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The Role of Artificial Intelligence on the Transformation of Traditional Financial Accounting Practices: A Thematic Literature Review

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Abstract

This research provides an in-depth analysis of the transformative impact of Artificial Intelligence (AI) on traditional financial accounting practices. The main objective of this study is to examine the role of AI in automation of traditional financial accounting practices to enhance the accuracy and efficiency in traditional financial accounting practices. It also focuses to identify the major challenges associated with integrating artificial intelligence in traditional financial accounting practices. In order to fulfill the objectives of the study, this study uses a systematic thematic literature review methodology process. Among different databases, this study focuses on Scopus, Web of science and Google scholar as the database. After selecting database, researcher searches keywords, title and abstract relevant to the present study without specifying the time range. Only peer-reviewed journal articles published in English and addressing artificial intelligence and financial accounting were included in the review. Duplicate records, articles not subjected to peer review and articles published in languages other than English were excluded from the study. The findings reveal that automation in accounting transform the nature of traditional accounting practices and improves the accuracy and efficiency of financial accounting. However, challenges such as the need for skilled manpower, data privacy, data security and high cost of AI integration are notable. In conclusion, the study recommends a human-AI collaborative model. AI handles data, perform repetitive routine tasks, and prepare report while accounting personnel retain responsibility for professional judgement, interpretation, control and accountability.

Keywords: Artificial intelligence, Financial accounting, Machine learning, Natural language processing, Accuracy, efficiency

Introduction

In recent years, the rapid development of digital technologies has attracted worldwide attention. Nearly every aspect of life has changed dramatically and quickly as a result of digital technologies. Artificial intelligence is one of the most popular and talked-about technologies of the modern era (Chollet,2021). Artificial intelligence is a branch of computer science that aims to develop systems and machines that can perform tasks that usually require human intelligence (Eriana & Zein, 2023).

Today, artificial intelligence is used for many cases, including speech or image recognition, medical diagnoses and automatizing routine labor (Goodfellow et al. 2016). Given this, it is not unexpected that artificial intelligence is currently a multidisciplinary topic with consequences for numerous businesses and fields. Artificial intelligence has gained considerable attention and interest among managers and academics in recent years (Brock & Von Wangenheim, 2019).

Financial accounting is the oldest area of accounting. It is concerned with the process of recording, classifying, summarizing and interpreting the past financial transactions. It aims to prepare the various financial statements at the end of accounting period to communicate the results of a firm's operation and financial position to the concerned users. Over the course of history, accounting has been characterized by its detailed nature, requiring high levels of accuracy. The traditional methods involved manual data entry, ledger maintenance and extensive use of paper-based records (Smith, 2018). These procedures limited the speed and effectiveness of financial reporting and analysis since they were laborious

and prone to human error. Even though accounting is a traditional field with a long history, it has been subject to rapid changes in the past years that come along with the digital age (Berikol & Killi, 2021).

The context of artificial intelligence in accounting has brought major changes to commonly accepted accounting practices. Artificial intelligence's ability to process large volumes of data with speed and precision has significantly enhanced the efficiency and accuracy of accounting tasks (Tandiono, 2023). Artificial intelligence technologies such as machine learning algorithms and data analytics tools are now being employed to automate routine tasks, such as data entry and transaction categorization, which were once the backbone of traditional financial accounting (Odonkor et al., 2024).

These developments demonstrate that artificial intelligence should not be viewed merely as a tool for automating book-keeping. Rather, AI has the potential to change the nature, boundaries, processes and professional responsibilities of financial accounting. Research on the application of artificial intelligence to accounting has already been done quite a bit. However, the majority of the themes that are looked into are related to the impact of AI on the accounting profession, the limitations of AI for accounting duties, the impact of AI-based accounting on the accountant's profession, etc. Consequently, there is a need for an integrated thematic synthesis specifically addressing the transformation of traditional financial accounting practices due to development of artificial intelligence. This study therefore conducts a thematic literature review to identify, organize and interpret the major themes emerging from previous research on artificial intelligence and financial accounting.

Research Questions

The present study aims to deal with the following research questions:

i) How does artificial intelligence contribute to the automation of traditional financial accounting processes?
ii) How does artificial intelligence enhance the accuracy and efficiency in financial accounting?
iii) What are the major challenges associated with integrating artificial intelligence into existing accounting practices?

Objectives of the Study

The present study aims to examine the impact of artificial intelligence on the transformation of traditional financial accounting practices. Some specific objectives are as follows:

i) To examine the role of artificial intelligence in automating traditional financial accounting processes.
ii) To analyze the contribution of artificial intelligence to enhance the accuracy and efficiency in financial accounting.
iii) To identify the major challenges associated with integrating artificial intelligence into existing accounting practices.

Research Methodology

This study employs a systematic thematic literature review methodology process proposed by Snyder (2019). A literature review helps classify and integrate relevant findings from multiple disciplines by systematically collecting research (Kureljusic & Karger, 2023).

There are many databases of scientific publications exist. This study focuses on Scopus, Web of Science and Google Scholar as the database. The justification for selecting those databases as the primary sources for the literature review is that they are all reputable and largest ones (Forliano et al., 2021). After selecting database, researcher searches keywords, title and abstract relevant to the present study without specifying the time range. Only peer-reviewed journal articles published in English and addressing artificial intelligence and financial accounting were included in the review. Duplicate records, articles not subjected to peer review and articles published in languages other than English were excluded from the study.

Thematic Analysis and Discussion

Previous studies have already examined the impact of artificial intelligence on traditional accounting practices (Bertomeu, 2020; Ciampi et al., 2021). However, after obtaining the final sample of articles for review, the researcher

screened and critically examined the content of the selected studies to identify recurring patterns and key areas of focus. Based on the systematic review of the selected literature, three interconnected themes were identified:

Theme 1 : Automation in traditional financial accounting processes through AI

One of the most prominent themes identified in the literature is the automation in traditional accounting process through artificial intelligence. Traditional accounting processes have been marked by careful attention and detailed work. The traditional accounting methods involved manual data entry, transaction recording, invoice processing, ledger maintenance, account reconciliation, preparation of routine financial report and extensive use of paper-based records (Smith, 2018). These processes are repetitive, time consuming and prone to human error. The introduction of artificial intelligence in accounting processes has revolutionized these traditional practices by enabling machines to perform routine tasks, such as data entry, transaction categorization with greater speed, consistency and limited human intervention (Odonker et al.,2024). Artificial intelligence (AI) technologies, such as machine learning algorithms, data analytic tools, natural language processing and robotic process automation have contributed to the automation of several traditional accounting processes (Tandiono, 2023).

Krajnik and Demeter (2021) writes that application of machine learning, natural language processing, and other AI technologies enhance accounting processes. Similarly, Zakaria (2021) says that machine learning is a subset of AI that plays a crucial role in this transformation. It involves algorithms that are capable of learning from data and using it to make judgments or predictions. Machine learning algorithms are employed in accounting for tasks like risk assessment and fraud detection.

Kovalenko et al. (2021) writes that natural language processing is another critical component of artificial intelligence in accounting. Computers can comprehend, interpret, and produce human language thanks to natural language processing technologies. Natural language processing is used in accounting to interpret unstructured financial data from papers and reports, enabling more effective data processing and compliance monitoring.

Another important aspect of this automation is use of Robotic Process Automation (RPA) in accounting. RPA, a subset of automation, introduces the concept of software robots or bots that mimic human actions in executing rule-based tasks (Santos et.al., 2020). In accounting, RPA is essential for automating intricate procedures and facilitating the smooth incorporation of automation into current workflows. RPA is designed to automate rule-based tasks allowing it to perform repetitive activities such as data extraction, report generation, and compliance checks (Volodymyr et al., 2020). RPA in accounting can handle tasks like data entry, reconciliation, and report generation, free up human accountants to focus on more strategic activities (Odonker et al., 2024).

Table-1 : AI-enabled transformation in traditional financial accounting practices

Traditional accounting	AI-enabled transformation
Manual data entry	Automated data capture
Manual transaction classification	AI-based classification
Manual invoice processing	Automated invoice extraction
Manual reconciliation	AI-assisted reconciliation
Periodic processing	Real time processing
Routine report preparation	Automated report generation
Accountant as data processor	Accountant as analyst

Source: Table created by author

Across the reviewed studies, a common pattern is evident: AI primarily transforms accounting by automating repetitive and rule-based activities, thereby reducing the accountant's involvement in routine transaction processing and increasing the importance of analytical and decision-support functions.

Overall, the reviewed literature indicates that AI-driven automation does not only replace the accounting tasks but can transform the nature of traditional accounting work. Automation in accounting is a present-day reality that is reshaping the profession (Quinto II, 2022). Similarly, Chalendar and Benson (2021) writes that automation tools handle voluminous data entry and transaction processing swiftly and minimizes the risk of human errors that may occur during manual entry. The automation in accounting also free up the time of accountants to focus on strategic decision making. Thus, AI-based automation represents a fundamental dimension of the transformation of traditional financial accounting practices.

Theme 2 : Role of AI to enhance accuracy and efficiency in financial accounting

The second major theme emerging from the previous literature is the role of artificial intelligence in enhancing accuracy and efficiency in financial accounting. While the first theme focuses on automation of traditional accounting to reduce repetitive manual activities, the present theme focuses on the result of such automation, particularly improvements in the precision and productivity of financial accounting.

The adoption of artificial intelligence into accounting has revolutionized the traditional financial accounting practices. Artificial intelligence's ability to process large scale data with speed and precision has significantly enhanced the efficiency and accuracy of accounting tasks (Tandiono, 2023).Similarly, a study by Smith (2018) explores that AI - driven systems enable real-time financial analysis, providing business with timely and relevant financial information. By lowering the possibility of mistakes and fraud, these technologies provide increased accuracy in financial reporting.

According to the literature, financial accounting's accuracy and efficiency have been greatly impacted by the use of artificial intelligence. The study of Peng et al. (2023) support this statement. The study of Peng et al. (2023) explore the role of artificial intelligence in accounting, highlighting its potential to improve operational efficiencies and reduce costs. Similarly, Adebiyi (2023) examines the impact of predictive analytic on accounting and auditing proficiency, focusing on financial reporting, fraud detection, risk management and real-time decision making. The study discovered a strong positive correlation between fraud detection and financial reporting accuracy and predictive analytic. This suggests that incorporating predictive analytic into accounting improves precision and dependability.

Noordin, Hussainey and Hayek (2022) conducted an exploratory study to determine the impact of artificial intelligence applications on the accounting and auditing profession. According to their research, AI apps help develop solutions for challenging accounting and auditing procedures and raise the degree of dependability of financial data. The development of AI technology has improved the overall effectiveness of practitioners' work by empowering them to make more precise and informed decisions.

Overall, the literature suggests that adoption of artificial intelligence in accounting has resulted in substantial improvements in accuracy of financial accounting practices. AI-enabled systems can evaluate large data sets with high accuracy, reducing the chance of errors and increasing the reliability of financial statements. This AI-driven system has improved the accuracy and efficiency of the financial accounting process. It has also helped in achieving sustainable development goals by saving time and resources. Although, artificial intelligence offers significant benefit in terms of efficiency and accuracy by adopting automation in repetitive tasks , it also takes into account the costs and challenges of its integration.

Theme 3 : Challenges in integrating AI with existing accounting practices

The third major theme emerging from the reviewed literature concerns the challenges of integrating artificial intelligence with existing accounting practices. Although previous literature highlights the potential of AI to automate accounting activities and improve accuracy and efficiency, its implementation is not without difficulties. The transformation from traditional accounting practices to AI-driven accounting requires changes in technological infrastructure, employee competencies, internal control and professional responsibilities.

A study of Zakaria (2021) explores that the application of AI in accounting also brings challenges, particularly in terms of data privacy, security, and ethical considerations. The reliance on artificial intelligence systems requires stringent measures to safeguard sensitive financial data and maintain compliance with regulatory standards. However, Zang et al. (2020) writes data privacy and security as a critical concerns in artificial intelligence driven accounting. They raise issues of data protection and regulatory compliance. In this technology driven approach security and confidentiality of financial information has to be ensured. In the support of data privacy and security, a study of Alshurafat (2023) explains that the

integration of artificial intelligence into accounting has led to the emergence of new challenges. Although artificial intelligence has simplified many processes, it has also stirred concerns about data privacy, security and the potential for job displacement. Similarly, Daraojimba et al. (2023) explore the role of forensic accounting in the digital age, focusing on the challenges in digital financial fraud prevention. The study points out the need for continuous skill augmentation and tool adaptation in forensic accounting to combat digital financial fraud effectively in an AI-driven world.

Another significant challenges in integrating artificial intelligence highlights the need for trained professionals who can manage and interpret AI-driven data. In this support, Tandiono (2023) writes that AI also presents challenges of specialized skills and knowledge to operate and interpret AI systems. This requirements represents a transformation of traditional accounting skill requirement and necessitating additional training and education for accounting professionals. Similarly, Shkurti and Manoku (2021) writes that the digital transformation of accounting also presents challenges. He claims that constant learning and adaptability are necessary due to the quick speed of technological change. To use these technologies efficiently, accountants and other financial professionals need to learn new skills and information.

Cost is also a major concern when integrating AI into traditional accounting systems because a significant number of existing accounting systems were developed without considering the integration of AI technologies. Odonker et al. (2024) writes that the integration of AI into traditional financial accounting practices can be costly due to make investment in the right technology infrastructure, software, and training programs to ensure successful implementation. For certain organizations, particularly small and medium-sized businesses with limited resources, the expense of integrating AI into accounting systems may be economically impractical. The accounting industry may adopt AI more slowly as a result of this cost obstacle. However, Almagtome (2021) discusses the application of AI in accounting and financial reporting systems, highlighting the need for a thorough understanding of the costs and benefits associated with AI integration.

Overall, the reviewed literature demonstrates that the integration of artificial intelligence into traditional financial accounting practices presents several challenges along with numerous benefits. The major challenges include data privacy, security, ethical consideration, the need for skilled personnel, data protection, cost implications and potential job displacement. Organizations must overcome these obstacles if they want to fully benefit from AI's potential to revolutionize conventional financial accounting procedures.

Conclusion

The study examined the influence of artificial intelligence on conventional financial accounting practices. Through an extensive review of literature, the study identified three major themes for the study. These themes are automation of traditional financial accounting practices, enhancement of accuracy and efficiency, and challenges associated with integration of AI into existing financial accounting practices.

The key findings of this study indicate that AI is significantly transforming the traditional financial accounting practices by reducing dependence on labour-intensive, paper based repetitive activities such as data entry, transaction processing, reconciliation and routine reporting. The findings indicate that while AI’s integration offers significant advantages such as automation in traditional labour-intensive practices, and enhance efficiency and accuracy in reporting and decision making, it also presents notable challenges such as data privacy, data protection, data security, need for a skilled workforce, and the substantial costs associated with AI adoption and integration into existing systems.

The study recommends a human-AI collaborative model. Artificial intelligence handles data intensive and repetitive regular works of data entry, transaction processing, and routine reporting while accounting professionals retain responsibility for professional judgement, interpretation, control and accountability.

Future research scope

Since present study focuses on a previous literature to make thematic analysis of impact of AI on transformation of traditional financial accounting practices, there are several areas remain open for future research such as (i)empirical study to examine the actual effect of AI adoption on accounting (ii) industry and country specific differences in AI adoption (iii) AI related issues of data privacy and digital security.

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