The Impact of Artificial Intelligence on Accounting Education: A Review of Literature

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Abstract. This study explores the impact of artificial intelligence (AI) on accounting education through a semi-systematic review of the literature. The review found findings from 20 studies on the topic of AI and accounting education published in various journals, conference proceedings, and a book chapter. The findings reveal that scholars have expressed concerns about the impact of AI on accounting education for a significant period. Moreover, several themes emerge, including an interest in expert systems, an exploration of the application of AI in accounting education, and the call for accounting curricular reform. The study concludes that accounting educators must adapt their teaching methods and curricula to ensure that graduates are equipped with the necessary skills for a changing industry. Future research can concentrate on enhancing accounting curricula with the latest technological advancements, like AI, and exploring its potential impacts on the accounting industry, including risks, limitations, ethical implications, and its usefulness in accounting practices like financial reporting and auditing.

1. Introduction

Artificial Intelligence (AI) is a rapidly developing field that has the potential to revolutionize many industries, including accounting. Studies have shown that the "Big 4" accounting firms - KPMG, PwC, EY, and Deloitte - have heavily invested in technological innovation and are using AI in various ways in accounting and auditing [1]–[3]. Moreover, Damerji & Salimi [1] argued that AI is getting more applicable in accounting with the increasing number of automated accounting jobs. AI also provides more accuracy and improves decision-making [4]. A study conducted by Kokima and Davenport [2] argued that the auditing field will be affected the most by AI. However, other studies also predicted that several accounting tasks will be replaced by AI, for example, bookkeeping, fraud detection, financial reporting, and revenue forecasting [5], [6]. Due to its prominent and future role, many researchers have studied AI and accounting [7]–[9].

Despite the interest in AI and its influence on accounting, there is little understanding of to what extent accounting scholars have discussed and examined the impact of AI on accounting education. In addition, the rise of technology and the influence of AI in the accounting and auditing field has made many employers prefer recent accounting graduates equipped with technologies, including AI[1]. However, how far accounting education has equipped students in accordance with industry demand is unclear. To fill this gap, this study aims to examine the discussions and perspectives of accounting researchers regarding the impact of AI on accounting education. In doing so, this study is guided by the following research questions:

1. What is the publication typology of papers related to AI in accounting education, and how has it evolved over time?
2. What themes and ideas have accounting scholars discussed regarding the use of AI in accounting education?
3. What insights can be gained from a review of the literature on AI and accounting education, and how can these inform future research in this area?

This study conducts a semi-systematic literature review to answer the above research questions. The reason for using a semi-systematic review in this study is that the review method fits this study's aim, i.e. to recognize and comprehend all research traditions that may be relevant to the topic being studied and to combine them using meta-narratives[10]. The following section describes in detail the methodology and scope of this study. It is then followed by the publication profile and the themes and ideas in the literature on AI and accounting education. This study concludes by providing direction for further research and suggesting avenues for exploring the emerging trends and issues in the intersection of AI and accounting education.

2. Method and scope of review

Snyder [10] argued, regardless of the review approach, the basic steps in conducting a literature review consist of (1) designing the review, (2) conducting the review, (3) analyzing, and (4) writing up the review. Following
Snyder [10], the process of this study commences by considering the need, the contribution, the purpose, the research questions, and the type of review. After careful consideration of those aspects, this study conducts the review.

In searching for relevant papers, this study did not limit the review to a particular time frame. The keywords to use for searching relevant journals were artificial intelligence, expert systems, machine learning, robotics, and robotic process automation combined with accounting education. Additionally, to ensure the search covers enough breadth of relevant papers, this study conducted two stages of research. The first stage was to review three specific journals in the field of accounting education: Accounting Education, Issues in Accounting Education, and Journal of Accounting Education. The justification for prioritizing those journals as the primary sources for the literature review is that they are all reputable academic journals specializing in accounting education. These journals also have a high standard for publishing rigorous and relevant research in accounting education. Therefore, a review of the literature from these journals is likely to provide a comprehensive understanding of the current state of knowledge in AI and accounting education.

The second stage of searching for relevant papers was relying on Google Scholar. Google Scholar can be a useful supplementary tool in literature search as it assists in finding “grey literature.” Grey literature is the “documents not published by a commercial publisher, and it may form a vital component of evidence reviews” [11] (p.3). Moreover, by including grey literature, it ensures the minimization of publication bias, which is defined as “the tendency for significant, positive research to be more likely to be published than no significant or negative research, leading to an increased likelihood of overestimating effect sizes in meta-analyses and another synthesis” [11] (p.3).

After finishing the data extraction process, the data analysis begins. It involves categorizing the data based on the selected research questions. The following section of the Publication Typology reports the findings of the search.

3. Publication Typology

The results of this search were 20 papers on AI and accounting education. These papers include 18 studies published in journals and 3 papers were from conferences and a book section. Of 18 studies published in the journals, 10 of them were published in specialized accounting education journals with the following distribution: 6 were published in Accounting Education journal, 1 in the Journal of Accounting Education, and 2 in Issues in Accounting Education. The review also found that there were 5 AI and accounting education papers published in the Journal of Emerging Technology in Accounting. The remaining AI and accounting education papers were found in either computer science journals or accounting journals, with 2 papers published in a computer science journal and 2 papers published in an accounting journal. Additionally, 2 papers were identified from various accounting and education conferences and 1 study from a book chapter. The review found that accounting researchers have been concerned about AI for a long time. During that period, expert systems were considered to be an intriguing topic for discussion. There were 3 papers that specifically discussed the expert system with the coverage of examining accounting educators’ opinion on including expert systems and artificial intelligence in the accounting curriculum [12], the application of the expert systems in the teaching of accounting [13], and a literature review of an expert system [14].

Upon reviewing the work of Brown et al. [14], it was discovered that the study of expert systems dates back a long time. Brown et al. [14] summarised the studies of expert systems dated back to 1987. This review did not find papers on the topic of AI and accounting education later than 1995 perhaps due to the reliance on electronic database search. Papers that were published before 1995 might not be available electronically. Moreover, observing the number of studies that focused on expert systems topics, confirmed that expert systems were the most well-developed area of AI literature in the accounting discipline [15].

The next period of publications was found between 2007 and 2023. This publication coverage was varied ranging from a general discussion of artificial intelligence [1], [16]–[21] to robotic process automation [22]–[24], some publications also discussed artificial intelligence along with blockchain and data analysis technologies [25], [26]. There was also one study that focused on a large language model of ChatGPT [27].

The bulk of the publications related to AI and accounting education topics were mostly conceptual in nature [13], [14], [17], [19], [21], [23], [24], [26], [28]–[30], meaning they discussed theoretical ideas and frameworks. However, there were a limited number of empirical studies, which involved practical research and data analysis [1], [12], [16], [18], [20], [22], [25], [27], [31]. The research on this subject generally tended to be more theoretical than practical, with a greater emphasis calling for accounting curricular reform rather than testing data through data collection and analysis. Table 1 provides a summary of the typology of the reviewed studies.

4. AI and Accounting Education: The Extant Literature Themes

Studies that advocated for changes to the accounting curricula, in general, believed that the accounting field has been or will soon be affected by AI [21], [23], [25], [31] With the rise of AI, various accounting tasks that involved repetition and basic functions will be replaced by automation through technologies such as robotic process automation [17], [24]. Additionally, the accounting field requires a set of diverse skills, including operational systems and linguistics, to prepare accountants for the market’s automation needs, and an open mindset to adapt to future developments [31].
The changing landscape of the accounting profession requires a shift in the focus of business schools and higher education policymakers toward developing new competencies and reframing existing skills rather than solely providing new knowledge [18]. In line with this, accounting educators must meet the expectations of accounting professionals and reform accounting education to achieve this goal [26]. As the profession evolves, accounting education must be responsive to these changes and prepare students with the necessary skills to thrive in the future [17], [32].

There is a growing body of evidence supporting the urgent need for changes in accounting curricula worldwide. For instance, in China, accounting education still heavily relies on traditional teaching methods that may no longer be sufficient in the face of rapid technological advancements [21]. Similarly, concerns have been raised in the United Arab Emirates (UAE) about whether the current accounting curriculum adequately prepares graduates for the evolving IT requirements of the accounting job market [25]. These examples highlight the need for accounting educators to adapt their teaching methods and curricula to ensure that graduates have the skills and competencies necessary to succeed in a rapidly changing industry.

The necessity to reform the accounting curriculum has been the subject of significant advocacy. This effort commenced with the introduction of guidelines for the incorporation of artificial intelligence (AI) and expert systems into the accounting curriculum [12], [13], [28], followed by the presentation of empirical evidence supporting the efficacy of computer-based tutoring systems that employ AI [16]. Extant studies also have indicated that the use of artificial intelligence (AI) in computer technology has the potential to revolutionize accounting education. The traditional case method used in accounting education generates "canned" solutions, which may restrict students' individual efforts and the educational value of the exercise [29]. The studies suggest that the integration of AI technology in accounting education can lead to improved learning outcomes and better equip students for the changing demands of the accounting profession. Existing studies also examined the latest AI technology, namely the large language model: ChatGPT [27], and revealed that while it may demonstrate comparable performance to humans in certain topics, it is often surpassed by students in accounting-related questions.

### Appendix 1. Summary of publication typology

<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s)</th>
<th>Title</th>
<th>Journal/Conference Proceeding</th>
<th>Year</th>
<th>Study Type</th>
<th>AI Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baldwin-Morgan, Amelia A.</td>
<td>Integrating Artificial Intelligence into the Accounting Curriculum</td>
<td>Accounting Education</td>
<td>1995</td>
<td>Conceptual</td>
<td>Not specified</td>
</tr>
<tr>
<td>2</td>
<td>White Jr, Clinton E.</td>
<td>An Analysis of the Need for ES and AI in Accounting Education</td>
<td>Accounting Education</td>
<td>1995</td>
<td>Empirical</td>
<td>Expert system</td>
</tr>
<tr>
<td>4</td>
<td>Lymer, Andrew</td>
<td>The Integration of Expert System into the Teaching of Accountancy: A Third-year Option Course Approach</td>
<td>Accounting Education</td>
<td>1995</td>
<td>Conceptual</td>
<td>Expert system</td>
</tr>
<tr>
<td>5</td>
<td>Goldwater, Paul M. Fogarty, Timothy J.</td>
<td>Protecting the Solution: A 'High-Tech'. Method to Guarantee Individual Effort in Accounting Classes</td>
<td>Accounting Education</td>
<td>2007</td>
<td>Conceptual</td>
<td>Not specified</td>
</tr>
<tr>
<td>No.</td>
<td>Author(s)</td>
<td>Title</td>
<td>Journal/Conference</td>
<td>Year</td>
<td>Type</td>
<td>Focus</td>
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<tr>
<td>7</td>
<td>Song, Guomin</td>
<td>Reform and Exploration of Accounting Professional Practice Teaching under the Background of Artificial Intelligence</td>
<td>IOP Conf: Series: Materials Science and Engineering 563</td>
<td>2019</td>
<td>Conceptual</td>
<td>Not specified</td>
</tr>
<tr>
<td>8</td>
<td>Qasim, Amer Kharbat, Faten F.</td>
<td>Blockchain Technology, Business Data Analytics, Artificial Intelligence: Use in the Accounting Profession and Ideas for Inclusion into the Accounting Curriculum</td>
<td>Journal of Emerging Technologies in Accounting</td>
<td>2020</td>
<td>Conceptual</td>
<td>Not specified but the authors discussed AI along with blockchain and data analytics.</td>
</tr>
<tr>
<td>10</td>
<td>De Villiers, Rouxelle</td>
<td>Seven Principles to Ensure Future-Ready Accounting Graduates - A Model for Future Research and Practice</td>
<td>Meditari Accountancy Research</td>
<td>2020</td>
<td>Empirical</td>
<td>Not specified</td>
</tr>
<tr>
<td>11</td>
<td>Damerji, Hasan Salimi, Anwar</td>
<td>Mediating Effect of Use Perceptions on Technology Readiness and Adoption of Artificial Intelligence in Accounting</td>
<td>Accounting Education</td>
<td>2021</td>
<td>Empirical</td>
<td>Not specified</td>
</tr>
<tr>
<td>12</td>
<td>Zhang, Lan Shen, Zechuan Du, Jinliang Li, Na</td>
<td>Research on the Development of Accounting Education under the Background of Artificial Intelligence</td>
<td>2nd International Conference on Artificial Intelligence and Education (ICAIE)</td>
<td>2021</td>
<td>Conceptual</td>
<td>Not specified</td>
</tr>
<tr>
<td>13</td>
<td>Holmes, Amy Foshee Douglass, Asley</td>
<td>Artificial Intelligence: Reshaping the Accounting Profession and the Disruption to Accounting Education</td>
<td>Journal of Emerging Technologies in Accounting</td>
<td>2022</td>
<td>Empirical</td>
<td>Not specified</td>
</tr>
<tr>
<td>14</td>
<td>Qasim, Amer El Refae, Ghaaleb A. Eletter, Shorouq</td>
<td>Embracing Emerging Technologies and Artificial Intelligence into the Undergraduate Accounting Curriculum: Reflections from the UAE</td>
<td>Journal of Emerging Technologies in Accounting</td>
<td>2022</td>
<td>Empirical</td>
<td>Not specified but the authors discussed AI along with blockchain and data analytics.</td>
</tr>
<tr>
<td>15</td>
<td>Zhang, Chanyuan (Abigail) Vasarhelyi, Miklos A.</td>
<td>How to Teach a 14-week Robotic Process Automation (RPA) Course for Accounting Students</td>
<td>Issues in Accounting Education</td>
<td>2022</td>
<td>Conceptual</td>
<td>Robotic Process Automation</td>
</tr>
<tr>
<td>16</td>
<td>Ng, Cory</td>
<td>Teaching Advanced Data Analytics, Robotic Process Automation, and Artificial Intelligence in a</td>
<td>Journal of Emerging Technologies in Accounting</td>
<td>2022</td>
<td>Empirical</td>
<td>Robotic Process Automation</td>
</tr>
</tbody>
</table>
5. Insights and Future Research

Based on the above studies, it can be inferred that the accounting industry is being impacted by continuous advancements in technology, including AI. Despite this, accounting education has not kept up with the pace of change in the industry. Accounting scholars around the world have expressed concern over the absence of current and relevant accounting curricula. The dynamic nature of the industry, coupled with the rapid advancement of technology, including AI, means that accounting education must evolve to equip students with the necessary skills and competencies to succeed in the workforce. Failure to update accounting curricula could result in graduates being ill-prepared for the current industry landscape, hindering their ability to succeed in the field. As a result, there is a pressing need for accounting educators to adapt their curricula and teaching methods to ensure that graduates are equipped with the knowledge and skills to thrive in a rapidly changing industry.

Future research can focus on developing and implementing more up-to-date accounting curricula that incorporate technological advancements such as AI. This could involve investigating the effectiveness of different teaching methods and approaches for integrating AI technology into accounting education and exploring strategies for engaging students in AI technology. Additionally, future research could also examine the potential impacts of AI on the accounting industry, including the potential risks and limitations associated with its use. This could include exploring the ethical implications of AI in accounting and investigating how AI technology can be used to enhance accounting practices, such as auditing and financial reporting.

6. Conclusion

AI has brought about significant changes in various industries, including accounting. While there is growing interest in the impact of AI on the accounting industry, there is a lack of understanding about the extent to which AI has been discussed and examined in accounting education. Based on this background, this study examined the discussions and perspectives of accounting researchers regarding the impact of AI on accounting education. To do so, this study conducted a semi-systematic review of papers on AI and accounting education.

The current study found 20 studies published in various journals, conference proceedings, and a book chapter regarding AI and accounting education, and identifies a range of themes and trends. For a significant period, accounting scholars have been expressing their concerns regarding the impact of AI on accounting education, as revealed by the findings of this study. Several themes have emerged from the literature on AI and accounting education. First, there has been a longstanding interest in expert systems, which paved the way for the development of expert systems in accounting education. Second, there has been a growing interest in using AI to enhance accounting practices, such as auditing and financial reporting. Third, there has been a focus on using AI to improve accounting education, including the development of AI-based accounting curricula. Fourth, there has been a growing interest in using AI to improve the efficiency and effectiveness of accounting education, including the use of AI to automate repetitive tasks and improve student engagement. Finally, there has been a growing interest in using AI to improve the quality of accounting education, including the use of AI to improve the accuracy and reliability of accounting information.
way for the current focus on AI. Second, scholars are exploring how AI can be applied in accounting education to improve learning outcomes and prepare students for the workforce.

Overall, the studies reviewed indicate that AI is having a significant impact on the accounting profession, and accounting educators need to adapt their curricula and teaching methods to ensure graduates have the necessary skills to succeed in this changing industry. Subsequent research can concentrate on enhancing accounting curricula with the latest technological advancements, like AI. This can involve evaluating different methods to integrate AI technology into accounting education and engaging students with AI. Furthermore, research can explore the potential impacts of AI on the accounting industry, including risks, limitations, ethical implications, and its usefulness in accounting practices like financial reporting and auditing.

While this study added to the existing literature on AI and accounting education, it is important to acknowledge its limitations. One limitation is that the review was restricted to electronic databases, which may have excluded relevant studies that were not available in electronic form. Additionally, the study may have been influenced by the author's biases.

To address these limitations, future studies could consider using additional search methods, such as hand-searching relevant journals or contacting experts in the field, to ensure that a comprehensive review of the literature is conducted. It would also be beneficial for future studies to involve multiple authors with diverse perspectives to reduce the potential impact of bias on the study's findings.

References


