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Research Article

Investigating the Function of Artificial Intelligence in Audit Judgement

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ABSTRACT

Introduction: Auditors are frequently assigned the responsibility of reviewing intricate financial instruments or assessing the sufficiency of internal controls in light of potential fraud threats. In such circumstances, discernment is necessary to analyse facts, comprehend intent, and evaluate the reliability of answers offered by management. Although AI has demonstrated its disruptive potential across various domains, auditing necessitates a series of intricate and nuanced decisions that demand not only technical study but also human intuition, experience, and ethical considerations.

Objectives: This article explores the role of AI in auditing, focusing on its potential to either replicate or enhance auditor judgment, as well as the challenges that remain in achieving full automation in the auditing process.

Methods: The approach taken in this study is a literature review, which involves gathering, assessing, and analyzing relevant academic works related to the topic. This review contributes to a deeper understanding of how AI is applied in auditing and its effects on auditor decision-making.

Results: AI has the potential to revolutionize the auditing field by automating repetitive tasks, analyzing large volumes of data, and providing data-driven insights. The use of auditor judgment—grounded in experience, context, professional scepticism, and ethical considerations—continues to be a crucial element of auditing. Although AI can aid in data analysis and risk evaluation, it cannot emulate the intricate decision-making process inherent to human auditors. The future of auditing will probably integrate AI-driven tools alongside human discernment, with AI assisting auditors in making better informed and efficient conclusions. AI is expected to collaborate with human auditors, enhancing their judgement instead of supplanting it. By utilising AI technology, auditors may concentrate on advanced decision-making, while AI manages the more mundane elements of data processing and pattern identification.

Conclusions: While it's unlikely that AI will fully replace the judgment of human auditors, it has the potential to significantly enhance the auditing process. AI can serve as a powerful tool that helps auditors with data analysis, identifying risks, and providing insights that support decision-making. However, human judgment will still be essential in interpreting these insights and drawing final conclusions, taking into account ethical, regulatory, and situational factors.

Keywords: Artificial Intelligence, Audit Judgement, AI in auditing

INTRODUCTION

Auditing is essential for maintaining transparency, accountability, and integrity in both corporate and public sectors. The process entails the analysis of financial statements, adherence to legislation, and examination of business operations to guarantee that organisations operate in the best interest of stakeholders. The auditors' judgement is important to this process, as they evaluate data, discern hazards, and determine the correctness and dependability of financial records.

Artificial intelligence (AI) is growing quickly and has found its way into many fields, such as law enforcement, healthcare, and transportation. It's not just a field of study but also a collection of technologies integrated into

information systems. AI focuses on abilities like data analysis, learning, and adaptability, all with the goal of reaching human-level skills in particular areas. As artificial intelligence (AI) technology advance, a crucial concern arises: can AI replicate auditor judgement? This article examines the function of AI in auditing, its capacity to replicate or augment auditor judgement, and the obstacles that persist in attaining complete automation in the auditing process.

While AI has shown its potential to disrupt many industries, auditing involves complex and detailed decisions that require more than just technical knowledge—it also needs human intuition, experience, and ethical judgment. Auditors are often tasked with reviewing complicated financial instruments or evaluating the effectiveness of internal controls in the face of potential fraud risks. In these situations, judgment is crucial to interpret facts, understand intent, and assess the reliability of management's responses. Human auditors bring a level of expertise and skepticism that machines can't replicate, especially in uncertain scenarios where clear answers aren't available. Auditor judgement depends on experience, intuition, and the capacity to evaluate dangers that may not be readily discernible from data analysis alone.

OBJECTIVES

An auditor is a professional who performs an audit of the financial management of governmental, regional, or corporate entities [1]. His role involves assessing the correctness, completeness, adherence to relevant regulations, as well as effectiveness, economy, and efficiency [2]. Auditors typically engage in the following activities: reviewing regulations, analysing business processes, data, and documents (including expenditure data, revenue, planning documents, implementation agreements, or contracts), conducting interviews and confirmations with relevant parties, performing physical examinations of work outcomes, and formulating conclusions and recommendations [3].

Auditors are tasked with reviewing complex financial and operational data to determine whether an organization's financial statements truly represent its accurate and fair position. This often requires auditors to make judgments in situations of uncertainty, ambiguity, and incomplete evidence [4]. They need to assess the risk of significant errors in financial records, evaluate the effectiveness of internal controls, and identify potential cases of fraud or non-compliance [5]. These decisions depend significantly on experience, intuition, and professional skepticism attributes that are challenging to emulate just through algorithms [6]. Furthermore, auditor judgement entails making conclusions that reconcile quantitative analysis with qualitative considerations. For example, although numerical data may indicate a specific conclusion, auditors must also take into account the wider context, including the ethical ramifications of financial practices, the potential for fraud, and the motivations of those engaged in financial reporting. This well-rounded approach to decision-making, combining technical expertise with human intuition, is a core element of auditor judgment. This article aims to explore the role of AI in auditing, its ability to replicate auditor judgment, and the challenges and opportunities it presents for automating or improving traditional auditing processes. Another purpose of this study is to determine the opportunities and challenges faced in implementing AI in the audit process, especially audit judgment.

METHODS

The method used in this study is a literature study. A literature study is a research method used to gather, evaluate, and analyze relevant scientific works on the topic being explored. It's crucial to select credible and pertinent sources during this process. The study includes specific inclusion and exclusion criteria to choose the most relevant articles. The inclusion criteria for this study are articles from peer-reviewed journals, research focused on the use of AI in auditing and auditor assessments, studies published within the last 10 years to ensure the information is up to date, and articles discussing the opportunities, challenges, or effects of AI on auditor evaluations. The exclusion criteria eliminate articles not centered on AI or auditing, those that don't address the research question or offer new insights, and those not published in scientific journals or fully accessible. This literature analysis helps deepen our understanding of how AI is being implemented in auditing and how it affects auditor decision-making. One key goal of a literature review is to identify gaps in existing research, whether it's topics that haven't been fully explored, methods that haven't been fully applied, or areas of the subject that require further study.

RESULTS

Artificial intelligence, especially machine learning (ML) and deep learning (DL) models, has advanced considerably in recent years. Artificial intelligence systems can analyse extensive datasets, discern patterns, and generate

predictions based on historical information [7]. Although AI systems excel at automating repetitive tasks and analysing extensive datasets, emulating the nuanced judgement of human auditors poses numerous obstacles [8].

The literature addresses the auditing of AI using several terminologies. Early literature [9] and recent studies [10], [11], [12] describe "algorithm auditing" as a method to identify and alleviate prejudice and other adverse effects resulting from algorithm usage. The interest in auditing algorithms has increased alongside the enhanced capabilities and influence of opaque "black-box" algorithms that facilitate decision-making and affect individuals and organizations [9].

1. Data Processing and Pattern Recognition

Artificial intelligence excels in areas that require fast and accurate processing of large amounts of data. In auditing, AI can quickly analyze vast quantities of financial data, tax returns, invoices, and transaction records [13],[14],[15]. Machine learning algorithms can detect patterns, spot irregularities, and flag transactions that might need further investigation [7]. AI can also pinpoint discrepancies between financial statements and actual transactions, highlighting areas that need closer attention from auditors.

While AI can process data more efficiently than human auditors, the challenge remains in interpreting this data within a broader context. For example, AI may identify an irregularity in a financial transaction, although it lacks the intrinsic ability to discern whether this oddity stems from error, fraud, or legitimate business activity [16],[17]. The judgement of a human auditor is crucial; their comprehension of the organization's operations, industry-specific risks, and regulatory requirements offers context for evaluating data that AI cannot supply alone.

An AI system might flag a transaction as unusual based on its size, frequency, or timing. However, without understanding the broader context—such as the nature of the transaction, the organization’s business model, or the relationships between involved parties—the AI can’t determine whether the anomaly is a legitimate concern or just a regular business practice. In these situations, the judgment of a human auditor is crucial.

2. Risk Evaluation and Decision-Making

Auditors routinely assess risks to pinpoint the areas of financial statements that are most susceptible to significant errors [18]. This involves evaluating factors like the complexity of transactions, the effectiveness of the internal control systems, and the overall financial health of the organization. Although AI systems can examine previous data and discern patterns indicative of heightened risks, the decision-making process over responses to these risks necessitates a degree of judgement that is challenging for AI to emulate.

Artificial intelligence can aid auditors in the risk assessment process by delivering data-driven insights regarding potential risk areas [19]. AI-driven solutions can evaluate historical audit results and forecast which sections of the financial statements are prone to misreporting. Nonetheless, identifying suitable audit processes to alleviate such risks, assessing the importance of different findings, and determining the reliance on management's explanations are all judgements that necessitate auditor discretion. These decisions are influenced not only by data but also by the auditor's professional judgment, which factors in industry standards, regulatory requirements, and the overall financial health of the organization.

While AI can spot risks based on historical data, it can’t fully grasp the broader organizational and economic context that might impact the risk environment. Human auditors, on the other hand, can incorporate these qualitative factors into their risk assessments, ensuring that all relevant issues are thoroughly considered before making a final judgment.

3. Professional Scepticism and Ethical Assessment

Recent research has introduced the idea of ethics-based auditing (EBA) for automated decision-making systems [20]. EBA is characterized as “a systematic procedure through which an entity's current or historical conduct is evaluated for alignment with pertinent principles or standards.” This definition effectively maintains the audited entity's flexibility; hence, the subjects of auditing may include algorithms, AI systems, or organizations. Brown et al. [10] described ethical algorithm audits as evaluations of the algorithm's adverse effects on the rights and interests of stakeholders, together with the identification of circumstances and/or characteristics of the algorithm that lead to these adverse effects. The distinction between these two definitions lies in the fact that ethical algorithm audits emphasize impact, whereas EBA underscores adherence to principles and standards. The definition of the ethical

algorithm audit [10] asserts that algorithms are the focus of the audit, rather than permitting the audited organization to remain ambiguous.

A fundamental element of auditor judgement is professional scepticism [6], which is the readiness to interrogate and contest the evidence provided by management [21],[22]. Auditors must uphold independence and objectivity, especially in circumstances that may involve fraud or deliberate misstatements. AI, although proficient at identifying abnormalities and outliers, is unable to exercise professional scepticism like human auditors do.

An AI system may identify a sequence of transactions as possibly fraudulent due to anomalous patterns [5]; but, it is incapable of evaluating the underlying motivations for those transactions or ascertaining if they were components of a genuine business strategy. Auditors must ascertain the intentions of the persons involved, evaluate the veracity of management's answers, and incorporate ethical issues into their assessments [21]. This entails a degree of human discernment and decision-making that AI has yet to emulate.

AI may identify a pattern of atypical transactions that necessitates additional scrutiny [23],[24]. Nonetheless, it is the auditor's responsibility to exercise professional skepticism—posing critical enquiries, obtaining corroborative evidence, and evaluating the probability that the anomaly results from fraud or error rather than a genuine business decision. The determination to contest management's justifications or to elevate suspicions about possible fraud necessitates a degree of scepticism, intuition, and ethical deliberation that artificial intelligence cannot emulate [25]. Human auditors contribute a degree of professional expertise and ethical discernment to the process that is challenging to automate.

4. The Constraints of AI in Judgment-Driven Decision Making

AI is undeniably proficient in data processing, automating repetitive jobs, and providing predictive analytics; nonetheless, it possesses limits regarding judgment-based decision-making. Several key limitations include [25]:

1. Lack of Context: While AI can process large amounts of data, it doesn't have the contextual understanding that auditors use to evaluate the relevance of that data. Human auditors are skilled at understanding the bigger picture, including the business environment, regulatory landscape, and organizational culture.
2. Data Bias: The efficacy of AI systems is contingent upon the quality of the training data. If the data exhibits biases, such as past biases in financial reporting or auditing methods, AI may unintentionally reinforce these biases in its conclusions. This may compromise the impartiality of audit determinations.
3. Ethical and Legal Considerations: AI systems lack the capacity to make ethical judgements or assess the legal ramifications of specific audit results. In instances of possible fraud, an AI system may identify unusual transactions but is incapable of determining whether these transactions derive from deliberate malfeasance or inadvertent mistakes.
4. Inability to Manage Ambiguity: Numerous auditing choices entail a degree of ambiguity or uncertainty, especially when evaluating aspects such as fair value estimations or subjective judgements pertaining to financial reporting. AI encounters difficulties in decision-making inside ambiguous contexts lacking definitive data.

Dangelo Model (2023) for the Auditability of AI Systems

Dangelo (2023) [26] points out that the traditional audit process, once considered standard, is now marked by higher expectations and the need for more specialized skills. This issue is made worse by the lack of interest in auditing among college graduates and the significant loss of expertise within public accounting firms.

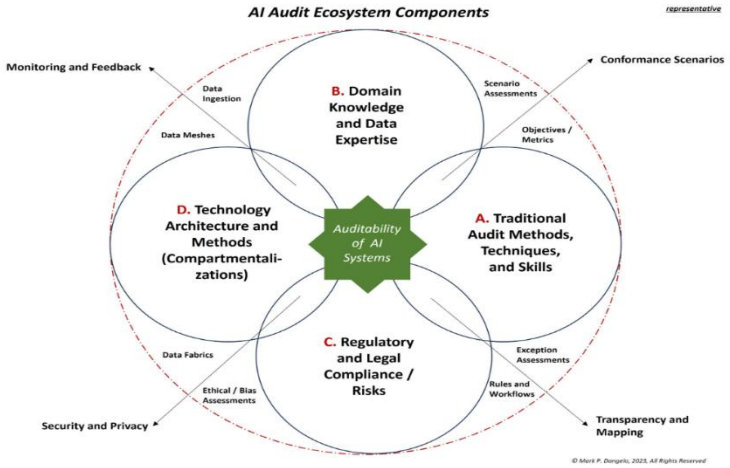

Figure 1—Holistic AI Adaptable Audit Framework

.The detailed classifications within categories A through D show various potential solutions that often go beyond the core expertise of trained audit teams. The overlap between these categories highlights common themes. This graphic subtly emphasizes a key challenge with the rapid adoption of advanced AI technologies, where risks are not only embedded in the algorithms but also in the data, their outputs across different sectors, the layers of decision-making criteria, and, importantly, the legal and regulatory consequences of unintended outcomes. For audit personnel accustomed to conventional methodologies, data sampling, and process evaluations, the integration of AI within and across domain systems necessitates a significant enhancement in required competencies. The upskilling requirements must be met either by the gathered audit team or by specialised personnel who can effectively transition from sample-based assessments to comprehensive data discovery utilising audit-defined technologies and methods specifically designed for AI audits.

For internal or external auditors, the capacity to acquire forensic capabilities for analysing and evaluating AI and its compliance with requisite standards positions audit teams in unaccustomed circumstances. Teams pursuing AI solutions necessitate expertise in data and computer sciences, machine learning, deep learning, and the capability for comprehensive sampling, encompassing algorithmic training, testing, and production data. In addition to the financial and domain expertise of conventional methods, the ingestion of data sources informs AI decisions, integrated workflows, operational regulations, and decision options that are distributed across several systems, resulting in intricate and obscure interdependencies.

The figure below by Dangelo (2023) [26] illustrates the shift in demands and the resulting consequences on skills and methodologies, contrasting traditional mindsets with adaptive, next-generation AI capabilities through activity, team, and iterative approaches. The roles and responsibilities of staff analysing and assessing AI in its various manifestations, the evaluation playbooks, and the associated balances and controls are undergoing a continuous transformation of features and functions.

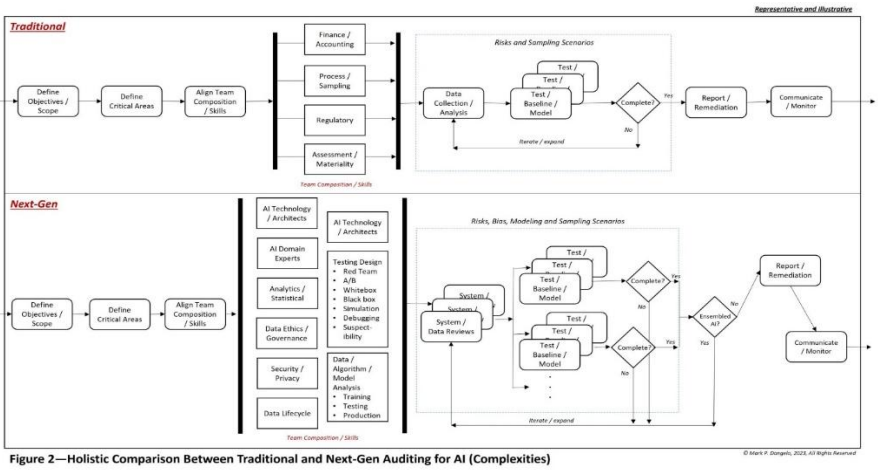

Figure 2—Holistic Comparison Between Traditional and Next-Gen Auditing for AI (Complexities)

DISCUSSION

Digital transformation is reshaping auditing practices through the adoption of cutting-edge technologies like artificial intelligence, machine learning, and blockchain. These advancements are key to improving data analysis and automation. While AI and machine learning significantly enhance data processing, blockchain provides a secure and transparent way to record transactions. These innovations help produce cleaner datasets, more advanced algorithms, and better decision-making processes.

AI is particularly influential in transforming the auditing field by automating repetitive tasks, analyzing large data sets, and offering data-driven insights. Currently, AI plays a vital role in streamlining traditional auditing practices, improving the efficiency of financial reporting, and expanding into areas like advanced data analytics, automation, and decision support. However, as AI becomes more integrated into auditing, it's clear that auditors in the digital age must acquire new skills while maintaining core ethical standards.

Although the benefits of incorporating advanced technologies into auditing are undeniable, it's important to critically evaluate both their strengths and weaknesses. Many studies tend to focus on the positive aspects, often ignoring challenges such as data privacy concerns, the complexities of integrating new technologies, and the potential for displacing human auditors. This overly optimistic outlook doesn't always reflect the practical and ethical issues these technologies could introduce. A more balanced assessment is needed to fully understand both the transformative potential and limitations of AI in auditing.

AI offers enhanced efficiency by automating tasks like data entry, verification, and analysis, freeing up auditors to focus on more complex, judgment-based work. It also improves accuracy, as AI can process large amounts of data in real time, reducing the risk of missed information and errors. Furthermore, AI's ability to identify fraudulent activities and anomalies—such as fraud or money laundering—by analyzing extensive datasets helps improve fraud detection efforts.

AI can also streamline audit report generation. It enables auditors to quickly create graphs, spreadsheets, and visualizations, speeding up the reporting process. By reducing errors and identifying patterns beyond human capabilities, AI enhances the quality and detail of audits, surpassing traditional audit methods. Overall, the adoption of AI in auditing boosts efficiency, accuracy, fraud detection, and report generation.

However, while AI significantly lightens auditors' workloads and transforms auditing practices, its successful implementation depends on the proficiency of those using it. Audit firms must carefully verify AI-generated outputs to avoid legal or regulatory issues. Although AI has become an essential tool for auditors, assisting with the automation of routine tasks, the question remains: can AI fully replace human auditors and conduct all audit operations independently? The incorporation of AI in auditing has numerous advantages, including increased efficiency, diminished errors and fraud risks, expedited audit completion, expanded analytical capabilities, and a concentrated emphasis on high-risk areas. Nonetheless, the application of AI in auditing also entails specific disadvantages. Ethical issues may emerge, including the possibility of bias if AI is designed to emphasize particular facts. Consideration should be given to employment consequences and data security concerns, including the potential for breaches or unauthorized access to sensitive information. The absence of substantial human oversight presents a barrier, as AI is devoid of decision-making capabilities and subjective evaluation skills, which may result in unnoticed errors. The intricacy of AI algorithms may impede auditors' comprehension of decision-making processes, affecting transparency and error identification.

Ultimately, the integration of AI in auditing may provide considerable hurdles, including organizational transformations and substantial implementation expenses. AI employs pattern recognition, visualization techniques, and data quality assessments to identify anomalies and formulate conclusions. Although there is ongoing dispute on the present capabilities of AI, it is anticipated to enhance its performance in executing certain jobs. Nonetheless, there are intrinsic limitations to AI supplanting specific facets of auditing that depend on human attributes such as experience, intuition, trust, and empathy. Human auditors bring valuable personal and professional skills that help build trust-based relationships with clients and provide insights into complex business issues. Effective communication is key for auditors to foster relationships grounded in trust and confidence. Their judgment, experience, and industry knowledge are crucial, especially since AI systems have limited learning abilities. While AI can automate tasks like sampling, contract analysis, and detecting anomalies, it cannot exercise professional

judgment or consider unanticipated factors. Therefore, human involvement is still necessary to ensure the quality of the audit work while harnessing AI's potential.

Auditor judgment, which is based on experience, context, professional skepticism, and ethical considerations, remains a vital part of the auditing process. Although AI can support data analysis and risk assessment, it cannot replicate the complex decision-making that human auditors are trained to handle. The future of auditing will probably integrate AI-driven tools alongside human discernment, with AI assisting auditors in making better informed and efficient.

CONCLUSION

While AI is unlikely to entirely replace the judgment of human auditors, it has the potential to significantly enhance the auditing process. AI is a powerful tool that helps auditors with tasks like data processing, risk assessment, and providing insights that inform decision-making. However, human judgment will always be necessary to interpret these insights and make final decisions, taking into account ethical, regulatory, and contextual factors.

In the future, AI is expected to assist auditors by enhancing their efficiency and effectiveness. Instead of replacing auditor judgment, AI will complement it, allowing auditors to focus on more complex tasks that require professional judgment, ethical considerations, and an understanding of nuanced business situations. By integrating AI, auditors can focus on sophisticated decision-making while leaving routine tasks like data processing and pattern recognition to the technology. However, the adoption of these emerging technologies does present significant ethical challenges that need careful consideration. As technology progresses, auditors must be prepared to evaluate issues related to data privacy, algorithmic bias, transparency, and more considerations. The incorporation of AI into auditing methods signifies a substantial and paradigmatic shift in accounting and financial management. This study enhances previous theory by highlighting the theoretical consequences of this transition via the development of a conceptual framework. Our research primarily focuses on understanding the impact of digital transformation on auditing. We analyzed a diverse range of papers, offering an in-depth comprehension of emerging trends and potential areas for future research. As the investigation advanced, it became apparent that the transition to technology-driven auditing techniques signifies a fundamental alteration in the essence of the auditing setting. Historically, auditing has been understood as a retrospective analysis of records, wherein auditors scrutinize papers to identify errors and discrepancies.

Our research indicates that AI is reshaping this domain, converting auditors into proactive agents of real-time monitoring and evaluation. This paradigm change is essential for progressing the theoretical understanding of auditing as a continually changing discipline. It involves a radical redefinition of auditors' roles and responsibilities in the digital era, transcending the simple integration of advanced technologies to enhance existing procedures. The incorporation of AI into auditing necessitates a novel enhancement of auditors' skills, compelling them to comprehend and evaluate real-time data, utilize sophisticated pattern analysis methods, and proactively identify abnormalities. Therefore, this study enhances a comprehensive grasp of the current transformation in the auditing profession. By positioning AI integration within a larger transition towards a more dynamic and future-focused profession, we investigated a novel approach for auditing processes. This theoretical perspective is crucial for both informing academic research and guiding professional practices and policy development in auditing.

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