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Artificial Intelligence and the Evolution of Accounting and Audit Practices: A Systematic Review

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Abstract

This paper aims to provide a systematic literature review on the integration of artificial intelligence (AI), including machine learning and deep learning, into the fields of accounting and auditing. Drawing on a corpus of 575 publications extracted from Scopus for the period 2021 to 2025, the study examines the models employed, their applications, and the factors that facilitate or hinder the adoption of AI within the accounting profession. The findings show that supervised models such as logistic regression, decision trees, and neural networks are widely used to enhance audit accuracy, detect fraud, and predict financial risks, while robotic process automation (RPA) contributes to operational efficiency and the streamlining of repetitive tasks. The adoption of AI is also shaped by organizational and human factors, including practitioners' acceptance, skills development, and compliance with ethical and regulatory frameworks. The study further highlights the complementarity of AI with other emerging technologies such as blockchain and cloud computing and underscores its systemic role in improving both economic and social performance. Overall, the findings provide an integrated perspective on recent trends and key issues related to AI in accounting and auditing, while opening avenues for future research on the adoption and optimization of these technologies.

Keywords Accounting, Audit, Artificial Intelligence, Machine Learning, Deep learning, Robotic Process Automation

1. Introduction

Technological progress has profoundly reshaped the accounting and auditing professions by introducing tools that transform the collection, analysis, and interpretation of financial data. Among these tools, artificial intelligence (AI) occupies a central position. Defined as the simulation of human cognitive processes by systems capable of learning, reasoning, and making autonomous decisions (Russell and Norvig, 2020), AI enhances the efficiency, accuracy, and analytical value of financial information. Recent studies show that tools such as robotic process automation (RPA), machine learning, and natural language processing (NLP) significantly reduce routine workloads while strengthening anomaly detection and increasing the transparency of financial processes (Davenport, 2018; Kokina et al., 2025; Altawalbeh et al., 2025). This shift reflects the need for organizations to adapt to an increasingly complex and demanding financial environment. The rise of digital transactions, the complexity of international regulations, and

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stakeholders' heightened expectations regarding transparency and accountability require tools capable of processing large volumes of data with precision. In this context, AI appears not only as a means of automating repetitive tasks (Alassuli, 2025) but also as a catalyst for improving decision quality in auditing and accounting (Fuentes et al. 2025). However, its adoption faces several challenges, including the opacity of so-called black box models, high implementation costs, the need for continuous training, and ethical concerns related to data protection and responsibility for automated decisions (Tiron-Tudor et al., 2024; Staszkiewicz et al., 2024). The central question that emerges is therefore the extent to which AI models and tools are transforming accounting and auditing practices, and what tangible benefits they provide in terms of efficiency, transparency, and organizational performance, while introducing new technical, human, and ethical challenges.

This study addresses this question by conducting a systematic literature review for the period 2021 to 2025, a period marked by significant growth in research and experimental applications of AI in accounting and auditing. While previous work has mainly mapped technical developments (Murphy et al., 2024) or proposed conceptual modeling frameworks (Li, 2025), this study adopts a dual perspective by simultaneously examining both dimensions. In auditing, AI is used for risk assessment, fraud detection, and improving audit opinion quality (Wang and Yan, 2025; Leocádio et al., 2024). In accounting, it supports the automation of entries, strengthens the reliability of financial statements, and contributes to the transformation of professional skills (Bou Reslan and Al Maalouf, 2024; Ismail and Krishnamaw, 2025). This review situates prior research findings across various contexts and offers an organized synthesis of the most recent results. It highlights prevailing trends, the most effective models such as logistic regression, neural networks, and explainable models, as well as the barriers and limitations identified in the adoption of AI in accounting and auditing. This study clarifies both scientific and professional advancements in the field while identifying areas of uncertainty and future research opportunities. Overall, the review demonstrates that AI extends far beyond simple process automation and constitutes a transformational tool for accounting and auditing. It provides a critical analysis of developments observed between 2021 and 2025 to better understand how emerging technologies are redefining the profession and shaping its future. The remainder of this paper is structured as follows. Section 2 presents the literature review, Section 3 provides a bibliometric analysis, and Section 4 presents the conclusions.

2. Literature Review

Recent scientific literature converges on the view that artificial intelligence (AI) has become a major driver of transformation in accounting and auditing practices. This transformation extends beyond simple automation and fundamentally reshapes professional paradigms, business models, and the competencies required in the field. Academic studies highlight that the automation of repetitive tasks, advanced anomaly detection, and the generation of insights from massive datasets are altering not only work methods but also the role of professionals, who are gradually shifting toward more strategic responsibilities (Davenport, 2018; Kokina et al., 2025; Ao et al., 2025; Jejeniwa et al., 2024). The period 2021 to 2025 represents a decisive turning point characterized by the growing adoption of sophisticated models such as traditional machine

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learning techniques (logistic regression, random forests, SVM), deep neural networks (LSTM, Transformers), and recent generative tools such as LLMs, which are used for report generation and advanced predictive analysis. This technological evolution takes place within a context of accelerated digital transformation driven by the global pandemic, which compelled organizations to rethink their business processes and intensify their digitalization efforts. It also responds to the increasing complexity of financial transactions in a globalized economy, as well as heightened expectations in terms of transparency and compliance in governance and regulation (Kureljusic and Karger, 2023; Ao et al., 2025). The emergence of international financial regulations, including directives related to ESG (Environmental, Social, and Governance) reporting, has further reinforced the need for tools capable of processing and analyzing ever larger and more complex datasets. In this regard, AI does not merely automate traditional accounting operations but contributes to redefining the very nature of the accounting and auditing professions, while simultaneously strengthening their strategic value.

Functional classification of AI technologies in accounting and auditing

Several authors propose a fundamental classification of AI technologies used in accounting and auditing, which makes it possible to distinguish technological maturity levels and their corresponding uses (Davenport, 2018; Kokina et al., 2025). Simple AI systems, including Robotic Process Automation (RPA), widely used for repetitive administrative processes (Kokina et al., 2025) such as invoice processing, and supervised machine learning, are extensively deployed in organizations, particularly for automating routine tasks and consolidating data. Although relatively basic, these technologies provide immediate and measurable efficiency gains, often yielding rapid returns on investment. Complex AI systems encompass deep neural networks, generative models, and advanced machine learning. These tools are primarily used to detect financial anomalies, prioritize human investigations, generate automated reports, or analyze complex patterns in financial data (Haq et al., 2020). They require substantial investment in infrastructure and skills, but their long-term transformational potential is significantly higher. The importance of explainable AI (XAI) is emphasized to ensure transparency and stakeholder trust. Techniques such as LIME and SHAP make it possible to understand and justify model decisions, a crucial requirement for adoption in auditing, where traceability and justification of conclusions are fundamental (Kokina et al., 2025; Duke, 2022). Regulatory bodies such as the IAASB are also developing frameworks tailored to these emerging technologies, demonstrating their growing importance in the sector.

Theories of artificial intelligence and sectoral innovations in management accounting and auditing

AI is defined as the simulation of human cognitive processes by machines capable of learning, reasoning, and performing tasks autonomously (Russell and Norvig, 2020). This conceptualization goes beyond a purely technical perspective and encompasses the cognitive and decision-making dimensions that lie at the core of accounting and auditing professions. Accounting information systems (AIS) play a key role in collecting, storing, and processing financial data, thereby providing essential information for decision making (Perdana et al., 2022). The integration of AI transforms these systems into intelligent platforms capable of

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predictive analysis and strategic recommendations. In management accounting, AI supports budget preparation, cost analysis, inventory management, credit evaluation, and strategic financial planning (Lee et al., 2024; Singh and Adhikari, 2023; Yeo et al., 2023). It also strengthens cybersecurity and supports compliance with ethical standards (Umoga et al., 2024). Specific applications include recommendation systems for personalizing customer experience, chatbots to automate service processes, predictive inventory management, dynamic pricing, and personalized marketing (Huang and Rust, 2018; Thottoli and Ahmed, 2022). These tools enable advanced data analysis, automate repetitive processes, and anticipate trends, thereby enhancing the accuracy, efficiency, and strategic value of accounting and auditing functions (Alles, 2018; Saad et al., 2022). The growing sophistication of these applications now allows real-time processing of complex data streams, the identification of patterns invisible to the human eye, and the generation of actionable insights for financial management. Machine learning (ML) constitutes a central component, capable of processing large volumes of data without explicit programming and improving anomaly detection, financial forecasting, and audit procedures (Krishnanraw and Kamisah, 2025). Hybrid models that combine supervised and unsupervised learning also enable the detection of emerging fraud and the simultaneous analysis of structured and unstructured data (Zhang et al., 2024).

Adoption of AI in accounting and auditing: theoretical frameworks and determinants

Several theoretical models illuminate the determinants of AI adoption in accounting and auditing, offering complementary perspectives on the psychological, organizational, and contextual factors that influence this process. Al Najjar et al. (2024) explain that the adoption of AI in accounting software can be understood through the Technology Acceptance Model (TAM) and modernization theory. TAM (Davis, 1989) highlights that perceived usefulness and perceived ease of use strongly shape the decision to adopt a technology. When AI improves output quality, enhances error detection, and is perceived as easy to use, organizations and individuals are more likely to adopt it. Modernization theory asserts that technological adoption generates firm-level benefits that contribute to macroeconomic growth, encouraging companies to adopt advanced technologies such as AI to reduce financial and reputational risks (Chyzhevska et al., 2021; Cooper and Nguyen, 2020). Although TAM was originally developed for simpler technologies, it remains relevant for understanding AI adoption, particularly in the case of mature applications such as RPA. The Technology Readiness Index (TRI) measures individuals' propensity to adopt new technologies across four dimensions: optimism (OPT), which reflects a positive view of technology; innovativeness (INN), which reflects a tendency to be a technological pioneer; discomfort (DIS), which refers to a lack of confidence in one's ability to use technology; and insecurity (INS), which refers to mistrust toward technology (Parasuraman, 2000). The Technology Readiness and Acceptance Model (TRAM) integrates TAM and TRI to provide a holistic analysis of behavioral and cognitive determinants. Furthermore, the Unified Theory of Acceptance and Use of Technology (UTAUT) and the AI Device Use Acceptance framework (AIDUA) expand these perspectives by incorporating social, motivational, and contextual factors such as social influence, facilitating conditions, and prior technological experience (Gursoy et al., 2019). In this context, Adamek and Solarz (2025) examine how the personality traits of accounting professionals influence their relationship with

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AI technologies. Drawing on the TRAM model, which combines the foundations of TRI and TAM, their study explores how individual characteristics shape perceived usefulness and perceived ease of use of AI systems, as well as the intention to incorporate these tools into daily practice. Their findings show that personality traits significantly affect professionals' perceptions of the utility and usability of AI systems, and consequently their intention to adopt these technologies. Optimism and innovativeness emerge as key determinants of adherence to emerging technologies.

Technological innovations and sectoral applications of AI

The technological landscape of AI in accounting and auditing is diverse and encompasses several generations of tools that reflect the historical and conceptual evolution of artificial intelligence. Expert systems, among the earliest forms of AI, rely on "if-then" rules to replicate human expert decision making in specialized domains such as the evaluation of compliant accounting treatments or the determination of the appropriate type of audit report (Smith and McDuffie, 1996; McDuffie and Smith, 2006). Voice assistants (Siri, Alexa, Gemini Live) and generative chatbots (Claude, Copilot) facilitate natural interaction with information systems and allow professionals to access information and perform tasks without traditional text interfaces (Lan et al., 2024; Hannigan et al., 2024). Agentic AI technologies refer to systems capable of making autonomous decisions to achieve specific objectives, such as process optimization, anomaly detection, or financial forecasting, while maintaining a level of human supervision to ensure compliance with ethical standards (Anica-Popa et al., 2024). The combination of accountants' professional judgment and generative AI capabilities enhances analytical accuracy, although mastery of prompt engineering remains essential to avoid inconsistent results (Vasarhelyi et al., 2023; Korzynski et al., 2023). Cognitive computing simulates human reasoning through computational algorithms, offering adaptability, interactivity, and contextual reasoning. This approach goes beyond simple data processing and enables advanced applications in financial analysis and auditing. Large Language Models (LLMs) excel at natural language processing and learning from unstructured data, facilitating the analysis of contractual documents, the generation of narrative reports, and the extraction of relevant information (Ryman-Tubb et al., 2018; Zafar et al., 2024). Overall, these technologies represent the forefront of AI applied to accounting and auditing, with significant potential to transform business processes by automating certain repetitive functions while strengthening analysis, forecasting, and informed decision making.

Organizational impacts and implementation challenges of AI

Empirical studies highlight significant impacts of AI on organizational efficiency while underscoring persistent implementation challenges. The integration of AI into accounting systems improves the accuracy of financial reporting and strengthens regulatory compliance through the rapid detection of anomalies and inconsistencies in data (Altawalbeh et al., 2025). It also enables the automation of complex operations, such as reconciliations and continuous ledger updates, thereby enhancing the accuracy of financial statements (Estep et al., 2024). Leitner-Hanetseder et al. (2021) estimate that for routine tasks, AI can save up to 50 percent of time and proportionally reduce labor costs, while ensuring uninterrupted 24/7 operation, which facilitates

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coordination among firms operating across different time zones (Huang et al., 2022). A major benefit of AI lies in fraud detection and prevention. AI systems analyze vast volumes of transactions and identify suspicious behavior with higher precision than traditional approaches (Wang and Yan, 2025). However, despite these advantages, AI adoption faces several challenges, including high implementation costs and concerns related to privacy and ethics. Osasona et al. (2024) emphasize the need for comprehensive training of professionals to effectively leverage these technologies, which requires interpreting system outputs and integrating them into conventional accounting processes (Anh et al., 2024). Yet, Ranta et al. (2023) suggest that many organizations are not yet prepared to deploy continuous training programs of this scale. Kerr et al. (2025) note that without adequate oversight, AI may produce less reliable results. Adoption is also limited by the consistency of data formats across clients (Kokina and Davenport, 2017), and some firms remain reluctant to share data due to confidentiality concerns (Kokina et al., 2025). Additionally, a lack of understanding of AI's practical capabilities can generate resistance (Cooper et al., 2019). The deployment of these tools is also accompanied by significant risks, including algorithmic bias (Schwartz et al., 2022), data privacy vulnerabilities (Zhu and Guan, 2022), and the automatic generation of content that may be ethically noncompliant. These technical challenges are compounded by cultural and organizational barriers, such as resistance to change and a lack of internal expertise, which vary considerably across national and sectoral contexts.

International and Sectoral Perspectives on Intelligent Accounting

The impact of AI varies considerably across sectoral and geographical contexts, reflecting differences in technological maturity, regulatory frameworks, and organizational cultures. Bou Reslan and Al Maalouf (2024) highlight that AI is profoundly transforming accounting, shifting the profession from retrospective data processing to a predictive and proactive approach. Technologies such as Optical Character Recognition (OCR) and Robotic Process Automation (RPA) enable the efficient digitization, processing, and integration of transactional data into accounting systems, reducing errors and enhancing productivity. The application of AI in accounting software, through tools such as RPA, deep neural networks (DNNs), and Blockchain (BCT), automates data entry, processing, and verification, improving the accuracy and quality of tax reporting (Zhang et al., 2020; Hoa et al., 2023). Specifically, RPA eliminates human intervention in repetitive tasks, DNNs detect inconsistencies, and BCT secures information. The combination of these technologies strengthens data reliability and analytical capabilities. Kureljusic and Karger (2023) demonstrate that the normative structure of accounting data facilitates automated evaluation, with interrelations between indicators enabling the recognition of complex patterns that are difficult to detect manually. Forecasting emerges as a central use case for AI, particularly for estimating profits, losses, and cash flows, including client payment dates (Bahrami et al., 2020). This dynamic illustrates a paradigmatic transformation of accounting and auditing, redefining their foundations and professional boundaries while raising ethical, regulatory, and competency challenges. In this context, Alassuli (2025) emphasizes the growing interest in RPA for financial management and bank reconciliations, with firms reducing operational costs and considering broader applications (Cooper et al., 2019). By enhancing control accuracy through comprehensive data review, RPA reduces the risk of errors (Zareen et

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al., 2024) and, when combined with analytics, strengthens anomaly detection and regulatory compliance through continuous monitoring (Ayinla et al., 2024). Changes in work practices, including the development of remote auditing, have further accelerated the adoption of intelligent automation (Saatchi et al., 2024). These technologies, more flexible than traditional systems, enable the automation of all repetitive, rule-based tasks, increasing the efficiency and competitiveness of organizations, including smaller enterprises (Perdana et al., 2023). Several authors highlight the evolving skill requirements in the profession. Almulla et al. (2024) note that the use of AI in management accounting remains emergent but is rapidly progressing. They stress that intelligent automation is intended to support professionals rather than replace them. Empirical studies demonstrate tangible benefits of AI in accounting. In emerging markets, accounting errors are frequent, resulting from limited skills or underperforming software (Hoa et al., 2023). Such errors include omissions, duplicates, calculation mistakes, and hidden transactions, all of which can be mitigated through automation.

Professional Transformations and Ethical Challenges Induced by AI

Ethical and regulatory challenges related to artificial intelligence are now a central concern for the accounting and auditing profession. Lehner et al. (2022) identify five critical dimensions, namely objectivity, confidentiality, transparency, accountability, and reliability, which influence ethical decision-making mechanisms (Rest, 1986). Their analysis shows that AI, lacking moral discernment and ethical intentionality, cannot exercise autonomous judgment, requiring the establishment of hybrid governance based on the complementarity of human expertise and technological capabilities. Tiron-Tudor et al. (2024) employ the Throughput Model to analyze ethical tensions inherent in advanced digitalization. They identify six major issues, including autonomy, privacy, power balance, security, human dignity, and fairness, in addition to risks such as technological manipulation and algorithmic bias. These transformations also redefine the expected skill profiles in the sector. Professionals must develop broader mastery of emerging technologies and enhance their ability to critically assess the implications and potential misuses of automated systems. Recent studies also highlight AI's impact on training programs. Generative AI tools and adaptive learning platforms now allow the simulation of complex auditing and financial management scenarios, promoting immersive learning and bridging the gap between theoretical knowledge and professional practice (Ballantine et al., 2024). This evolution is accompanied by a growing need for interdisciplinary approaches that combine accounting expertise, digital skills, and ethical reasoning to ensure controlled adoption of emerging technologies and to minimize regulatory and technological disparities across jurisdictions (Secinaro et al., 2025; Han et al., 2023). Leitner-Hanetseder et al. (2021) anticipate that by 2030, much of the routine work, including data entry, reconciliations, and standardized checks, will be automated by software robots, allowing professionals to focus more on interpretative analysis, identification of emerging risks, and high-stakes ethical decision-making. This shift requires a comprehensive redesign of curricula, with increased emphasis on digital skills, analytical thinking, critical reasoning, and applied ethics.

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AI, Economic Performance, and Strategic Perspectives

The impacts of AI extend beyond the organizational level to influence macroeconomic and social performance. Kerr et al. (2025) demonstrate, through a comparative analysis of 69 countries, that those in the top third of the Global AI Index achieve substantially higher economic performance, both in terms of GDP per capita (USD 50,278 versus 9,265) and social progress index (85.3 versus 69.2). The authors highlight a strong link between AI adoption, national competitiveness, and social well-being. AI thus appears not only as a productivity lever for firms but also as a driver of societal innovation, with major strategic implications for training, investment, and governance policies. In the same context, Mishra et al. (2022) find that attention to AI in 10-K reports is associated with improved net efficiency among publicly traded US firms during 2005-2019. Their textual analysis, based on the frequency of 122 AI-related terms, reveals that companies placing greater emphasis on these technologies tend to enhance net efficiency, reduce advertising expenditures, increase employment due to specialized skill demand, and strengthen marketing ROI. However, the increase in net efficiency is tempered by a decrease in gross efficiency, related to higher labor costs for skilled profiles. These findings indicate that AI does not automatically replace jobs but rather transforms the structure of work by promoting the creation of skilled positions. Finally, future research perspectives emphasize the growing importance of explainable AI (XAI) to enhance transparency, understanding, and acceptability of algorithmic systems, particularly in auditing, where justification of conclusions is fundamental. The use of unsupervised models is also a promising approach for detecting emerging anomalies in unlabeled data, whether involving innovative fraud schemes or weak risk signals. However, Losbichler and Lehner (2021) propose a research agenda structured around five priority areas for the responsible application of AI in accounting: organizational transformation, human-machine collaboration, regulation, technological innovation, and ethical considerations. Their conceptual study, inspired by complexity theory and cybernetics, emphasizes that the ideal of precise forecasting remains unattainable even with AI due to the fundamentally complex and partially observable nature of economic systems. They advocate for contextualized collaboration between humans and machines, adapted to the degrees of uncertainty, complexity, and ambiguity inherent in each decision-making environment. In conclusion, the literature demonstrates that AI is profoundly transforming accounting and auditing while raising ethical, regulatory, and organizational challenges. However, its effects vary according to context, technological maturity, and professional characteristics. It is therefore essential to understand the conditions and mechanisms through which AI genuinely influences accounting and auditing practices, considering technical, human, and regulatory dimensions. (see Table 2 for the summarized literature review).

3. Methodology

This literature review aims to examine existing studies on the role of artificial intelligence in the accounting and auditing fields. Table 1 presents the search criteria applied in Scopus to identify relevant publications related to the use of artificial intelligence (AI) and machine learning (ML) in accounting and auditing. The search strategy combines technical terms related to AI and ML (“machine learning”, “artificial intelligence”, “deep learning”, “neural network”, “A.I.”, “AI”)

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with discipline-specific terms ("Accounting", "Accountant", "Auditor", "Audit Reporting", "Management Reporting", "Accounting Information Systems"). The analyzed period spans from January 1, 2021, to September 15, 2025, and includes only English-language articles and reviews published in scientific journals in management, accounting, economics, finance, and information technology.

Table 1 Search criteria

Search Terms	AI/ML search terms: "machine learning" OR "artificial intelligence" OR "deep learning" OR "neural network" OR "A.I." OR "AI" Accounting search terms: "Accounting" OR "Accountant" OR "Auditor" OR "Audit Reporting" OR "Management Reporting" OR "Accounting Information Systems"
Date Range	01 Jan 2021- 15 Sep 2025
Publication Type	Articles and revue
Source Type	Journals
Language	English language only
Subjects	Business, Management and Accounting, Economics, Econometrics and Finance, Computer Science.

This search resulted in an initial dataset of 575 articles. Bibliometrix was then used to conduct the bibliometric analysis and generate the figures presented in this study. This approach ensures relevant and multidisciplinary coverage, in line with the recommendations of Abbas (2025), who highlights the need for diversified selection to avoid biases associated with restricting reviews to so-called "top journals" (Summers & Wood, 2017; Barrick et al., 2017).

Bibliometric Analysis

The annual evolution of scientific production, illustrated in Fig. 1, shows a continuous increase in the number of published articles, rising from approximately 63 publications in 2021 to nearly 247 in 2025. This trend reflects a growing interest in integrating AI and ML technologies into accounting and financial practices. Abbas (2025) suggests that recent publications on AI integration in the accounting sector date from the past five years, demonstrating sustained academic momentum, while Bhimani and Willcocks (2014), Vasarhelyi et al. (2015), and Quattrone (2016) emphasize that the rise of digital technologies profoundly transforms data collection, decision-making processes, and accounting practices.

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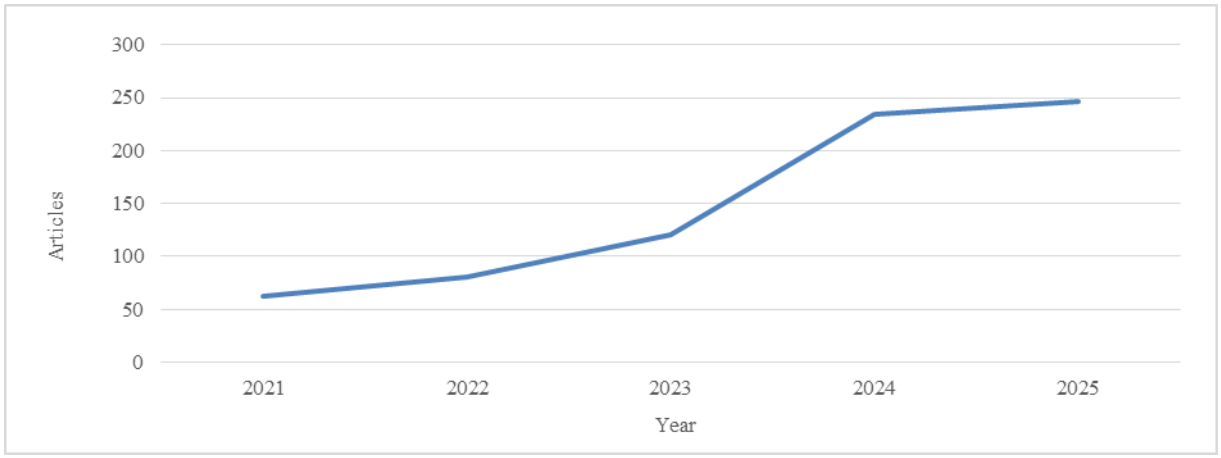

Fig.1 Annual Scientific Production

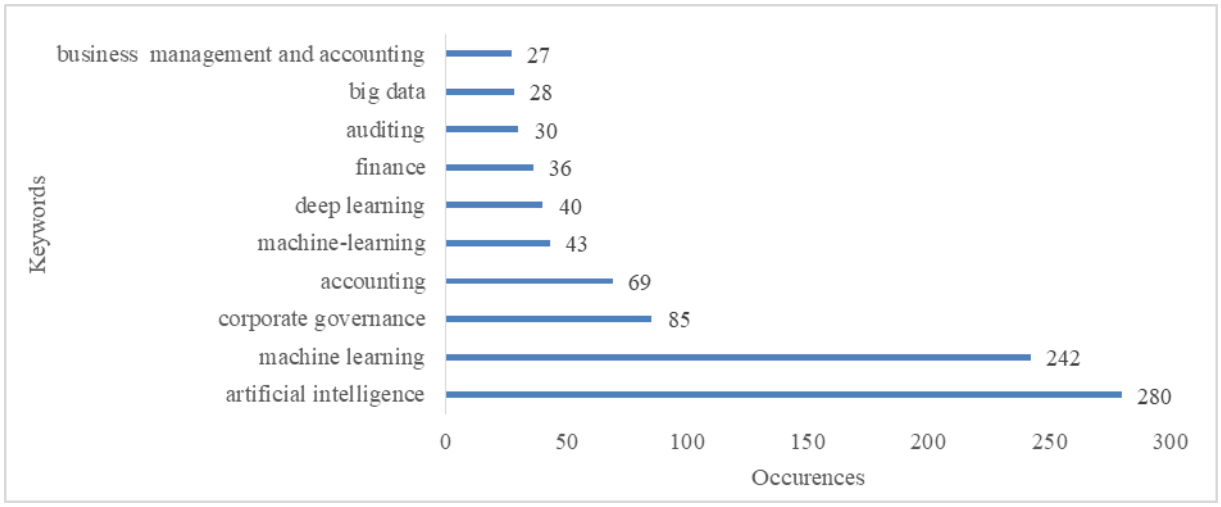

Fig.2 Most Relevant Words

The acceleration observed from 2023 indicates the emergence of more specialized and diversified research aimed at optimizing accounting practices through AI and ML. The analysis of keywords (Fig. 2, Fig. 3 and Fig. 4) reveals a strong emphasis in recent literature on advanced artificial intelligence and machine learning techniques applied to accounting and auditing. Technical concepts such as “artificial intelligence” (280 occurrences) and “machine learning” (242 occurrences) are particularly prominent, often situated within applications related to corporate governance and finance, as reflected by the occurrences of “corporate governance” (85) and “finance” (40). This distribution indicates that while recent research prioritizes advanced AI techniques, it also considers organizational and regulatory aspects. Less frequently explored topics, including user acceptance, socio-economic impact, and ethical concerns, represent promising avenues for future research.

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The presence of terms directly linked to audit and accounting highlights the disciplinary focus of the research. This thematic structuring aligns with the areas identified by Abbas (2025), who distinguishes four main domains: digitalization in management accounting, adoption of AI technologies, transformation of accounting and financial functions, and the new roles and skills expected of accounting professionals.

Fig.3 Word Cloud

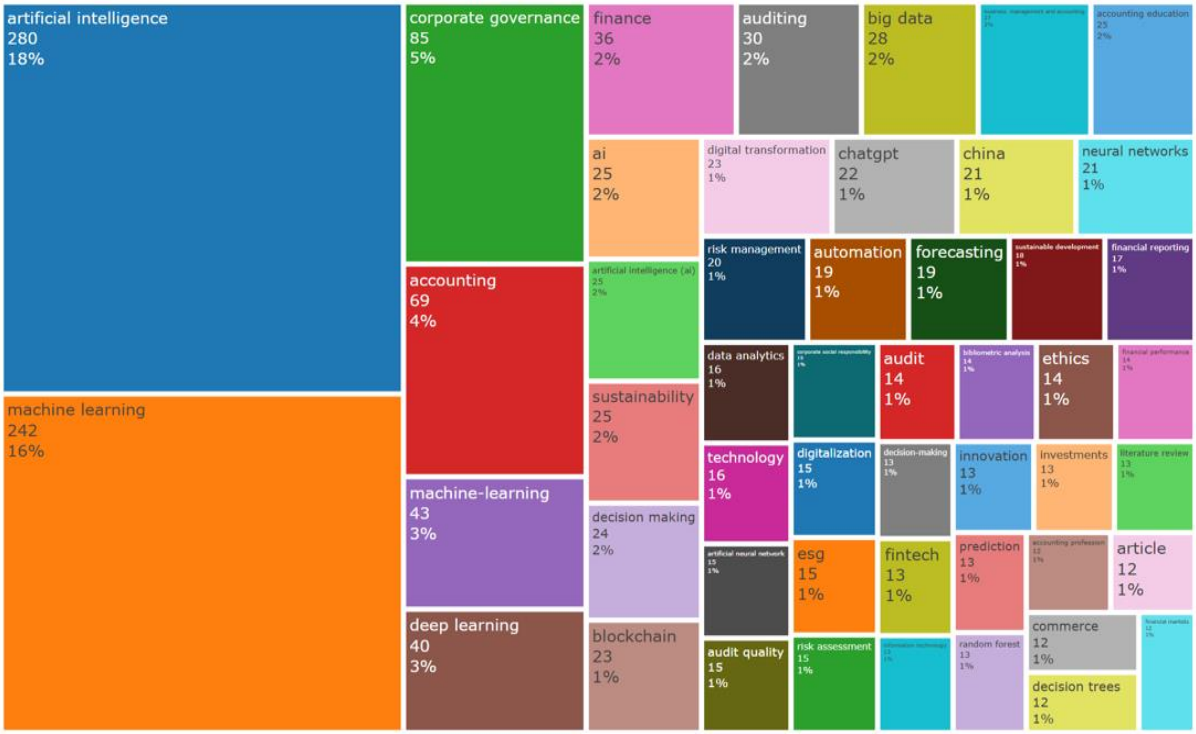

Fig.4 Tree Map

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These findings are also supported by Schneider et al. (2015), Arnaboldi et al. (2017), and Ratmono et al. (2023), who demonstrate the impact of technologies on the analysis and processing of accounting and decision-making data, enhancing the accuracy and speed of decision-making. Fig. 5 traces the temporal evolution of keywords from 2021 to 2025, highlighting an exponential growth of the terms "Artificial Intelligence" and "Machine Learning," confirming their central role in the current literature. The concepts of "Corporate Governance" and "Finance" maintain a stable presence, highlighting their continued importance. These findings corroborate the observations of Bhimani (2020) and Vasarhelyi et al. (2015), who indicate that digitalization and AI are gradually transforming management accounting practices by increasing the speed, variety, and scope of data utilized, while also influencing decision-making and strategic control. The thematic mapping (Fig. 6) illustrates the organization of the main clusters: "machine learning" (including "neural networks" and "decision trees"), "accounting" (with "auditing" and "education"), and "innovation," with "artificial intelligence" as the central node. This interconnection of themes demonstrates the interdisciplinary approach highlighted by Dai & Vasarhelyi (2023) and Shchyrba et al. (2024), showing that AI acts as a transversal catalyst linking technology and accounting practices, while redefining the roles and skills of professionals. In summary, the overall bibliometric analysis underscores the convergence of the literature toward the study of AI and ML in the accounting domain, emphasizing both the opportunities offered by digitalization and the automation of decision-making processes, as well as the challenges related to their integration.

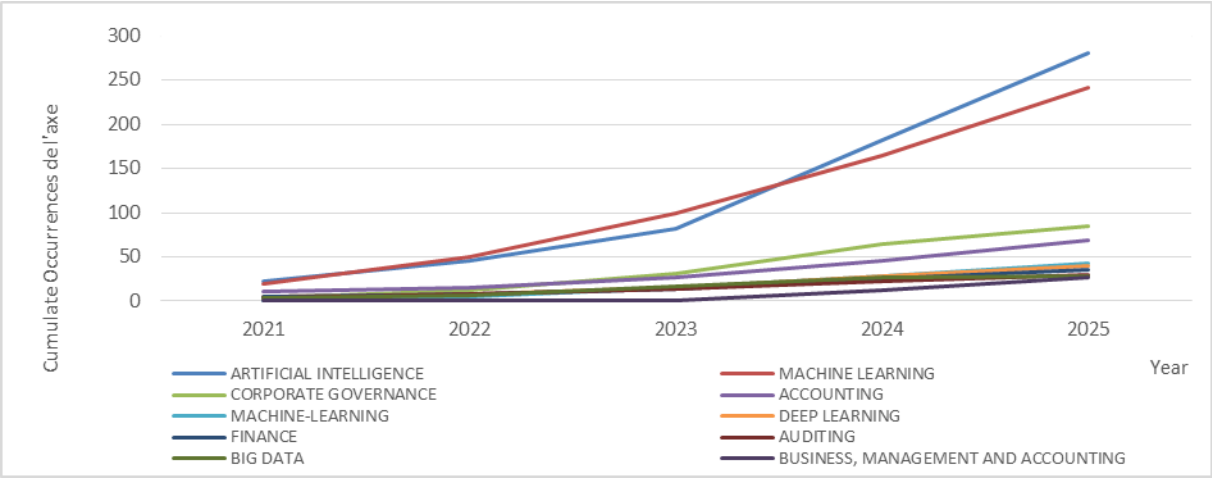

Fig.5 Word's Frequency Over Time

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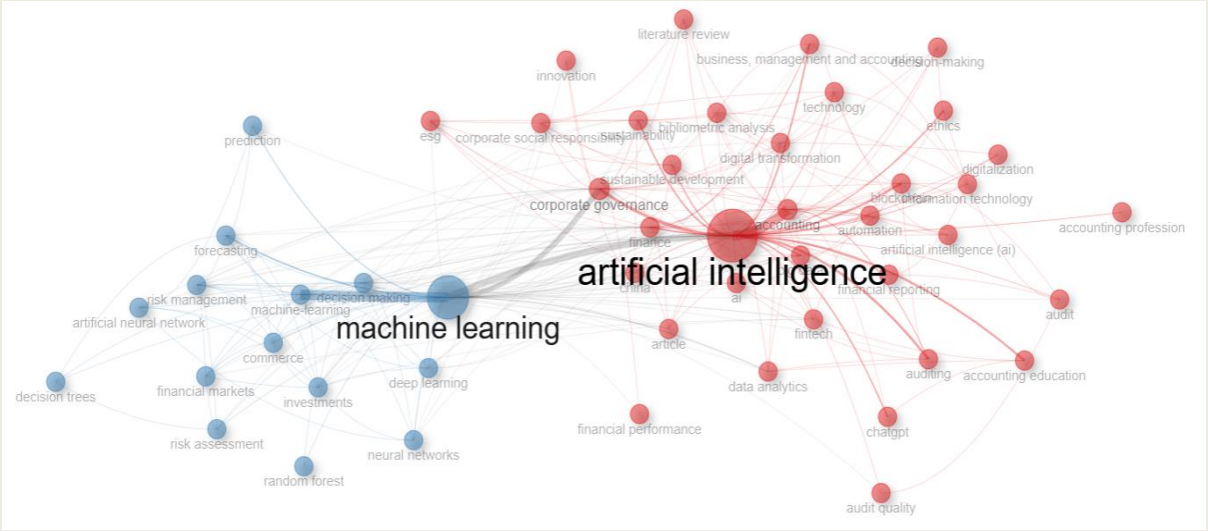

Fig.6 Coword Net

These findings are further supported by Saleem et al. (2023), confirming the relevance and growing maturity of this research area while highlighting the need for additional empirical studies to fully assess the impact of emerging technologies on accounting practice and the profession.

4. Conclusion

This systematic review provides a structured overview of recent research (2021–2025) on the integration of artificial intelligence (AI) into accounting and auditing practices, highlighting both technical advancements and organizational and ethical implications. The analysis shows that supervised models, such as logistic regression, decision trees, and neural networks, are effective tools for enhancing audit accuracy, fraud detection, and the prediction of financial risks. At the same time, the automation of repetitive tasks through robotic process automation (RPA) increases productivity and frees professionals from certain operational burdens, enabling a reallocation of efforts toward higher-value activities. The study also emphasizes that AI performance is not limited to technical and algorithmic outcomes. User acceptance of technology, organizational readiness, and professional training emerge as critical factors for effective adoption. Ethical and regulatory challenges, including model transparency, legal accountability, and data protection, represent major issues that must be addressed to ensure the legitimacy and sustainability of AI in the profession. The findings highlight a delicate balance between technological innovation and institutional oversight, which conditions the successful integration of these tools. Furthermore, this review underscores the importance of interdisciplinarity and technological complementarity. The interaction between AI, blockchain, cloud computing, and smart contracts illustrates that the future of accounting and auditing relies on interconnected digital ecosystems capable of enhancing transparency, traceability, and reliability of financial information.

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Table 2 Bibliographic Summary

Authors	Tested Models	Applications	Key Findings /
Wang & Yan (2025)	Logistic regression, RF, GBDT, RUSBoost	Detection of audit opinion shopping	Audit object is the most predictive factor
Adamek & Solarz (2025)	TAM, TRI, TRAM	Technology adoption	Personality traits and cognitive perceptions influence AI adoption
Fuentes et al. (2025)	Decision trees, RF, SVM	Financial and accounting processes	AI significantly improves accuracy
Secinaro et al. (2025)	Blockchain, smart contracts, AI	Fintech	Enhances accountability and transparency
Ismail & Krishnamaw (2025)	TAM, ML	AI adoption	Professional relevance influences usage intention
Bui et al. (2025)	UTAUT, AL	AI adoption	Multifactorial adoption influenced by perceived usefulness and social influence
Ao et al. (2025)	Cognitive computing, LLMs	Analysis and predictions	AI improves efficiency and accuracy but poses ethical challenges
Alassuli (2025)	RPA	Financial management, audit	RPA improves audit efficiency and transforms auditor roles
Morshed & Khrais (2025)	PLS-SEM	Accounting systems adoption	Cybersecurity and ethical framework influence adoption
Kokina et al. (2025)	RPA, Explainable AI (XAI)	Automation of repetitive tasks, anomaly detection	Efficiency gains, transparency, fraud detection
Jejeniwa et al. (2024)	Machine Learning	Strategic accounting, cost analysis	Transformation of accounting tasks toward analysis and decision-making
Lee et al. (2024)	ML and predictive tools	Budget monitoring, inventory management	Reliable forecasts, resource optimization
Ballantine et al. (2024)	AI-based training platforms	Professional skills development	Preparation for complex and ethical tasks
Tiron-Tudor et al. (2024)	Throughput Model	Accounting digitalization	Identification of socio-ethical challenges
Ranta et al. (2023)	ML, deep learning, LDA	Text analysis	ML offers opportunities in text analysis and prediction improvement
Han et al. (2023)	Blockchain, AI, smart contracts	Accounting processes	AI and blockchain enhance transparency and efficiency

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Singh & Adhikari (2023)	Supervised and unsupervised AI	Credit evaluation, anomaly detection	Error reduction, fraud detection
Mishra et al. (2022)	Text analysis, AI focus	Document analysis	AI improves operational efficiency despite negative impact on gross efficiency
Noordin et al. (2022)	TAM, AI	AI adoption	AI perceived as beneficial, improves efficiency and fraud detection
Lehner et al. (2022)	AI, ML, cognitive auditing	Audit and decision-making	Ethical challenges related to AI must be addressed for responsible decision-making
Albawwat & Frijat (2021)	Assisted, augmented, autonomous AI	Audit	Assisted and augmented AI perceived as useful, but capabilities underestimated
Losbichler & Lehner (2021)	RPA, FAAS	Accounting	Transformation of accounting roles, adaptation of required skills
Al-Sayyed et al. (2021)	Expert systems, neural networks	Audit	Expert systems improve audit evidence efficiency, neural networks less effective
Leitner-Hanetseder et al. (2021)	AI, ML	Accounting, audit, predictive analysis	Automation of routine tasks, transformation of roles

This combined technological dynamic confirms that AI acts as a catalyst for broader structural transformation by redefining roles, competencies and governance models within the accounting and auditing profession. To support practical implementation, this review proposes a conceptual synthesis model that illustrates the interaction between technological capabilities, organizational factors and ethical and regulatory requirements. The model underscores the need for balanced governance to ensure responsible and sustainable adoption of AI tools.

Limitations and Future Research

The review presents several limitations, particularly those related to the selection of databases, the choice of keywords and the specific time frame considered. These constraints may have resulted in the omission of relevant studies falling outside the predefined search parameters. Building on these limitations, several directions for future research emerge. Further investigation into unsupervised and generative AI models is needed, as these methods remain underexplored despite their growing relevance for detecting anomalies, managing unstructured data and supporting autonomous decision-making. Future studies should also evaluate the broader socio-economic implications of AI adoption at the macro level, including its impact on labor dynamics, regulatory environments and financial system stability. Finally, the development of comprehensive ethical and regulatory frameworks appears essential to guide the next generation

of intelligent auditing and accounting systems and to ensure their responsible, transparent and sustainable deployment.

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