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AI Revolution in Accounting & Auditing: A Comprehensive Literature Review

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Abstract:-The integration of Artificial Intelligence (AI) into the domains of accounting and auditing has ushered in a transformative revolution with profound implications. This comprehensive literature review delves into the evolution and impact of AI, shedding light on its historical roots, from ancient tales of mechanical marvels to its pivotal emergence in the 1940s. The narrative then seamlessly transitions into the contemporary landscape where AI has become an omnipresent force, significantly altering the way financial data is managed, analyzed, and reported. Within the preview of financial reporting, AI plays a pivotal role. It automates routine tasks, enabling professionals to shift their focus towards strategic endeavors. AI's data analysis capabilities bring to light intricate financial patterns and trends, enhancing risk assessment and fraud detection. Furthermore, AI's predictive analytics empowers businesses to make informed decisions, while its ability to generate financial statements with precision and ensure regulatory compliance is paramount. The paper, while elucidating the transformative potential of AI in accounting and auditing, also examines the attendant challenges, such as workforce adaptation and concerns about job displacement. It emphasizes the imperative of up skilling and fostering a clear vision for successful AI integration. Despite these challenges, the opportunities are substantial, encompassing enhanced efficiency, improved data quality, economic growth, risk control, and interdisciplinary collaboration. This paper concludes that the future of accounting and auditing is intricately tied to the embrace of AI, as professionals adapt, learn, and harness its capabilities. As AI reshapes the financial landscape, those who navigate this transformative journey stand to thrive in this dynamic AI revolution.

Keywords: *Artificial Intelligence (AI), Auditing, Machine Learning*

1.   Introduction

The words "Artificial Intelligence (AI)" might sound fancy, but they're exciting for both regular folks and experts who know about AI. It's all about creating smart machines and beings that can think and make decisions on their own. This idea has fascinated people for a long time, from old science fiction books to today's movies that talk about AI. Imagine robots like in Isaac Asimov's stories or computers that can think, like in the movie "I, Robot." AI's history is full of dreams, experiments, and big promises. Think of it like a story: in ancient times, people talked about mechanical helpers for gods, and later, folks like Rene Descartes used the idea of a "mechanical man" to explain things. Even famous writers like Jules Verne and Isaac Asimov inspired today's AI researchers. These stories also appear in ancient tales like the Golem in Jewish tradition and Mary Shelley's "Frankenstein." But the real deal with AI started in the 1940s. It got a boost from new electronics and computers after World War II. Fast forward to today, and AI is everywhere. It helps with farming, healthcare, safety, self-driving cars, planes, boats, marketing, finance, and even video games. It's a big part of our lives. Figure 1 depicts Process of AI to Deep Learning.

Now, AI is also making its way into accounting and auditing. This is a turning point because it could change how these jobs work all around the world. So, this review is about exploring how AI has affected accounting and auditing and what could happen in the future. We will ask questions like, will these jobs stay the same, and if not, how will they change? We'll look at real examples of AI in accounting and auditing, and we'll talk about how countries are getting ready for AI. We'll also talk about the rules and ethics for using AI in these jobs. This review does a few things. It looks at lots of writings about AI and accounting from 1992 to 2020. That helps us

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see what people are talking about when it comes to AI in these jobs. It is like taking a snapshot of what's happening. It's also a guide for future studies. Plus, it is a way to introduce people in accounting and auditing to AI. Finally, it tells us if the world is ready for AI in these fields and what good things and bad things could happen. AI technology has made its presence felt in the world of finance, transforming how businesses handle their financial records and how auditors ensure accuracy and compliance. Gone are the days when accountants and auditors relied solely on manual data entry and analysis. AI tools are now streamlining these processes, making them faster and more reliable. Imagine AI algorithms swiftly sorting through piles of financial data and identifying inconsistencies, or automatically categorizing expenses for a company. This increased efficiency is a breath of fresh air for professionals in the field, as it allows them to shift their focus from repetitive, time-consuming tasks to more strategic and analytical work. The adoption of AI in accounting and auditing also brings numerous benefits to businesses and organizations. With AI's ability to process large datasets, financial discrepancies can be detected in real-time, helping businesses react promptly to any financial irregularities. Additionally, AI's predictive capabilities assist in forecasting financial trends, aiding businesses in making informed decisions. In the auditing sphere, AI can perform complex risk assessments and generate detailed audit reports more quickly than human auditors, leading to improved accuracy and reduced chances of fraud or errors. These advantages are making waves in the world of accounting and auditing, but they don't come without their own set of challenges and potential risks, Next parts of this paper provide existing literature survey. Section 3 provides various application of AI in financial accounting. In section 4 various 4 Challenges and Opportunities are discussed. Finally section 5 concludes the paper.
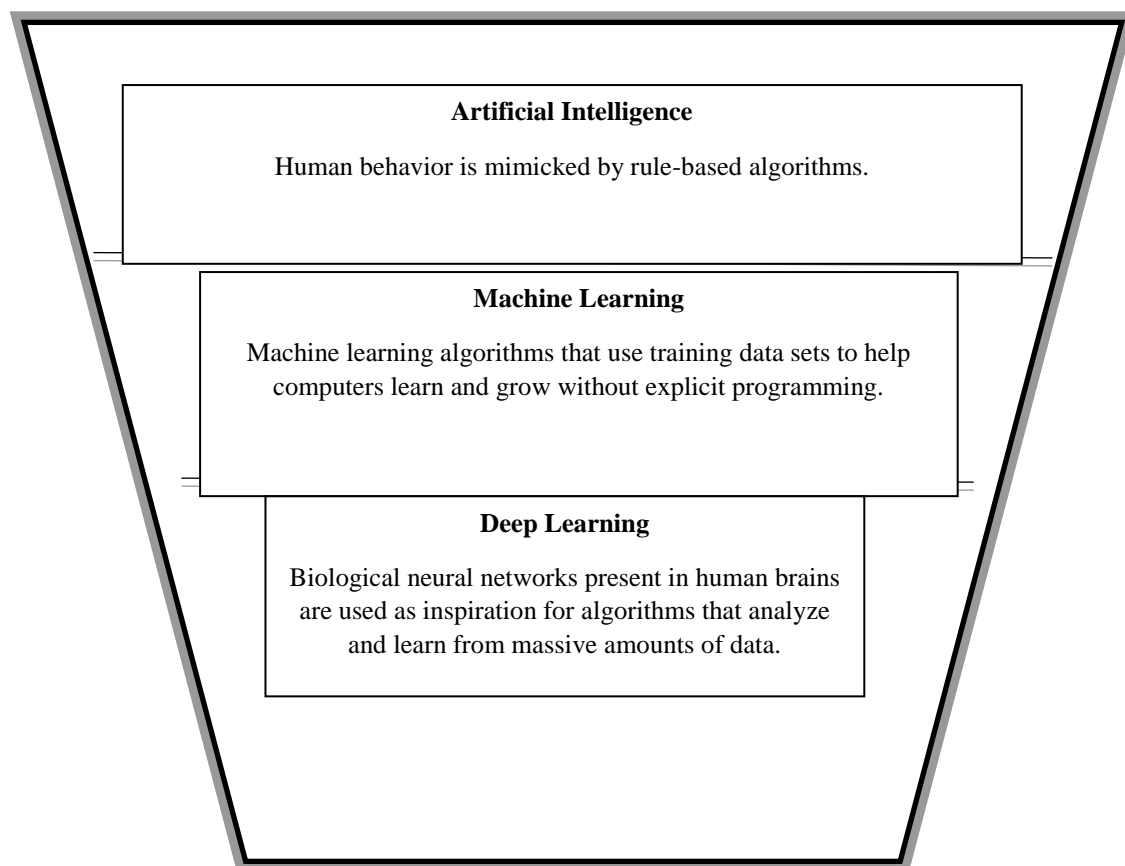

Artificial Intelligence

Human behavior is mimicked by rule-based algorithms.

Machine Learning

Machine learning algorithms that use training data sets to help computers learn and grow without explicit programming.

Deep Learning

Biological neural networks present in human brains are used as inspiration for algorithms that analyze and learn from massive amounts of data.

Figure 1 Process of AI to Deep Learning

2. Literature Survey

Davenport and Ronanki (2018)[1] suggest that instead of focusing on the technical side of AI, organizations should look at how AI can help their business. AI can assist in three main areas: automating tasks, analyzing data, and connecting with people. Authors Chukwuani and Egiyi (2020)[2] looked at how AI is changing

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accounting. They found that AI is making accounting tasks more automatic. It's also changing the role of accountants in the modern world. Back in the 1990s, O'Leary (1995) studied how AI was being used in Accounting, Finance, and Management. He found that AI was being used in different ways, like using neural networks and knowledge-based systems.

Huang (2018)[3] researched how AI is used in taxation. In China, they found evidence that AI is helping with taxes. Meservy and their team (1992) talked about early Expert Systems (ES) used at Brigham Young University. These systems helped with financial planning, computer audits, and simulating auditor evaluations. Chukwudi and their team (2018)[4] did a survey about how AI affects accounting. They found that AI improves accounting in South East Nigeria.

Lee and Tajudeen (2020) [5] studied organizations in Malaysia using AI-based accounting software. They found that even small organizations use AI to handle invoices and collect data. Author Luan (2020) [6] discussed the challenges and opportunities of AI and big data in education, policy-making, and industry, including accounting and auditing. They pointed out that everyone should work together to use AI and big data fully, but there are some obstacles like a lack of vision and skills.

 Authors Baldwin et. (2006) [7] mentioned that in the early 2000s, auditing became complex due to many rules and high-profile audit failures. They wanted accountants and AI experts to work together to improve auditing. They reviewed AI systems that support auditing tasks, some of which were successful. Kokina and Davenport (2017) [8] categorized AI applications into four groups, and they looked at the level of intelligence AI has achieved. They found that AI can analyze numbers, process words and images, complete digital tasks, and perform physical tasks. While AI hasn't reached self-aware intelligence, it can handle many accounting and auditing tasks. Baldwin and their team (2006) [7] also highlighted auditing tasks that AI can help with, like analytical review procedures, classification, materiality assessment, internal control evaluation, risk assessment, going concern decisions, bankruptcy prediction, and aggregating audit evidence. Makridakis (2017) [9] explored the current and future advancements in AI and how machines can become intelligent. They discussed how AI may change many aspects of human life, including the fields of accounting and auditing."

The impact of artificial intelligence on Accounting by Zehong Li & Li Zheng , (2018),[10] stated that artificial intelligence has paved the way into accounting and how AI is used in detecting frauds, in generating positive impact on accounting information quality and in development of qualified accounting personnel. Article also included the reason for non-occurrence of mass unemployment because the decisions related to human cannot be made through machines; that's why accounting personnel should improve their own abilities to become a qualified personnel.

In the study, How Artificial Intelligence Changes the Future of Accounting Industry (2020),[11] the impact created by the use of Artificial Intelligence in the accounting was mentioned. The main point covered under the study was the potential future impact and opportunities available for economic development, to stay in the market and to grow every industry has to adopt latest AI-based technologies.

Study The Impact of Artificial Intelligence on the Accounting Industry by Yaling Shi (2019), [12] stated that Artificial intelligence has entered the field of accountancy and is continuing to enter more, and it is playing an important role in controlling risk in enterprises, increasing the efficiency of the business firms, identifying, reducing and preventing errors in business field. Artificial intelligence is helping business in many ways but still after some time people will have to face crisis related to unemployment as AI will take so many jobs in future. This study basically, discusses the applications of AI in accounting industry and also what upcoming challenges industry can face in future due to advancement of Artificial Intelligence, and how people will have to adapt to changes and develop skill to compete with Artificial intelligence.

Author Layadi, Levina (2023),[13] in her study concluded that Artificial Intelligence has many impacts in the field of accountancy such as it helped auditors to produce annual reports objectively and it helped accountants to access financial data from various business units for future analysis. The study also stated the precautions that businesses have to keep in mind while using AI, because AI itself is used through human efforts because AI is

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dependent on set of instructions; the role which an accountant plays will not be replaced only when the accountant will try to adapt to technological changes in the environment and develop along the AI.

According to Jeff Dernavich (2023),[14] AI will change the aspect of looking into the field of accountancy, the profession of accounting could become more appealing as the field will adapt to Artificial Intelligence. He also addressed the concern of unemployment by stating that people are afraid that AI will take their jobs but in contrast it will provide job opportunities to people who will adapt to technology and upcoming technological changes, only those people will be replaced who will not combat with upcoming technological changes. It was mentioned that AI wont replace the jobs but will change the way how people work.

The article focuses on informing about how Big data, data analytics and Artificial Intelligence play a very important role in growing profession of accounting. All the mentioned words have become a part of day to day life over the past recent years and will continue to be the part in future for a very long time, so it is very important that accounting professionals understand these words and try to adapt to the upcoming and existing changes that have already entered into the scenario. Study also conducted a survey and the reports showed that 83% of the clients have more expectations from the accounting professionals as compared to the expectations of past five years; reports also concluded that almost 39% of accounting professionals have already adopted to technological changes and by adopting they can seize various opportunities and stay in the competition ahead [15].

The study on Determinants of artificial intelligence adoption in SMEs: The mediating role of accounting automation (2023), examines that how technological factors are influencing the adoption of AI technology. Study found that time-saving is an important determinant that have a positive relationship between accounting automation and adoption of Artificial intelligence. Findings suggest that AI can help the process of automation through a clear vision and strategy so that the rate of adoption to AI can increase, hence the research was in favor of SMEs [16]. Table 1 provides the key points of the literature survey.

Table 1 Key Points of the Literature Survey

Author & Year	Main Focus	Discussed AI Technologies
Davenport and Ronanki (2018)[1]	Business impact of AI in automating tasks, data analysis, and human connections	General AI capabilities in business
Chukwuani and Egiyi (2020)[2]	The impact of AI on accounting tasks and the role of accountants	Automation in accounting processes
O'Leary (1995)	The use of AI in Accounting, Finance, and Management in the 1990s	Neural networks, knowledge-based systems
Huang (2018)[3]	AI applications in taxation, especially in China	AI in taxation processes
Meservy and their team (1992)	Early Expert Systems at Brigham Young University	Financial planning, computer audits, auditor evaluations
Chukwudi and their team (2018)[4]	The positive impact of AI on accounting in South East Nigeria	AI's influence on accounting in South East Nigeria
Lee and Tajudeen (2020)[5]	AI usage in organizations for handling invoices and data collection	AI-based accounting software in organizations
Luan (2020)[6]	Challenges and opportunities of AI and big data in education, policy-	The need for collaboration and overcoming obstacles in using AI

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	making, and industry	
Baldwin et. (2006)[7]	Complexities in auditing in the early 2000s and the need for collaboration between accountants and AI experts	AI systems supporting auditing tasks
Kokina and Davenport (2017)[8]	Categorized AI applications and the level of AI intelligence achieved	Four categories of AI applications and AI intelligence levels
Makridakis (2017)[9]	Current and future advancements in AI and its impact on various aspects of human life	General advancements in AI and its potential impact
Zehong Li & Li Zheng (2018)[10]	Impact of AI on detecting frauds, improving accounting information quality, and developing accounting personnel	AI in fraud detection and accounting quality improvement
Suleiman Jamal Mohammad1 (2020)[11]	The potential future impact of AI on economic development and industries	Future impact and opportunities of AI in various industries
Yaling Shi (2019)[12]	The role of AI in controlling risk, increasing efficiency, and reducing errors in enterprises	AI applications in risk management and efficiency improvement
Layadi, Levina (2023)[13]	The role of AI in producing objective annual reports and accessing financial data	AI's impact on accounting reports and data access
Jeff Dernavich (2023)[14]	AI's effect on the accounting profession and the need for adapting to technological changes	Changing roles in the accounting profession due to AI
Rawashdeh. A (2023)[16]	How technological factors affect AI adoption, with a focus on SMEs	Factors influencing AI adoption and the role of AI in SMEs

3. AI Applications in Financial Accounting

In the fast-evolving world of finance and accounting, Artificial Intelligence (AI) is emerging as a game-changer. It's not just a buzzword; it's transforming the way we work with numbers and financial data. AI is all about smart machines that can think and make decisions on their own, like the robots in science fiction stories. AI journey has a rich history, from ancient tales of mechanical helpers for gods to the futuristic visions of writers like Jules Verne and Isaac Asimov. However, AI's real impact started in the 1940s, boosted by advances in electronics and computers after World War II. Today, AI is everywhere, touching various aspects of our lives, from farming to healthcare, from self-driving cars to finance. It's this last area, finance, where AI is making significant strides, particularly in accounting and auditing.

The adoption of AI in accounting and auditing is nothing short of a revolution. It's changing how financial data is handled, analyzed, and reported. This section explores the profound impact of AI on financial reporting, uncovering the ways in which AI is reshaping the world of finance.

Automation of Routine Tasks: AI automates the mundane and repetitive tasks that used to take up a considerable chunk of accountants' and auditors' time. No more manual data entry and transaction processing;

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AI takes care of it efficiently, reducing the likelihood of errors and freeing professionals to focus on more important work.

Enhanced Data Analysis: AI's data-crunching abilities are a revelation. It can uncover patterns, anomalies, and trends in financial data that would be challenging for humans to detect. This is a boon for risk assessment, fraud detection, and delivering timely financial insights.

Predictive Analytics: AI isn't just good at analyzing historical data; it can predict future trends and financial outcomes. This helps businesses make informed decisions and assists auditors in identifying potential risks.

Financial Statement Generation: AI can quickly generate financial statements like income reports and balance sheets based on transaction data, reducing the time and risk of reporting errors.

Regulatory Compliance: With the ever-evolving regulatory environment in finance, AI ensures compliance with complex standards. It streamlines the preparation of financial statements, ensuring that they meet the necessary legal and industry-specific requirements.

AI in financial reporting brings several benefits to the table. It speeds up processes, identifies financial discrepancies in real-time, and helps with forecasting financial trends. In the world of auditing, AI performs complex risk assessments and generates audit reports with precision and speed. This not only improves accuracy but also reduces the chances of fraud and errors. However, the adoption of AI in accounting and auditing isn't without challenges and potential risks. This section has provided an overview of how AI is changing the landscape of financial reporting, making tasks more efficient, improving accuracy, and opening up new possibilities.

4. Challenges and Opportunities

The integration of Artificial Intelligence (AI) in accounting and auditing presents both challenges and opportunities. Understanding these dynamics is essential for organizations and professionals as they navigate the AI revolution.

Challenges

Workforce Adaptation: One of the foremost challenges is workforce adaptation. As AI automates routine tasks, accountants and auditors must transition to more strategic roles. However, this shift may create concerns about job displacement and necessitates upskilling and retraining efforts to align with AI-driven practices.

Unemployment Concerns: The fear of unemployment due to AI advancements is a significant concern. AI's capacity to handle repetitive tasks raises questions about the future employability of professionals in these fields. Addressing this challenge involves creating pathways for professionals to remain relevant in an AI-driven industry.

Lack of Vision and Skills: The lack of a clear vision and skills needed for AI adoption is a hurdle. Professionals and organizations must invest in the necessary knowledge and capabilities to effectively implement AI solutions. The absence of AI expertise can hinder the transition.

Opportunities:

Enhanced Efficiency: The adoption of AI promises significant efficiency improvements. AI can automate routine tasks, freeing professionals to focus on higher-value activities, such as data analysis, strategic decision-making, and client advisory services.

Quality Improvement: AI has the potential to enhance the quality of accounting information. It can assist in fraud detection, error reduction, and the accurate processing of financial data. This contributes to the integrity and reliability of financial reporting.

Economic Development: AI adoption can drive economic development. Industries that embrace AI technologies are better positioned for growth and competitiveness in the market. This presents opportunities for organizations to thrive and innovate.

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Risk Control: AI plays a crucial role in risk control within enterprises. It can identify, reduce, and prevent errors, mitigating financial risks and ensuring business stability. AI's capacity for error reduction is a valuable asset in accounting and auditing practices.

Interdisciplinary Collaboration: The call for interdisciplinary collaboration, as advocated by Baldwin and colleagues (2006), fosters innovation. Accountants and AI experts working together can create cutting-edge solutions and drive the field forward.

Clear Vision and Strategy: A clear vision and strategy for automation accelerate AI adoption. Organizations that proactively embrace AI for automation can position themselves as leaders in the industry. This strategy involves understanding how AI can align with organizational objectives and values.

5. Conclusion

In the rapidly evolving landscape of finance and accounting, the advent of Artificial Intelligence (AI) marks a transformative juncture. The journey of AI, rooted in ancient tales and inspired by science fiction, has come to fruition in the form of practical, intelligent machines that can think and make decisions independently. This paper has explored the profound impact of AI on accounting and auditing, shedding light on how this technological revolution is reshaping the financial reporting landscape. AI's integration into accounting and auditing brings a multitude of benefits. The automation of routine tasks liberates professionals from time-consuming manual work, allowing them to redirect their efforts toward strategic and analytical endeavors. Enhanced data analysis capabilities empower businesses to detect anomalies and patterns. AI's predictive analytics offers valuable insights for decision-making, while its ability to generate financial statements ensures accuracy and efficiency. Moreover, AI's prowess in regulatory compliance ensures that financial data adheres to complex standards. Furthermore, the absence of a clear vision and the requisite skills may hinder the successful implementation of AI solutions. Amid these challenges, numerous opportunities come to the fore. AI promises substantial efficiency gains, transforming how accounting and auditing professionals operate. Quality improvements are achieved through AI's capacity for fraud detection and error reduction, ensuring the integrity of financial reporting. Economic development becomes attainable, as industries embracing AI position themselves for growth and competitiveness. The role of AI in risk control cannot be overstated, with the technology identifying, reducing, and preventing errors, thereby enhancing financial stability. Interdisciplinary collaboration between accountants and AI experts drives innovation and progress, paving the way for groundbreaking solutions. Organizations with a clear vision and strategy for automation are poised to lead the industry, understanding how AI aligns with their objectives and values.

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