
Artificial Intelligence Auditing: Embracing the Disruption. Are You Prepared?

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Abstract

This article investigates the growing presence of artificial intelligence (AI) in the accounting industry, as well as its possible impact on the auditing profession. We investigate 29 papers from 18 journals using a semi-sytematic literature review. While AI provides benefits such as increased efficiency, efficacy, and decision-making, it still requires human oversight, particularly in areas like as fraud detection and communication with in-house accounting. The complexities of human judgment, as well as the requirement for auditor discretion, remain critical. Furthermore, because it can be challenging to use AI in auditing methods in Indonesia, where infrastructure for data analysis and verification is typically reliant on physical documents, auditors can still keep their jobs.

Keywords: Audit, Auditor, Artificial Intelligence

INTRODUCTION

Given that mathematics is the basis upon which computer logic is built, accounting was one of the very first fields in which tools and procedures associated with Information and Communication Technology (ICT) were implemented. Despite the fact that information and communication technology was initially used to fundamental accounting systems, financial modeling software rapidly shown that it was highly effective in the analytical aspects of accounting (Carr, 1985; Clark & Cooper, 1985). As stated by Barras and Swann (1984), the accounting profession is regarded as having a delayed rate of acceptance of information and communications technology (ICT) due to the conservative approach of its practitioners. However, in the late 1990s, pressure was put on the accounting profession to computerize its operations in order to boost productivity, decrease the amount of competition, and lower operating expenses (Manson, McCartney, & Sherer, 2001). According to Giles (2019), the utilization of technological resources is not an alternative but rather a must in today's society. In Clifford (2019), Elon Musk warned that artificial intelligence might be even more dangerous than nuclear weapons.

The existence of Artificial Intelligence (AI), which is now increasingly being considered in accounting, demonstrates this. Artificial intelligence (AI) is the

study of intelligent thoughts that can be used to conduct calculations (Singh & Singh, 2010).

According to ICAEW (2018), accountants have long used technology to increase productivity and benefit businesses. Now, with the advent of A.I., accountants have a chance to rethink and significantly enhance the quality of their clients' business and investment decisions. As part of their integrated audit automation systems, some of the world's largest accounting firms make audit decisions using artificial intelligence (Omoteso, 2012).

Although AI has the potential to transform business and professional services, particularly in the knowledge economy (Ukpong, Udoh, & Essien, 2019), its presence has caused instability in industrial audits. According to Giles (2019), artificial intelligence and machine learning will totally change the way auditors perform their jobs. It has already changed the way audits are conducted today and will continue to do so in the foreseeable future. According to Anderson (2017), according to Xero's 2016 State of Accounts research report, just over half (59%) of small firms do not believe they will require an accountant in 10 years. Indeed, according to the report, the accounting profession and administrative record keeping will be among the top priorities to be replaced by robots/computers.

Based on this phenomena, we are interested in investigating how far artificial intelligence has advanced in the position of auditors based on numerous scientific research undertaken utilizing semi-sytematic literature reviews. The review will be separated into two parts in this study: studies that draw conclusions based on assumptions and studies that directly witness the true role of artificial intelligence in the audit process.

METHOD

This study investigate 29 papers from 18 journals using a semi-sytematic literature review.

RESULTS AND DISCUSSION (Capital, 12 pts, bold)

The History of A.I.

The idea of artificial intelligence was initially put forth by Thomas Hobbes in the seventeenth century. The basic assumption is that human behavior can be mechanically comprehended and that symbols (such as numbers, graphs, computations, and statistics) can be utilized to solve issues rather than longer words like synonyms (Hobbes, 1651). One of the earliest AI research initiatives was started by Claude E. Shannon, Marvin L. Minsky, Nathaniel Rochester, and John McCarthy in the summer of 1956 under the name Dartmouth Summer Research Project (McCarthy, Minsky, Rochester & Shannon, 2006). The goal is to provide a computer the ability to use language (in terms of abstractions and conceptions) to resolve problems and develop. Unfortunately, following the initial traction, AI research did not result in significant accomplishments because to technological limitations.

Inventions like "cloud computing" and new data storage and processing technology, as well as increases in infrastructure speed, availability, and scalability,

have all played a role in the resurgence of AI in recent years. Deep learning is a subfield of AI that uses computational models (deep neural networks) for information representation, allowing it to automatically extract features from unstructured or semi-structured input including images, audio, text, and video.

According to Albawwat and Al Frijat (2021), AI systems can be Assisted, Augmented, or Autonomous. By doing many of the jobs that people already accomplish, assisted AI systems are created to support humans in making decisions or responding to various situations. Collaborative human-machine decision-making is necessary for enhanced AI systems, in which the machines doing the activity may interact with their surroundings and pick up knowledge from the auditor. AI systems that can operate autonomously and adapt to various situations are known as autonomous systems. The auditor delegated decision-making in this situation to AI. Systems using autonomous AI exhibit both logical and compassionate intelligence. They discovered that whereas autonomous AI systems are thought to contribute the least to audit quality, assisted AI systems are the most user-friendly and useful.

The Researches on A.I. in Audit

Meservy, Denna, and Hansen (1992) explored the use of AI techniques and methodologies to supplement professional competence in accounting, tax, and audit services. They talked about a framework that is directing current activities, some of the early expert systems developed by faculty members, and upcoming initiatives. The framework is organized into three axes that stand in for the knowledge acquisition, knowledge organization and representation, and knowledge validation, which are the three main areas of research for expert systems at Brigham Young University. In addition, various issues and challenges related to the creation and application of Expert System in accounting, tax, and audit services are looked at in the study.

Baldwin, Brown, and Trinkle (2007) examined at its possible applications in auditing and financial reporting within the accounting profession. They draw attention to the difficulties and dangers of conducting audits manually, and they propose that artificial intelligence tools like expert systems, genetic programming, neural networks, and fuzzy systems may be used to help. They thought that organized, programmed, and repetitive operations like computing inventory ratios could benefit from the application of AI in auditing. For audit activities, like as going-concern assessments, that rely on ambiguous and insufficient information, more advanced AI systems need to be researched. Through the use of AI techniques like fuzzy logic, neural networks, and possibly other areas of AI that have never before been utilized in an accounting environment, AI researchers hold the key to overcoming various audit and assurance task challenges. However, they also discovered that employing intelligent systems to solve auditing problems is challenging and that more sophisticated AI methods need to be researched. These challenges include the fact that expert systems lack user neutrality and that applying intelligent systems to auditing problems is challenging. Additionally, while some audit tasks are highly structured and often routine, others are significantly less so

and depend on unreliable and insufficient data. Therefore, not all tasks can be completed using AI.

As predicted by Issa, Sun, and Vasarhelyi (2016), the use of artificial intelligence (AI) technology will alter auditing in the future. Ibid. poses the question of whether the application of AI to some audit procedures will increase job creation or job destruction, and comes to the conclusion that AI may eventually supplant auditors in a variety of automated tasks. AI is also capable of automatically designing the entire audit plan based on the circumstances of the client and the available evidence, self-correcting errors, and continuously improving the audit process.

The potential ramifications for human accountants are examined in Kokina & Davenport's (2017) investigation of the various auditing tasks that can be automated using artificial intelligence, such as the analysis of contracts and other documents with financial relevance. They emphasize the difficulties presented by transparency and bias problems in AI-based accounting. In contrast to earlier research, they hold the opinion that while AI is rapidly expanding its involvement in accounting and auditing, it is unlikely to completely replace human accountants anytime soon.

The Practices of A.I. in Audit

There is minimal research on the actual use of AI in auditing, despite the fact that the present literature on AI is vast and varies from algorithmic analyses to a wide spectrum of applications in various domains of endeavor.

Since there is a great deal of data that needs to be processed and examined, Faccia, Al-Naqbi, and Lootah (2019) argue that the application of artificial intelligence in auditing methods is essential. Accounting AI applications include automated transaction categorization, financial statement generation, and enhanced audit quality and efficiency.

According to PwC, Davis & Williams (2015), A.I. can aid the Accountant Profession in real-time monitoring of controls and marking of inconsistencies, problem identification, analysis, and solution provision. While Giles (2019) noted that document review, sample sizes, and fraud detection are the three key areas of financial auditing that have been impacted by AI. The auditor can devote more time to reviewing findings and making sure the company's financial statements are materially free of error, rather than spending time collecting and studying samples of data that may or may not be representative of the population. And, based on questionnaires given to Portuguese auditors, Rodrigues, Pereira, da Silva, and Ribeiro (2023) discovered that an AI-assisted approach allows the collection and analysis of data that with AI, auditors may collect and analyze data to determine how long an audit will take, how much time should be spent on it, and what kinds of risks should be taken into account.

According to a literature review of the latest developments and cognitive audit applications among the Big4 companies conducted by Zemankova (2019) and Hasan (2022), Deloitte is far ahead of the competition in artificial intelligence development efforts thanks to the creation of Argus and the Guided Risk

Assessment Personal Assistant (GRAPA). An example of EY's involvement in the blockchain space is the EY Blockchain Analyzer. Two years in a row, PwC's GL.ai and Cash.ai technologies have been recognized as "Audit Innovation of the Year" by the International Accounting Bulletin. KPMG views AI as an ecosystem in its whole, which is why it developed the KPMG Ignite concept, a portfolio of AI-based products and capabilities.

Albawwat and Al Frijat (2021) come to the conclusion that using AI in auditing can have benefits, but it also brings new risks that could affect the quality of the audit.

Although much has been learned about AI, Yanisky-Ravid & Hallisey (2019) and Koshiyama et al (2021) discovered that it is possible for AI systems to provide discriminatory conclusions when using "bad" data. Using artificial intelligence, researchers investigate how using inaccurate or biased information might lead to unfair treatment of individuals. Ibid. also brings up the privacy risks that arise from the fact that AI systems utilise massive amounts of data compiled from a variety of sources. Seethamraju and Hechimovic (2022) note that the potential application of AI is constrained by the perceived legal and reputational danger of financial auditing job. Ethical considerations were also contributed by Munoko, Brown-Liburd, and Vasarhelyi (2020), Eltweri (2021), and Lehner, Ittonen, Silvola, and Strom (2022). According to Omoteso (2012), an independent human opinion on the truth and fairness of financial information being given by management and the conformance of this information with applicable accounting standards and related regulations is still necessary in audits conducted with A.I. Human judgment is crucial in auditing and making decisions, as Triatmaja (2019) notes.

Fedyk, Hodson, Khimich, and Fedyk (2022) examine a unique dataset of 310,000 auditors from Europe's 36 major audit firms and discover that AI investments by audit firms are connected with significant reductions in material restatements and restatements relating to accruals and revenue recognition. In addition to lowering the likelihood of an audit restatement by 5%, investments in AI lead to a 3.6% reduction in accounting personnel after three years and a 7.1% drop after four years. Noordin, Hussainey, and Hayek's (2022) conclusions are in agreement with these.

According to Al-Sayyed, Al-Aroud, & Zayed (2021), expert systems had a substantial impact on audit evidence, while neural network technology did not. This was determined by surveying qualified auditors at IT firms in Jordan. To make judgments and recommendations, expert systems analyze data and apply a predetermined set of rules or body of knowledge. They are programmed to act and make choices like a human subject matter expert. However, neural network technology is a sort of machine learning that use algorithms to detect and learn from data patterns. Information is processed through a network of nodes or neurons that mimics the way the human brain does it.

Criticism

Despite AI's increasing toughness, speed, and accuracy in calculations, human oversight is still required for the provided findings. Some tasks may be beyond the capabilities of current AI systems. In the case of financial documents that contain an inaccuracy, for instance, an auditor can "sniff" out whether or not fraud has happened. This is emphasized further if there is a requirement for interaction between the auditor and internal accounting on this subject. Therefore, the auditor's thought or opinion is vital.

In addition, in Indonesia, where note-taking is still common practice for verifying data integrity, AI may have trouble keeping up. Although these notes are amenable to digitization, doing so calls for additional infrastructure that the MSME sector has not been able to provide thus far because of its high cost.

CONCLUSION

The advantages of adopting AI in auditing include enhanced efficiency, effectiveness, consistency, audit work structure, better decision making and communication, increased staff training, skill development for startups, and quicker decision time. However, some negatives include significant investment costs, constant system upgrading and maintenance, an inhibition of the development of professional judgment skills, the risk of replicating the tool by competitors, and the possibility of utilizing it against auditors in court for over-reliance on decision aid evidence. All of these problems come at a cost, and they all hinder the development of professional judgment skills.

In Indonesia, where there are still many companies that haven't made the best use of information technology, artificial intelligence is still a long way from being used in the auditing business. However, auditors should not become complacent because the rate of information technology disruption cannot be forecast precisely.

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