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Artificial Intelligence and the Future of Accounting Profession: Implications and Challenges

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Abstract A fast expanding trend that has the potential to completely transform the way accounting and finance professionals carry out their work is the use of big data and artificial intelligence (AI). The goal of this research is to examine the potential and difficulties that big data and AI bring for the accounting and finance industries. The current situation of big data and AI in the accounting and financial sectors is examined in this study, as well as the possible advantages and dangers of implementing them, as well as the difficulties that must be solved in order to fully realize their potential. This concept paper includes an analysis of existing research on big data and AI in accounting and finance, including articles, reports, and studies from professional sources. The findings of this study are of interest to accounting and finance professionals, academics, and researchers, as well as policymakers and other stakeholders who are interested in understanding the implications of big data and AI for the accounting and finance industry.

Keywords Artificial intelligence (AI) · Big data · Professional responsibility · Blockchain · Accounting profession

1 Introduction

Data-driven decision making is currently undergoing a big transition in the fields of accounting and finance. Big data has made it possible for accounting and finance professionals to evaluate large amounts of data and make better judgments [1–3]. The use of big data in accounting and finance has the potential to revolutionize the field. For example, big data and AI can be used to improve the accuracy and reliability of accounting work [4, 5] and to reduce business costs [6–8]. Additionally, big data can be used to improve decision making in finance [9], such as in portfolio optimization [10]. However, despite these potential benefits, there is a lack of research on the

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specific ways in which big data and AI can be used to improve accounting and finance practices [11]. By examining the prospects for big data and AI in the accounting and finance professions, this study seeks to bridge this gap. Specifically, the following questions will be answered:

1. How can the use of AI in accounting lead to improved decisions and cost savings for businesses, and what are the potential risks and challenges associated with this usage?
2. What are the potential ethical considerations of using AI in accounting, and how can these be addressed in a responsible and fair manner?

The study will examine existing research on big data and AI in accounting and finance and find possible uses for big data in these fields. Additionally, the study will provide recommendations for future research on big data in accounting and finance.

By presenting an overview of the prospects for big data in accounting and finance, this research adds to the body of knowledge. This will help educators, researchers, and professionals in accounting and finance understand how big data and AI may be applied to advance their fields. Furthermore, this paper provides insights for future research on this topic.

2   Methodology

This study is a conceptual paper that is based on a review of the literature on the effects of artificial intelligence on the accounting profession and the moral implications of using it. We conducted a thorough literature search using Web of Science and Google Scholar to find relevant papers published between 2015 and 2022. The papers were chosen based on the quality of the study, the date of publication, and their applicability to the subject. To ensure a thorough and rigorous analysis, inclusion and exclusion criteria were established for the selection of studies. Inclusion criteria were established to ensure that only studies that were directly relevant to the topic of AI in accounting profession were included in the review. Studies that met the inclusion criteria were those that:

1. Were published in English.
2. Focused on the use of AI in accounting and its impact on the profession.
3. Both empirical and theoretical studies and reports that provide insights on the topic were included.
4. Were published in reputable journals, reputable conference proceedings, or professional reports by reputable accounting firms.
5. Were published between 2015 and 2022.

All other research was disregarded. After applying the inclusion and exclusion criteria to a total of more than 100 studies, 52 sources were finally included in the review, many of which were professional body reports, in order to capture the most recent developments in the use of AI in accounting and auditing.

An integrative review approach [11] was used to synthesize the existing research on the topic. The review offered an overview of the present level of knowledge on the subject, identified research trends and patterns, and suggested research gaps and opportunities for the future.

3 The Potential Benefits and Challenges of Using AI in Accounting

The use of AI in accounting can provide several potential benefits [12]. One potential benefit of using AI in various areas of accounting is the ability to improve financial reporting [13]. The integration of AI in accounting can help to streamline financial reporting processes and improve the accuracy of financial statements. This can be achieved through the use of natural language generation [14, 15] which can automatically generate financial reports, reducing the time and cost associated with manual report creation.

The capacity to improve budgeting and forecasting processes is another possible advantage. Businesses can utilize this technology to increase the accuracy of their budgeting and forecasting because AI algorithms are capable of analyzing massive volumes of data and spotting trends. As discussed by He et al. [16], the use of large random matrices for big data modeling, can improve the understanding of situations of businesses, which can be leveraged to enhance the budgeting and forecasting processes.

The employment of AI in accounting, however, could also present certain difficulties. One such issue is the possibility of job displacement [17], as the use of blockchain technology in accounting can automate some operations and perhaps cause job displacement for some people.

The ethical questions surrounding the use of AI in accounting could provide another difficulty. Businesses must make sure that the development and deployment of AI is done in a reasonable and fair manner, taking into account the potential repercussions of the technology, according to Trust in Artificial Intelligence [18].

Additionally, the integration of AI in the accounting profession requires a certain level of technical knowledge and understanding of the technology [19], as highlighted by Dzuranin et al. [20]. This requires a shift in the traditional accounting curriculum [21] to include the integration of technology and data analytic skills.

Overall, the literature suggests that the use of AI in accounting can bring about significant benefits in terms of improved financial reporting, budgeting, and forecasting. However, businesses and professionals must also be aware of the potential challenges and ethical considerations associated with this technology. The adoption of AI in accounting also requires a shift in the traditional accounting curriculum, which can be seen as a challenge for the accounting education.

4   AI and Employment in Accounting Profession

Cost savings are one of the major advantages of employing artificial intelligence (AI) in accounting, according to the literature on the subject. For example, KPMG [22] found that their new AEOI reporting tool can automate certain tasks, which can lead to cost savings for businesses. Similarly, a study by Big 4 firm [23] revealed that their new payroll tax tools based on AI can improve the efficiency of the tax process and reduce costs for businesses.

The literature on the effects of artificial intelligence (AI) on employment and job displacement in the accounting profession is divided and frequently contradictory. According to certain studies, the use of AI could result in widespread job loss, especially for low-skilled individuals. According to certain studies, the use of AI in accounting has the potential to automate specific jobs like data entry and analysis, which could result in the loss of employment for some individuals [24–26]. Reference [24] found that the use of AI in accounting may result in the automation of some tasks, which may cause low-skilled individuals to lose their jobs. The use of blockchain-enabled smart contracts can automate certain tasks, which could lead to job displacement for certain workers [17, 27]. Similarly, a study [28] suggests that the use of internet-related technologies in accounting can lead to job displacement for low-skilled workers.

According to other studies, the implementation of AI in accounting could lead to the creation of new jobs and economic expansion [29–32]. The application of AI to accounting duties can boost their efficacy and efficiency, which could result in the establishment of new job possibilities and a rise in the need for specialized labor [28, 30, 33]. The adoption of AI in accounting can lead to the creation of new job opportunities, particularly for highly skilled workers [34].

It is important to note that the studies listed above are based on the current state of AI technology, which is rapidly evolving. As AI technology advances, it is likely that it will become more sophisticated and capable of automating more complex tasks. This could lead to further job displacement for low-skilled workers, but also new job opportunities for highly skilled workers [29, 35]. For instance, blockchain technology, as a complementary technology to AI, can offer new opportunities for businesses as well as for employees [32, 36] and can offer new ways for verifiable outsourcing [37]. Reference [38] found that blockchain technology, which is closely related to AI, has the potential to create new job opportunities in fields such as auditing and consulting. Similarly, EY has announced a blockchain audit technology [17] which will make the job of auditing more efficient and accurate, but also requires a new set of skills. Reference [39] found that the use of blockchain technology in the legal field can lead to the creation of new job opportunities, particularly for highly skilled workers. Similarly, [18] suggests that the use of AI in accounting can lead to the creation of new job opportunities, particularly for those with the necessary skills and knowledge.

In sum, the use of AI in accounting raises concerns about job displacement and the impact on the workforce, which is important to take into account to ensure a

responsible and fair deployment of AI technology. A study [40] suggests that the big accounting firms such as Deloitte, PwC, KPMG, and EY are all investing in the development of AI-based solutions for accounting and auditing, which may lead to the automation of certain tasks and job displacement for certain workers. Therefore, it is important for businesses, policy makers, and other stakeholders to carefully consider the potential consequences of AI and to ensure that its development and deployment are done in a responsible and fair manner. In response to these concerns, many companies such as KPMG and EY have developed programs that provide training and development for employees to help them adapt to a changing workplace [18, 41–43]. PWC [44] highlights the importance of investing in training and development programs for employees, to help them acquire the skills needed to adapt to a changing workplace.

Overall, while the literature on the impact of AI on employment in the accounting profession is inconclusive, the adoption of AI is likely to have a significant impact on the profession and the workforce [32]. The literature suggests that the use of AI in accounting can lead to cost savings and improved efficiency, but it also raises concerns about potential job displacement. It is important for businesses, policymakers, and other stakeholders to carefully consider the potential consequences of AI and to ensure that its development and deployment are done in a responsible and fair manner, by investing in employee's training and career development programs [16, 28].

5 AI and Quality and Accuracy in Accounting

The use of Artificial Intelligence (AI) in accounting can have a significant impact on the quality and accuracy of accounting work [31, 34, 45]. One of the main advantages of using AI in accounting is that it can automate repetitive and time-consuming tasks, such as data entry and analysis, which can lead to improved efficiency and cost savings for businesses [46, 47]. For example, PwC has developed a blockchain auditing service for clients [48] that can reduce costs and improve the efficiency of the auditing process. Similarly, Deloitte has also launched a blockchain lab in New York and Hong Kong [49] which aims to bring distributed ledger technology into production and improve the efficiency of accounting and auditing services.

Moreover, AI can also improve the accuracy and quality of accounting work by providing real-time data analysis and insights. For instance, KPMG has launched a new automatic exchange of information (AEOI) reporting tool [22] that uses AI to automate data collection and analysis for compliance with international tax regulations. Furthermore, KPMG also has developed a new FBT payroll tax tool [23] that uses AI to automate the calculation of payroll tax.

Additionally, the use of AI in accounting can also enhance the audit process by providing advanced risk assessments and real-time data analysis. KPMG, for example, has introduced Dynamic Risk Assessment [50] that uses AI to provide real-time data analysis, which can help auditors identify potential risks and improve

the accuracy of their work. EY also has implemented AI in the audit process by using drones [51] to provide real-time data analysis and improve the efficiency of the auditing process.

6   Ethical Considerations of Using AI in Accounting

The use of artificial intelligence (AI) in the accounting profession raises a few ethical considerations, including issues related to fairness, transparency, and accountability [52]. Reference [53] highlights the potential risks associated with the use of AI in accounting, such as the possibility of biases in the data used to train AI systems, which could lead to inaccurate or unfair results. Additionally [54] emphasizes the importance of transparency in the use of AI in accounting, as the decision-making processes of AI systems may be difficult for humans to understand and interpret.

Additionally, the use of AI in accounting also raises concerns about data security and privacy, which is important to consider when developing and deploying AI systems. Reference [44] suggests that AI systems in accounting must be designed with robust security mechanisms in place to protect sensitive data and ensure compliance with data privacy regulations.

Addressing these ethical considerations requires a proactive approach that includes the participation of various stakeholders such as businesses, regulators, and experts in AI and ethics. Reference [55] highlights the importance of involving experts in AI and ethics in the development and deployment of AI systems in accounting to ensure that the ethical considerations are considered.

The responsible deployment of AI in the accounting profession requires a multi-faceted approach that considers both technical and ethical considerations. To effectively implement and utilize AI in accounting practices, businesses must be aware of the best practices for responsible deployment.

One key aspect of responsible deployment is ensuring transparency and explainability of AI systems. As stated by [56] in their study on the ethicality of earnings management, "transparency is a key attribute of ethical decision-making." This holds true for the deployment of AI in accounting as well, as businesses must be able to explain the decisions made by AI systems to stakeholders and regulators.

Another important aspect of responsible deployment is addressing potential biases in AI systems. Reference [57] in their study on Luca Pacioli and the role of accounting and business, highlighted that "Addressing bias in AI systems is crucial to ensuring fair and ethical decision-making." This is particularly important in accounting, where decisions made by AI systems can have significant financial consequences.

In addition to these technical considerations, businesses must also consider the ethical implications of using AI in accounting. Reference [58] in her study on how AI is challenging the accounting profession, discussed the importance of addressing ethical concerns such as privacy, accountability, and responsibility when deploying AI systems.

One way to address these ethical considerations is through the development of governance and management frameworks for AI deployment. According to KPMG [18], "Having a governance framework in place helps organizations to understand the potential risks of using AI and to mitigate them, while also ensuring that the benefits of AI are realized."

In conclusion, responsible deployment of AI in the accounting profession requires a holistic approach that takes into account both technical and ethical considerations. Transparency and explain ability, addressing bias, and ethical considerations such as privacy and accountability, are key aspects to consider. Furthermore, having governance and management frameworks in place can help organizations mitigate risks and ensure that the benefits of AI are realized. Overall, the use of AI in accounting has the potential to bring significant benefits such as cost savings, improved accuracy and efficiency. However, it is important to ensure that ethical considerations are taken into account in a responsible and fair manner, by involving experts in AI and ethics, regulators, businesses and other stakeholder.

7 Conclusions

The literature analysis concludes that the application of AI in accounting has the potential to yield major advantages like cost savings, increased effectiveness and accuracy, and improved decision-making skills. The requirement for transparency and responsibility in the decision-making process, potential employment displacement, data privacy concerns, and other ethical issues must also be taken into account.

To ensure responsible deployment of AI in the profession, it is important for organizations to establish clear guidelines and best practices for the use of AI, such as performing regular audits, providing training for employees, and incorporating human oversight in decision-making. It is also critical to make sure that the usage of AI does not degrade the accuracy and quality of accounting operations.

Furthermore, the literature highlights the importance of considering the economic implications of using AI in accounting, as it has the potential to bring significant cost savings and new job opportunities while also job displacements.

Overall, even though AI has the potential to significantly improve the accounting industry, its deployment should be done with prudence and after carefully weighing its ethical ramifications and best practices for responsible implementation.

Future research on AI should focus on a variety of areas to improve the effectiveness and safety of this technology. One area of focus should be investigating the effectiveness of different algorithms in various domains and decisions to provide insight into how this technology can be best utilized. Additionally, it's important to investigate the ethical implications of using AI in decision-making processes, particularly in areas that affect people's lives. Another important area of focus should be on ways to improve the interpretability and transparency of AI models to increase trust and accountability. Furthermore, future research should also explore the use

of AI technologies, such as natural language processing and computer vision, to create more powerful and versatile systems. Finally, research should investigate the use of machine learning in creating models that can adapt to different cultures and languages.

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