

Examining the Role of Artificial Intelligence on Modern Auditing Techniques

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Abstract

As technology has gradually played a greater role in auditing, many Big 4 and large accounting firms are using artificial intelligence as a tool to conduct more efficient audits – both internally and externally. This research paper aims to identify and analyze Artificial Intelligence (AI) 's impact on modern audits performed. The paper identifies the current Audit technologies and weighs the advantages of such tools in Auditing, examines the impact of AI on employees and the firm, and lastly explores the governance, regulatory and ethical challenges experienced in Auditing due to AI. Despite the advantages of AI, there are many changes that have occurred in the Audit process over the past few years. While audit processes are being upgraded, the level of competency of an Auditor is also being tested, as many changes and implications are being added to Auditor's qualifications. The conclusions, recommendations and implications reached in this study are generalizable and appropriate for use in developing best practice solutions.

Keywords : Audit, Artificial Intelligence, Automation, Technologies

Introduction

Examining the Role of Artificial Intelligence on Modern Auditing Techniques

Artificial Intelligence (AI) can revolutionize internal audit work and value. Researchers such as Chan and Kim (2020) argue that AI techniques have brought a drastic change to the business landscape. AI is referred to as a system that manages and analyzes information in ways that mimic human intelligence. An Internal Auditor's role entails analyzing and evaluating information from numerous sources to draw conclusions and make recommendations. Research has proved that implementing AI in Auditing has helped internal auditors capture and digest higher volumes of information and analyze a broader range of data formats (Chan and Kim, 2020). Additionally, AI has enabled performing and completing tasks to occur at faster rates than ever before. As per Chan and Kim's article on "The Artificially Intelligent Audit Function", they claim how Auditors can now deliver more insights to clients and increase stakeholder's return on investment in audit services. It is essential first to identify the current updates to audit and what AI tools are currently in use. Research has shown that Auditors are currently utilizing Computer Vision Technology, Natural Language Processing (NLP) system, and Machine Learning tools to process high-volume data

Computer Vision Technology

Computer Vision Technology is being used by Internal Auditors to review the accuracy and reliability of the financial and operating information by interpreting and analyzing digital images. For example, auditors are required to verify the firm's assets and, in doing so, can be very time-consuming using the various sampling methods (Chan and Kim, 2020). However, Chan and Kim argue that claim using computer vision technology has improved this process's efficiency for internal auditors by providing access to unavailable information. Another example listed by Chan and Kim were the use of drones. Many Big 4s are using drones to measure the entire population of assets, such as recording the number of trucks in the vehicle manufacturing plant or testing the level of coal stockpiles at a power plant. Thus, alleviating the number of hours auditors spend on physical inventory counts that now can be saved through this technology. This allows auditors to reinvest their time in investigating other high-priority areas.

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Natural Language Processing

Natural Language Processing (NLP) is an area of computer science and artificial intelligence (AI) that enables computers to process large amounts of natural or human language data (Hoggett et al., 2021). KPMG argued that implementing NLP systems could significantly empower the audit. The NLP system would allow auditors to analyze unstructured data without much strain. On the other-hand structured data is usually found in spreadsheets and ledgers and are readily available for comprehensive analysis using data and analytics (D&A) and other automated capabilities. Additionally, KPMG acknowledged that more than eighty percent (80%) of data today is in the unstructured state such as contracts, emails, PDFs, and other documents used by Auditors. The intention of implementing the NLP system is to utilize the processing power of intelligent machines and correlation theories to extract data from the listed unstructured sources. A common example used by KPMG is the NLP application system that reads emails and other documents to search and identify information such as using optical character recognition technologies that can 'read' documents such as PDFs. Auditors utilize the NLP application to read thousands to millions of documents in a fraction of time. An average auditor would obviously take much longer to perform this simple task than the NLP application would (Hoggett et al., 2021). Thus, this results in auditors performing much more comprehensive reviews while conducting the audit.

Machine Learning

Machine Learning (ML) is another tool used to extract insights from data using algorithms that allow machines to automatically learn and improve on their own. Chan and Kim, (2020) noted that internal auditors use machine learning tools to detect anomalies and identify emerging risks. For example, auditors use the technology to uncover irregular financial transactions and patterns of management fraud. Internal auditors can use ML tools to review all transactions and observations, rather than only a subset of data. During the risk assessment and planning stages of the audit, auditors determine high-risk areas based on reviewing a wide range and high volume of information such as organization-specific events, changing legal requirements, and industry trends.

The AICPA board further argues that auditors should consider the complexity of the client. At the end of the day, it is essential that firms understand the business structure of the organization prior to implementing an effective AI technology method. AI is used by firms to add value to the firm's core mission and vision while assisting in the identification of new emerging risks facing the industry and the firm.

Impact of AI on the Firm Employees

According to the Public Company Accounting Oversight Board (PCAOB) the audits of financial statements are conducted by the independent auditors, where the auditor issues an expression of an opinion on the fairness with which they present, in all material respects, financial position, results of operations, and its cash flows in conformity with generally accepted accounting principles. Auditors have the responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud ("AS 1001: Responsibilities and functions of the independent auditor," 2021).

Along with technology advancements, firms should also consider the impact of these technology upgrades on employees, especially auditors. For most new hire auditors, the bar of hiring has increased, making it much more competitive for auditors to be hired without some basic level of accounting and analytics background. The AICPA board has implemented analytics as a part of the CPA exams. Additionally, many universities have also started implementing technology and analytics courses throughout the curriculum, making the Accounting course much more extensive than before and broader (Zhang et al., 2018). Due to intensive upgrades to accounting software within many firms, they have instituted trainings and hands-on learning for employees to undertake in so they will be able to utilize more intensive AI tools within their work. Moreover, since AI is classified as an emerging concept to many staff members, this will foster an increased learning environment at work.

In McCollum's research, he claims that AI's competence should also be charged to the individuals who are the creators of such functions and tools. A common issue faced by many firms is knowledge gaps between academic researchers developing AI and the business employees building machine learning algorithms, who may not understand what it is they are doing. He claims, "Part of the problem is their bosses don't understand it either." (McCollum, T., 2017).

A downside to AI that has been argued by many researchers is the elimination of jobs and the increased rate of unemployment (McCollum, T., 2017). According to the Pew Research Center's recent *U.S. based Automation in Everyday Life* survey, about 72 percent of respondents are worried about robots handling human jobs.

Zhang argues that the automation of repetitive tasks will cause substantial reduction of the workforce needed for traditional assurance work (Zhang et al., 2018). However, this change will lead to an increase of employees possessing information technology, statistics, and data analysis skills which is a major plus.

As many individuals and researchers might argue, such changes will force auditors and accountants to learn new skills which will in turn open many more avenues for them as the industry transitions into the future.

Governance and Control.

The AICPA board has consistently noted that along with benefits for AI to Auditing, there are direct and indirect changes to consider. Direct challenges include data privacy, confidentiality, data integrity, and the understandability and operational management of an audit. The indirect challenges posed to auditors are the appropriate competence and capabilities to perform the audit engagement (Chartered Professional Accountants Canada, 2020).

As an auditor it is essentially important to be compliant and maintain certain governance especially regarding the SEC. AI falls under various standards bodies: industrial robots by ISO standards, domestic robotics by product certification regulations, and in some cases the data used for machine learning by data governance and privacy regulations. In McCollum's research, he questions the ability of machine learning tools exceeding the expectations of the creator's intelligence. On the contrary, he argues that there are ways to control machine learning algorithms, most notably by raising or lowering their ability to fit the data such as through limiting the amount of computation, using statistical significance tests, and penalizing the complexity of the model. The references used in his research claims how most professionals underestimate the intelligence of these AI algorithms. This emphasizes the need of stricter governance policies for these innovations.

Ethical Challenges

AI's existence in accounting and auditing began in the early 1980s. However, there were much simpler versions of AI were being used compared to current versions. This was due in part to the technological advances of the last two decades. Most of the AI systems and tools used in the past supported professionals in decision-making. The ethical implications of using such AI tools back then by professionals were not questioned until the 1990s, when researchers began to identify the ethical effects of expert systems, such as professionals lacking cognitive skills. However, even then, such issues were not addressed until the 21st century, when Auditors started embracing newer AI techniques. Compared to the past, AI systems have now evolved significantly. Such new AI systems no longer require much human intelligence, rules, and facts, these new systems are entirely based on data. For example, these AI systems are used to study the input data of customer transactions. After accumulating the data required, AI creates models using algorithms to perform descriptive and predictive tasks (Munoko et al., 2020).

Although emerging technologies promise faster, cheaper, and much more accurate analysis of massive data, these types of technologies must be passed under the scrutiny of technology bodies such as the Association for Computing Machinery US Public Policy Council (Munoko et al., 2020). Many researchers have concluded that machine learning algorithms that are programmed are based on cognitive tasks and decisions made by individuals, in other words using human judgment. Research conducted by IBM argues that AI systems' training data and algorithms could lead to unfair decisions (Munoko et al., 2020). Hence, AI systems equivalent to human intelligence can also serve as a risk while making decisions, predictions, and actions. As the Big 4 audit firms continue to make significant AI investments for both the advisory and audit teams, auditors rely much more on AI to conduct audits and underlying assumptions.

Three common assumptions are first, AI technologies are always accurate, and, secondly, the AI system will always behave within the desired constraints. Thirdly, the system is the divergence from the desired constraints will be detectable and correctable. However, research has proven that not always are these assumptions accurate, hence resulting in ethical, legal, and economic implications. According to the World Economic Form of 2015, "30 % of the corporate audits will be performed by AI by 2021" (Munoko et al., 2020). Researchers such as Munoko, Brown-Liburd, and Vasarhelyi argue that these technologies have generated great auditing results but may influence human actions. As an auditor, one of the main rules is to be independent and unbiased of options. If technology will influence an auditor's minds, how can a CPA maintain its code of ethics? The researchers also claim that, currently, the ethical code does not consider the current or future use of emerging technologies such as AI. A typical example expressed in the article by the researchers is testing the auditor's knowledge and reliance on complex AI algorithms to perform an audit task. Questions arise when the auditor has no or less understanding of the algorithm's reasoning, this could impact the auditor's due professional care (Munoko et al., 2020). Along with the rapid growth in technology, the researchers also claim that in due time audit professionals will overcome these ethical challenges.

Especially with the changes added to the CPA curriculum and intensive training provided to auditors, there is more hope and changes to the future with AI, being ethically incorporated by firms to conduct efficient and reasonable audits.

Conclusion

The outcome of working with technology such as AI provides the opportunity for auditors to work smarter, analyze larger samples or even entire populations and simultaneously deliver higher quality audits and better client insights. AI systems assist auditors by acquiring, processing, and churning through the mountains of data that a business's financial reporting systems generate (Brennan et al., 2017). Taking advantage of the power of AI can help internal auditors provide stakeholders with confidence in their organizations' operations and deliver higher return on investment in audit services. Accomplishing these goals requires an audit department that nurtures the development of data, infrastructure, people, and processes. Above all, it entails good planning. Internal audit leaders must understand the current state of data management and analytics capabilities and refine these capabilities to optimize the value AI can generate. It is a big responsibility but incorporating AI in audit processes can enable auditors to provide critical advice and assurance in a digitally transformed age (Chan and Kim, 2020). Chan and Kim also claim that incorporating AI with Audit should quantify the benefits associated with the AI strategy.

Lastly, Shimamoto claims that AI will allow accountants and auditors to eliminate a lot of menial and repetitive work and focus on higher value tasks such as driving analytical insights, designing more effective internal controls, and helping to improve the performance of the organizations served (Shimamoto D.C., 2018). Shimamoto also claims that introducing AI applications has changed auditor's role from testing transactions to now testing algorithms analysis and monitoring algorithm effectiveness (Shimamoto D.C., 2018). "Although there is the potential for deeper and broader understanding, auditors will need to remain skeptical about machine learning results; the patterns identified may not be accurate or even logical" ("ICYMI | Machine learning in auditing," 2020).

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