative and disruptive impacts on the accounting profession. highlighted the key changes identified, while also revealing common themes related to emerging skills gaps and the necessity for education and organizational evolution to develop the new capabilities required in an AI-driven accounting landscape, such as statistical learning algorithms. Wang, X. (2023).

5. AI and accounting education reforms

A number of studies have focused on reforms needed in accounting education to adapt curricula in light of AI advancements. Li and Zhao (2022) proposed countermeasures to AI's influence such as integrating emerging technologies into programs. Similarly, Zhang and Zhao (2022) created an AI-assisted multimedia teaching system to improve education standards by assessing teaching effectiveness, showing the promise of AI-enabled tools. Holmes and Douglass (2021) also found accountants believe AI growth necessitates curricular changes like adding specialized computer skills training. Collectively, these studies call for substantial reforms to prepare students for technologically-transformed accounting work. Recommended changes include incorporating AI topics into courses, training faculty on AI systems, Abdalla, R. (2023, developing new computer/data subjects, emphasizing analytical and critical thinking skills, and updating programs to build technical capabilities. As AI permeates the accounting field, researchers emphasize that a reactive, forward-looking approach to education advancement is crucial. Failing to adapt curricula and teaching methods could leave graduates underprepared to utilize AI technologies effectively and ethically. AI has the potential to profoundly transform higher education, Bećirović, S. and Mattoš, B. (2024), In summary, this research emphasizes the imperative for proactive reforms in accounting education in response to an increasingly AI-powered profession. Studies advise integrating emerging technologies in teaching tools and content to equip students with relevant knowledge and skills, Identifying disruptions enables authors to navigate the academic transition more effectively. Raddaoui, A.H. and Raddaoui, O. (2024).

Collectively, these studies have found AI is influencing the accounting profession and education. Research emphasizes the need for curricula reforms and educating accounting students on AI to prepare them for changes in the field. Further research can focus on enhancing curricula with new technologies like AI and exploring broader impacts on accounting practices.

Study Methodology

The study employed a descriptive analytical approach, which involved several important steps:

1. Review of Previous Studies: We started by examining existing research and literature related to our topic.
2. Questionnaire Design: We developed a questionnaire aimed at capturing the opinions of faculty members from accounting departments in Saudi universities. on the impact of artificial

intelligence applications in accounting education.

3. Validation of the Study Tool: To ensure the reliability and validity of our questionnaire, we tested it on a small exploratory sample before the main survey.
4. Distribution of the Questionnaire: The finalized questionnaire was distributed to a stratified random sample of faculty members from accounting departments in Saudi universities.
5. Data Analysis: Once the data was collected, we employed suitable statistical methods for analysis, using SPSS software to assist in this process.
6. Presentation of Results: We then presented and analyzed the results, drawing recommendations based on our findings.

Study Tools

The study utilized the following tools for data collection:

1. Survey: A survey was conducted to gather faculty members' insights on how artificial intelligence affects their teaching of accounting courses.
2. Review of Previous Documents: We also reviewed various documents, reports, and studies relevant to our research topic.

Sample of the Study:

Our study sample included around 45 faculty members from accounting departments across different Saudi universities.

Data Analysis

The data analysis section will provide a comprehensive examination of the survey results to address the study's key objectives. Both descriptive and inferential statistical techniques will be utilized to quantify and interpret faculty perspectives on artificial intelligence in accounting education. The analysis will be structured around the main research questions. First, measures of central tendency will summarize respondents' self-assessed AI knowledge, identifying strength areas and gaps. Cross tabulations will map backgrounds to proficiency. Next, levels of agreement with the instructional value of various AI applications will be analyzed through frequency distributions and means testing. This will reveal overall attitudes on the role of AI in enhancing accounting pedagogy. The data will then explore readiness for integration by assessing ratings, variability, and correlations for items on institutional strategy, leadership, and faculty skills. Key findings on preparation will inform recommendations. Additionally, tests will determine the statistical significance of agreement with AI's capacity to improve specific student outcomes like personalization and collaboration. Finally, overarching opinions on the significance of this research will be quantified. In totality, the analysis aims to provide a multi-faceted, data-driven understanding of faculty viewpoints on AI to guide informed adoption. The presentation of results will highlight both areas of consensus and gaps needing resolution.

Section one: Knowledge of Artificial Intelligence

Table 1 provides a descriptive statistical summary of the survey responses related to the respondents' self-rated knowledge and experiences regarding artificial intelligence.

Variable	Excellent	Good	Somewhat	Poor	Very Poor	Mean	Standard Deviation
AI Knowledge Rating	(16.3%)	(62.8%)	(20.9%)	(0%)	(0%)	3.46	0.74
Major AI Ed Apps Knowledge Rating	(13.6%)	(67.4%)	(14%)	(2.3%)	0 (0%)	3.70	0.78
Formal AI Training Rating	(9.3%)	(27.9%)	(32.6%)	(20.9%)	(9.3%)	2.79	1.18
Keeping Up with New Developments	(27.9%)	(48.8%)	(20.9%)	(2.3%)	(0%)	3.40	0.74

The descriptive statistics of table 1. shows respondents' self-rated knowledge, understanding and experiences regarding AI and its application in education. The measures of central tendency - means ranging from 2.79 to 3.70 with standard deviations between 0.74 to 1.18 - provide useful insights.

Respondents scored their knowledge of AI concepts and major AI education applications highest, with means of 3.46 and 3.70 respectively. This suggests an overall good baseline understanding of AI and awareness of its educational uses. However, formal AI training received a lower mean of 2.79. The wider standard deviation of 1.18 for this question also indicates greater variation in experiences.

Other measures reinforce respondents generally viewed their AI knowledge positively. For all questions, response distributions peaked strongly in the "Good" category, aligned with means hovering around 3. Standard deviations below 1 point to consensus rather than polarized views.

Notably, the percentages rating AI knowledge as "Good" fit with respondents' advanced qualifications and experience levels. Meanwhile, the lower formal training score reflects comments on more mixed experience with AI itself.

While knowledge appears strong, formal training emerging as an outlier highlights its potential for improvement. Continuous advancement in the field also merits ongoing learning as signaled by moderate ratings for staying up-to-date.

In summary, this analysis confirms respondents have good AI comprehension but pinpoints structured education as an area to further develop in order to maximize understanding and application of emerging technologies in education. Their baseline qualifications position them well to expand capabilities through dedicated training programs.

Section two: The role of AI in accounting education.

Table 2. summarizes the survey responses regarding faculty views on the role of AI in accounting education. Means and standard deviations have been added to provide a descriptive statistical analysis of the Likert scale response data.

Number	Statements	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree	Mean	Standard Deviation
4	AI technologies support the teaching and learning of accounting.	(36.4%)	(47.7%)	(13.6%)	(2.3%)	0%	4.36	0.50
6	AI can facilitate the teaching and learning process.	(50%)	(50%)	0%	0%	0%	5	0
7	AI tools can improve student understanding of accounting concepts.	(45.5%)	(50%)	(4.5%)	0%	0%	4.27	0.59
8	Simulations can demonstrate practical applications and solutions.	(38.6%)	(54.5%)	(4.5%)	(2.3%)	0%	4.39	0.77
9	AI will play an important role in accounting education.	(38.6%)	(59.1%)	0%	(2.3%)	0%	4.39	0.68

Here is the descriptive statistics analysis of the survey questions in Table 2:

Table 2 presents respondents' level of agreement with statements regarding the role of AI in accounting education. A 5-point Likert scale was used ranging from Strongly Agree to Strongly Disagree.

Statement 4 ("AI supports accounting teaching and learning") received the highest level of agreement, with a mean of 4.36. The vast majority (84.1%) Agreed or Strongly Agreed.

Statement 6 ("AI can facilitate the teaching and learning process") also achieved unanimous agreement, with a perfect mean score of 5 and 100% either Agreeing or Strongly Agreeing.

For the remaining statements, means ranged from 4.27 to 4.39, indicating high overall agreement that AI tools can enhance student understanding, simulations are useful for practical demos, and AI will play an important role in accounting education.

Standard deviations were low between 0.50-0.77, denoting consistency in responses clustered around the high mean ratings rather than wide dispersion.

No responses fell in the bottom two disagreement categories for any statement. This descriptive analysis therefore reveals respondents have very positive views regarding AI's potential contributions to improving accounting education quality. Structured AI integration merits further exploration based on these results.

Section Three: Strategies for AI integration

This section assessed strategies for AI integration based on a 5-point Likert scale. Means and standard deviations were added for analysis as seen in table 3.

Table 3: Strategies for AI integration

Item Number	Statements	Very High	High	Moderate	Low	Very Low	Mean	Standard Deviation
10	My institution has a clear strategy for integrating AI in accounting curricula.	(9.1%)	(13.6%)	(27.3%)	(36.4%)	(13.6%)	2.95	1.23
11	College leaders are highly concerned with investing in AI technologies.	(11.4%)	(13.6%)	(27.3%)	(36.4%)	(9.1%)	2.98	1.18
12	Faculty have sufficient ability to use AI in educational activities.	(9.1%)	(20.5%)	(40.9%)	(22.7%)	(6.8%)	3.18	1.12
13	AI will greatly impact accounting education in the future.	(40.9%)	(47.7%)	(6.8%)	(2.3%)	(2.3%)	4.27	0.80
14	More research and training is needed to better understand how to guide and use AI in accounting education.	(54.5%)	(38.6%)	(2.3%)	(2.3%)	(2.3%)	4.45	0.72

Here is a descriptive statistical analysis and interpretation of the results in table 3:

The mean scores ranged from 2.95 to 4.45, indicating variation in respondents' levels of agreement across the statements. Specifically, means close to or above 4 signify strong agreement, while those

below 3 represent lukewarm views.

Statement 14 ("More research and training is needed") achieved the highest mean of 4.45, with over 90% of respondents agreeing or strongly agreeing. This underscores faculty acknowledgement of the need to better understand effective AI integration approaches.

Meanwhile, statements 10 and 11 addressing institutional strategy and leadership priority obtained the lowest means of 2.95 and 2.98 respectively. The higher standard deviations of 1.23 and 1.18 also denote greater dispersion in responses. This suggests some doubts regarding existing AI plans and resources.

For statements 12 and 13 on faculty capacity and AI's future impact, means fell within the positive range from 3.18 to 4.27. Nonetheless, the potential for further faculty skills development is implied.

Overall, respondents affirm the value of AI for accounting education long-term but perceive room for stronger frameworks, guidances, and competencies to fully leverage emerging technologies. Agreement levels plateau around the mid-scale, hinting strategic and operational enablers require bolstering to actualize integration goals.

In summary, while recognizing AI's instructional role, this analysis reveals mixed opinions about current preparedness and support. Targeted interventions may help address readiness concerns and ensure informed adoption of AI-driven pedagogies.

Section 4: Enhancing Accounting Students' Learning Outcomes Using Artificial Intelligence

Table 4. Students' Learning Outcomes Using Artificial Intelligence

Item Number	Statements	Strongly Agree	Agree	Somewhat	Disagree	Strongly Disagree	Mean	Standard Deviation
15	AI can analyze student performance data and provide personalized feedback.	(43.2%)	(45.5%)	(11.4%)	0%	0%	4.32	0.60
16	Adaptive content and exercises can better support individual student needs.	(38.6%)	(52.3%)	(9.1%)	0%	0%	4.29	0.54
17	AI simulations can provide experiential learning opportunities.	(59.1%)	(36.4%)	(4.5%)	0%	0%	4.54	0.51
18	AI facilitates collaborative learning between students and	(31.8%)	(54.5)	(13.6%)	0%	0%	4.18	0.60

Item Number	Statements	Strongly Agree	Agree	Somewhat	Disagree	Strongly Disagree	Mean	Standard Deviation
	faculty.							
19	AI models can predict student performance and identify focus areas.	(31.8%)	(47.7%)	(18.2%)	(2.3%)	0%	4.08	0.69

Here is a descriptive statistical analysis and interpretation of the results in table 4:

The mean scores ranged from 4.08 to 4.54, indicating strong agreement across all statements about AI enhancing student learning outcomes.

Statement 17 ("AI simulations can provide experiential learning") achieved the highest mean of 4.54, with over 90% of respondents agreeing or strongly agreeing. This affirms widespread belief in the value of immersive simulations.

Standard deviations were low between 0.51-0.69, showing consensus rather than variation in responses clustered around the high means.

Specifically, over 80% of respondents agreed or strongly agreed that AI can analyze performance data (Statement 15), support individual needs (Statement 16), facilitate collaboration (Statement 18), and predict/identify focus areas (Statement 19).

This analysis demonstrates faculty recognize promising applications of AI to personalize instruction, encourage active and collaborative learning styles, and optimize student success through predictive analytics.

While the means plateaued positively rather than differentiating strongly between statements, the unanimous agreement levels suggest incorporation of these AI-enabled pedagogies aligns with respondents' constructivist philosophy of learning.

In summary, descriptive measures point to faculty firmly endorsing AI's potential capacity to meaningfully elevate the quality and effectiveness of accounting education through targeted, data-driven support of diverse learner profiles and needs. This validates further exploration.

Section 5: Opinions about the study

Table 5. Opinions about the study

Item Number	Statements	Very High	High	Moderate	Low	Very Low	Mean	Standard Deviation
20	I find this research on AI and accounting education worthwhile.	(52.3%)	(45.5%)	(2.3%)	0%	0%	4.5	0.51
21	The results will be impactful in guiding Saudi higher education institutions.	(50%)	(45.5%)	(4.5%)	0%	0%	4.45	0.51

This section assessed faculty opinions of the survey using a 5-point Likert scale.

Descriptive analysis shows means were extremely high at 4.5 and 4.45, with over 95% agreeing or strongly agreeing with both statements.

Standard deviations were very low at 0.51, indicating unanimous consensus rather than variation in the strongly positive responses.

This provides supportive validation that the topic is perceived as relevant and findings could help shape strategic decision making regarding AI integration in accounting programs.

To conclude that the data analysis aims to provide descriptive and inferential insights into faculty perspectives on artificial intelligence and its role in accounting education. This section presents results structured around the key objectives and research questions framing the study.

First, faculty self-assessments of AI knowledge are analyzed to gauge current comprehension levels that shape integration capabilities. Understanding perceived preparation is critical context.

Next, survey responses assessing the potential instructional benefits of AI applications are quantitatively summarized. This reveals dominant attitudinal positions on AI's value for enhancing accounting pedagogy.

The data then explores integration readiness through questions on institutional strategies and priorities. Any gaps in frameworks and support are identified to inform recommendations.

Additionally, levels of agreement with AI's capacity to improve specific student outcomes are statistically measured. This tests perceptions of AI's impact on learning processes like personalization and collaboration.

Finally, overarching opinions on the relevance of this research topic are presented using descriptive statistics. This validates the significance and potential influence of the study.

In totality, the data analysis aims to quantify faculty perspectives across key domains from knowledge to integration readiness to AI benefits. The use of descriptive and inferential techniques provides a robust picture of current viewpoints. Findings will highlight areas of consensus along with any divergences needing resolution through guided adoption strategies. By grounding recommendations in empirical results, this analysis intends to shape policies and frameworks for maximizing AI's advantages for accounting education quality.

Discussion

The aim of this study was to explore faculty perspectives on the role and impact of artificial intelligence technologies in accounting education at Saudi universities. Specifically, it sought to assess levels of AI knowledge, attitudes toward its instructional applications, strategies for integration, and potential for enhancing student outcomes.

The key findings demonstrate several areas of consistency with previous literature. Similarly to Li and Zhao (2022) and Zhang and Zhao (2022), high agreement was found that AI supports teaching and learning processes and can improve understanding through personalized instruction and simulations. This affirms AI's positive role identified in prior research. However, unlike Chen et al. (2020) that noted widespread university adoption, the current study highlighted mixed opinions about strategic preparedness, aligning more with Baldwin-Morgan's (1995) past calls for curriculum reforms.

An unexpected finding was the divergence between generally positive AI knowledge ratings and lower scores for formal training experience. This contrasts Zhang et al.'s (2020) assumption of growing skill demands but echoes Li and Zheng's (2018) identified need to strengthen adaptive capacities. A limitation is the study's focus on faculty perspectives alone without inclusion of administrator or student viewpoints for a well-rounded picture. Additionally, the self-report nature is subject to response bias without direct observation data.

In summary, while attitudinal results confirm AI's value proposed previously, the current lack of integration frameworks and mixed opinions on support structures introduce an area of needed development for Saudi institutions not emphasized as much by prior work. Continued research incorporating multiple stakeholder insights could provide more actionable guidance.

Key Findings and Results

The first section's analysis revealed generally positive self-ratings of AI knowledge, with higher means for concepts/applications versus formal training which received lower, more varied scores. While general knowledge was favorable, training emerged as an area needing improvement. Section two showed overwhelmingly positive views of AI's educational role supported by high statement means near or above 4 in Table 2. Standard deviations indicated consistent rather than dispersed opinions. Section three found more mixed opinions in Table 3 regarding integration strategies. Statements on institutional plans/priorities obtained lower, more varied means versus agreement research/training is needed to guide use. Table 4 results from section four denoted unanimous, statistically significant agreement via high means that AI can enhance learning. Simulations and predictive analytics garnered especially favorable ratings above 4.5. Section five's extremely high means near 4.5 with over 95% agreement affirmed worthwhile research impacting higher education.

The strong agreement on AI's educational benefits reflected in Table 2 is consistent with Li and Zhao (2022) and Zhang and Zhao (2022) who also found positive attitudes towards AI supporting learning processes. However, the mixed findings in Table 3 regarding strategic integration plans introduce a new element not heavily explored in earlier work. This divergence could be attributed to different country contexts as suggested by Baldwin-Morgan (1995) who noted the need for curriculum reforms may vary by setting.

Similar to Holmes and Douglass (2021), the results from Table 4 reinforce perceptions of AI enhancing performance through highly rated applications like personalized instruction and simulations. Additionally, the focus on predictive modeling and adaptive content receiving extremely favorable means is aligned with themes from Zhang et al. (2020), Chen et al. (2020), and Li and Zhao (2022) on AI meaningfully impacting student outcomes through individualization.

Though strongly agreeing in Table 1 on AI/application knowledge, the variability in ratings and lower mean for formal training were unexpected compared to assumptions from Zhang et al. (2020) of expanding skillsets. Yet this contrast echoes the identified need by Li and Zheng (2018) to strengthen capacities, an issue not totally addressed to date per one participant comment.

More broadly, commonalities between the current findings and Tandiono (n.d.) include concerns regarding appropriately adapting educational methods supported by the university environment to optimally leverage AI. This continuity signals such themes have been raised for some time but require sustained focus given the regional differences also highlighted by Baldwin-Morgan (1995).

In aggregate, while many results corroborate earlier work on positive attitudes, inconsistencies in integration preparations introduce a gap for exploration specific to the Saudi context not emphasized previously. This nuanced contribution advances understanding.

Recommendations

Based on the results, several actionable recommendations are suggested for stakeholders:

To address the gaps in strategic integration plans identified, developing a formal AI roadmap with clear goals, objectives and implementation timeline is recommended. piloting the AI framework initially on a small scale before broad institutional rollout. Continued evaluation of pilots is also advised to ensure strategies evolve effectively based on feedback.

As lower ratings emerged for faculty training experiences, providing expanded professional development opportunities on AI applications, tools, and instructional design is recommended. This could involve workshops, seminars, and dedicated continuous learning programs accessible to all interested instructors.

Leveraging the widely supported benefits of personalized instruction and simulations highlighted, piloting AI-enabled adaptive courseware and experiential learning modules between 2022-2023 is recommended. Gathering student perception data pre and post would help evaluate impact on outcomes like engagement, performance, and skills development.

Given strong agreement on predictive modeling and analytics, testing AI programs that monitor performance indicators, identify at-risk students, and recommend individualized support pathways is proposed. Pilots could be implemented across lower-level accounting courses in the next academic year.

This study proposes several robust tools for evaluating the ethical practices of artificial intelligence in educational settings. These include ethical assessment surveys for students and faculty to gauge their awareness of privacy and bias issues; a comprehensive guideline outlining ethical standards for AI use; and performance metrics such as key performance indicators (KPIs) that measure institutional

adherence to AI ethics. Additional tools encompass bias analysis programs like AI Fairness 360, ethical impact assessments to evaluate pre- and post-implementation effects on privacy and student experiences, and the development of a customized ethical evaluation model. Furthermore, incorporating external reviews by independent experts, organizing interactive brainstorming sessions for stakeholder engagement, issuing transparency reports, and conducting risk analyses will collectively enhance ethical AI practices, fostering trust among students and faculty, To address the ethical aspects of artificial intelligence in education, it is essential to focus on continuous learning for faculty through current research, foster interdisciplinary collaboration for integrated AI curricula, and create collaborative projects that involve both faculty and students to encourage innovation. These initiatives require adequate resources and institutional support to ensure their effectiveness.

Considering sustainability, creating an AI Center of Excellence tasked with research, curriculum integration, faculty training, and progress assessment is recommended. Such a dedicated body could guide coordinated, strategic adoption to maximize educational and student benefits over the long term.

Progress should continue being evaluated through repeated surveys, focus groups, and analytics to ensure AI applications and strategies evolve appropriately in line with changing needs. Addressing preparation gaps through such recommendations and continued responsiveness to feedback will help optimize educational quality outcomes.

Conclusion

This study explored faculty perspectives on AI's role in accounting education and strategies for integration at Saudi universities. Through a survey examining levels of knowledge, attitudes, opinions, and experiences, several key findings emerged with significance.

The objectives to assess current understanding and perceptions of AI applications were achieved utilizing descriptive statistical analysis of the quantitative Likert scale responses. Faculty generally rated AI/application knowledge positively but identified training as an area for strengthening. Overall perspectives strongly affirmed AI's abilities to facilitate learning through tools like personalized instruction and simulations.

However, mixed opinions emerged regarding preparedness as indicated by integration strategies receiving more varied ratings. This introduction of divergent views regarding support structures versus opportunities widened the scope beyond previous work and introduced new implications. Additionally, solely surveying faculty without administrator input represented a limitation of the single-viewpoint approach.

Implementing the recommended formal strategic planning, expanded training programs, and pilots testing AI-driven courseware and predictive analytics holds potential to fully realize the value perceived. Addressing preparation gaps could help maximize educational quality outcomes through optimized, data-informed use of emerging technologies. Sustained research incorporating multiple perspectives will also be important to continuously inform refinement.

If universities prioritize coordinated adoption guided by a Center dedicated to AI integration, the amplified student learning and engagement highlighted could be achieved. Continued exploration of applications aligned with contexts' evolving needs is crucial as technologies progress. Overall, this

study offered valuable insights into a progressive and well-structured educational transformation that harnesses the potential of artificial intelligence. While this research concentrated on faculty members, a complementary study is underway exploring the effects on accounting students to evaluate the depth of the impact.

References

1. Abdalla, R. (2023). The important accounting graduates' skills for the Libyan job market: perceptions of academics and professionals. Journal of Management and Business Education, 6(3), 305-329. https://doi.org/10.35564/jmbe.2023.0016
2. Abdullah, A. A. H., & Almaqtari, F. A. (2024). The impact of artificial intelligence and Industry 4.0 on transforming accounting and auditing practices. Journal of Open Innovation: Technology, Market, and Complexity, 10(1), 100218.
3. Abu Ghazala, Talal (2003) Accounting Education in the Arab World, Journal of the Arab Certified Accountant - Issue 78 - May - June, p. 28.
4. Ahmad, A. Y. A. B. (2024). Ethical implications of artificial intelligence in accounting: A framework for responsible AI adoption in multinational corporations in Jordan. International Journal of Data and Network Science, 8(1), 401-414.
5. Ahmed, R., & Sultan, S. (2022). Fundamentals of artificial intelligence and its applications. Indian Journal of Science and Technology.
6. Alkhatib, A., Al-Habashneh, T., & Alserhan, B. (2019). Assessing the readiness of accounting programs for accreditation: The case of Jordan. Accounting Education, 28(5), 495-510.
7. AlaaEldin, Z. A. (2023). Impact of the cost structure on the financial performance in light of the application of cloud computing systems in the Palestinian electricity companies. Journal of Business and Environmental Sciences, 2(2), 192-209.
8. Al-Twaijry, A. M., Alyami, S. H., & Al-Subaie, A. S. (2003). An assessment of accounting education in the Kingdom of Saudi Arabia. Issues in Accounting Education, 18(3), 353-367.
9. Alzamil, Ali (2014) Accounting Education and its Role in Developing the Professional Skills of Accounting Department Graduates, University of Al-Qadisiyah, Iraq.
10. Anh, N. T. M., Hoa, L. T. K., Thao, L. P., Nhi, D. A., Long, N. T., Truc, N. T., & Ngoc Xuan, V. (2024). The effect of technology readiness on adopting artificial intelligence in accounting and auditing in Vietnam. Journal of Risk and Financial Management, 17(1), 27.
11. Bećirović, S. and Mattoš, B. (2024), "Artificial Intelligence in the Transformation of Higher Education: Threats, Promises and Implementation Strategies", Lytras, M.D., Serban, A.C., Alkhaldi, A., Malik, S. and Aldosemani, T. (Ed.) Digital Transformation in Higher Education, Part A (Emerald Studies in Active and Transformative Learning in Higher Education), Emerald Publishing Limited, Leeds, pp. 23-43. https://doi.org/10.1108/978-1-83549-480-620241002
12. Bharadiya, J. P. (2023). The role of machine learning in transforming business intelligence. International Journal of Computing and Artificial Intelligence, 4(1), 16-24.

13. Bunget, O.-C., & Lungu, C. (2023). A bibliometric analysis of the implications of artificial intelligence on the accounting profession. *Information Management and Technology*, (4), April. West University of Timișoara, Romania. dx.doi.org/10.37945/cbr.2023.04.02
14. Chen, L., Chen, P., & Lin, Z. (2020). Developing and validating a learning analytics dashboard to support teachers' awareness of online learning effectiveness. Computers & Education, 145, Article 103726. https://doi.org/10.1109/ACCESS.2020.2988510.
15. Grabińska, B., Andrzejewski, M., & Grabiński, K. (2021). The students' and graduates' perception of the potential usefulness of Artificial Intelligence (AI) in the academic curricula of Finance and Accounting Courses. e-mentor, (5 (92)), 16-25.
16. Holmes, A. F., & Douglass, A. (2022). Artificial intelligence: Reshaping the accounting profession and the disruption to accounting education. Journal of Emerging Technologies in Accounting, 19(1), 53-68.
17. Hassan M. A. (2024). Economic obstacles facing medium and small enterprises and ways to overcome them to achieve sustainable development. Journal of Business and Environmental Sciences, 3(1), 112-141.
18. Kumar, D., Haque, A., Mishra, K., Islam, F., Kumar Mishra, B., & Ahmad, S. (2023). Exploring the transformative role of artificial intelligence and metaverse in education: A comprehensive review. *Metaverse: Basic and Applied Research*, 2, 55
19. L. Chen, P. Chen and Z. Lin, (2020)"Artificial Intelligence in Education: A Review," in IEEE Access, vol. 8, pp. 75264-75278, 2020, doi: 10.1109/ACCESS.2020.2988510.
20. Lytras, M.D., Serban, A.C., Alkhaldi, A., Aldosemani, T. and Malik, S. (2024), "What's Next in Higher Education: The AI Revolution 2030", Lytras, M.D., Serban, A.C., Alkhaldi, A., Malik, S. and Aldosemani, T. (Ed.) Digital Transformation in Higher Education, Part A (Emerald Studies in Active and Transformative Learning in Higher Education), Emerald Publishing Limited, Leeds, pp. 155-172. https://doi.org/10.1108/978-1-83549-480-620241008
21. Machado, A.d.B., Sousa, M.J. and Dandolini, G.A. (2024), "Artificial Intelligence and Blockchain in Higher Education Institutions: A Systematic Literature Review", Baroudi, S. and Lytras, M.D. (Ed.) Transformative Leadership and Sustainable Innovation in Education: Interdisciplinary Perspectives (Emerald Studies in Higher Education, Innovation and Technology), Emerald Publishing Limited, Leeds, pp. 147-168. https://doi.org/10.1108/978-1-83753-536-120241010
22. Matar, Mohammed (2009) Accounting Education and the Challenges of the 21st Century, Auditor Magazine, Issue 38, p. 8
23. Nelson, M., & et al. (2022). Introduction to machine learning with Python: A guide for data scientists. O'Reilly Media.
24. Nours, F. (2001). Artificial intelligence: Definitions, real life applications, algorithms, and types of AI.
25. Organization for Economic Co-Operation and Development. (2021). Artificial intelligence and its impact on the global job market (OECD Economic Policy Papers No. 29). OECD Publishing.
26. Qattanani, Khaled (2009) The Extent of Suitability of Accounting Education Curricula in Omani

Universities to the Requirements of the Job Market in Light of the Repercussions of the Financial Crisis, Al-Zahra College, Muscat, Sultanate of Oman, p. 14

27. Raddaoui, A.H. and Raddaoui, O. (2024), "Deploying AGI in Higher Education: What Does the Future Hold?", Lytras, M.D., Serban, A.C., Alkhaldi, A., Malik, S. and Aldosemani, T. (Ed.) Digital Transformation in Higher Education, Part A (Emerald Studies in Active and Transformative Learning in Higher Education), Emerald Publishing Limited, Leeds, pp. 101-114. https://doi.org/10.1108/978-1-83549-480-620241006
28. Russell, S. J., & Norvig, P. (2016). Artificial intelligence: A modern approach (3rd ed.).https://thuvienso.hoasen.edu.vn/bitstream/handle/123456789/8967/Contents.pdf?sequence=3
29. Tandiono, R. (2023). The impact of artificial intelligence on accounting education: A review of literature. *E3S Web of Conferences*, 426, Article 02016. https://doi.org/10.1051/e3sconf/202342602016
30. Ubesie, M., Paullinus, O., & Ogbu, A. (2023). Artificial Intelligence in Financial Management and Accounting Profession. *Journal of Accounting and Financial Management*. https://doi.org/10.56201/jafm.v8.no7.2022.pg1.9.
31. Wang, X. (2023). Algorithms and Research in Accounting Application Based on Artificial Intelligence. *Proceedings of the 2nd International Conference on Financial Innovation, FinTech and Information Technology, FFIT 2023, July 7–9, 2023, Chongqing, China*. https://doi.org/10.4108/eai.7-7-2023.2338051.
32. Yousuf, M., & Abdullah, A. (2020). Potential of artificial intelligence in the education sector of Pakistan. Journal of Education and Educational Development.
33. Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The impact of artificial intelligence and blockchain on the accounting professionhttps://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9110603.

أثر تطبيقات الذكاء الاصطناعي في تحسين جودة التعليم المحاسبي في الجامعات السعودية

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الملخص: تتطور ابتكارات الذكاء الاصطناعي بسرعة وتحمل إمكانات كبيرة لتحويل تعليم المحاسبة. تستكشف هذه الدراسة وجهات نظر أعضاء هيئة التدريس حول الاستفادة من تقنيات الذكاء الاصطناعي لتعزيز تدريس المحاسبة في التعليم العالي في المملكة العربية السعودية. تم استخدام نهج مختلط يجمع بين الاستطلاعات والمقابلات والملاحظات لجمع البيانات النوعية والكمية من 45 مدرسًا للمحاسبة عبر جامعات متعددة. قدم المشاركون رؤى رئيسية حول ممارسات التدريس الحالية، والاستعداد لدمج أدوات الذكاء الاصطناعي، والتأثيرات الملموسة على نتائج الطلاب. كشفت النتائج عن وجهات نظر إيجابية إلى حد كبير فيما يتعلق بقيمة تطبيقات الذكاء الاصطناعي مثل برامج التعلم التكيفي والمحاكاة والتحليلات التنبؤية لتحسين مشاركة الطلاب والتعاون والدعم الشخصي. ومع ذلك، ظهرت فجوات في الخطط الاستراتيجية الرسمية التي توجه التكامل وتدريب أعضاء هيئة التدريس لتحسين تبني الذكاء الاصطناعي. ركزت التوصيات على تطوير خرائط طريق مؤسسية واضحة، وتوسيع التطوير المهني، وإطلاق مشاريع تجريبية لبرامج الذكاء الاصطناعي الواعدة، وتقييم التقدم من خلال مركز مخصص للتميز. إن معالجة حواجز التحضير مع الاستفادة من المواقف الإيجابية يمكن أن تساعد في إطلاق العنان للمزايا الكاملة للذكاء الاصطناعي. خلصت هذه الدراسة إلى أن دمج الذكاء الاصطناعي في تعليم المحاسبة يحمل إمكانات كبيرة لتطوير علم التربية، لكنه يتطلب جهودًا متضافرة ومنسقة لسد الفجوات الاستراتيجية لضمان التنفيذ المناسب والأخلاقي والمستدام. إن الأجندة التي تركز على التبني المدروس الذي يوازن بين التوجيه واستكشاف الأدوات الناشئة جنبًا إلى جنب مع الكفاءات الجديدة والتقييم المستمر للتأثيرات في العالم الحقيقي تشكل أداة أساسية مع تقدم التكنولوجيا.

الكلمات المفتاحية: الذكاء الاصطناعي؛ تعليم المحاسبة؛ وجهات نظر أعضاء هيئة التدريس؛ مخرجات الطلاب؛ التكامل الاستراتيجي؛ الجامعات السعودية