

# Transforming Accounting Through Artificial Intelligence: A Systematic Literature Review of Opportunities, Challenges, and Ethical Imperatives

Nur Aliah, Mutia Riska Faridani

## Abstract

This study conducts a systematic literature review to investigate the transformation of the accounting profession through Artificial Intelligence (AI), emphasizing opportunities, challenges and ethical imperatives. Drawing from 20 Scopus-indexed articles published between 2020 and 2025, the research categorizes insights into four thematic domains : AI in accounting education, AI and professional ethics, AI and regulatory standards, and AI in predictive decision-making. The findings reveal that AI has the potential to automate routine accounting tasks, enhance financial analysis accuracy, and support real-time reporting and auditing. Furthermore, AI is reshaping accounting education through intelligent learning platform and adaptive pedagogical systems. However, the study identifies key challenges, including algorithmic bias, lack of transparency, limited human oversight, and ethical dilemmas surrounding data privacy and accountability. Despite AI's technical capabilities, moral judgment and professional responsibility remain irreplaceable human attributes in the accounting domain. The paper emphasizes the need for robust ethical frameworks, interdisciplinary governance models, and curriculum reforms to align AI integration with the principles of fairness, integrity , and social responsibility. Future research directions are proposed to address gaps in AI explainability, legal accountability , and implementation models tailored for small and medium enterprises (SMEs). This review contributes to a nuanced understanding of AI's transformative impact on accounting and advocates for a balanced approach that integrates technological advancement with ethical and human-centered considerations.

**Keywords:** Artificial Intelligence (AI), accounting Tranformation, Ethical Challenges, Accounting Education, AI Governance, Predictive Analytics, Systematic Literature Review.

Nur Aliah

Faculty of Social Sciences , Universitas Pembangunan Panca Budi  
e-mail: [nur.aliah@dosen.pancabudi.ac.id](mailto:nur.aliah@dosen.pancabudi.ac.id)

Mutia Riska Faridani

Faculty of Social Sciences and Humanities, Universitas IBBI  
e-mail: [mutiariska@students.usu.ac.id](mailto:mutiariska@students.usu.ac.id).

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## Introduction

Artificial Intelligence (AI) has advanced significantly in recent years. The journey of AI has been a long one. It began in the 4th century BC when a Greek philosopher named Aristotle developed a logical reasoning system using formulas, known as syllogistic logic. This was considered the first formal system of deductive reasoning. Later, in the 19th century, Charles Babbage and Ada Byron designed the Analytical Engine, a programmable mechanical calculating machine.

In 1854, George Boole developed binary algebra to represent the laws of thought. Between 1948 and 1949, a neurobiologist named William Grey Walter created the first robot called *Machina Speculatrix*. This robot demonstrated basic forms of reasoning and autonomy. These developments paved the way for the formal recognition of Artificial Intelligence as a scientific discipline during the Dartmouth Conference in 1956.

After World War II, the evolution of modern computers became the main driver of AI advancement. AI technologies began to expand into various applications across numerous fields, including agriculture, healthcare, transportation, maritime navigation, marketing, commerce, military operations, manufacturing, and education. The development of AI has continued into the era of Industry 5.0, with global efforts aimed at achieving the democratization of AI technology worldwide. Perkembangan AI dibidang akuntansi memiliki peningkatan yang signifikan sebagai teknologi transformatif yang berpotensi besar untuk mengubah profesi akuntansi. Penerapan AI dalam akuntansi dan audit dimulai sejak tahun 1980an dengan fokus awal pada *decision support systems* dan *expert systems*, seiring waktu, teknologi ini berkembang melalui integrasi *neural networks*, *fuzzy logic*, *genetic algorithms* dan *hybrid systems*. Transformasi besar terjadi dengan kemunculan *deep learning* dan *Natural Language Processing* (NLP) yang memungkinkan analisis kompleks terhadap data tekstual dan numerik dalam audit (Zemankova, 2019)

Artificial Intelligence (AI) can assist accounting professionals by automating business processes, analyzing large volumes of data, enhancing decision-making, and detecting anomalies and risk assessments. The development of AI in accounting continues to progress alongside advancements in computer technology and the increasing availability of data. AI is a technology that enhances economic productivity and has transformed various sectors, including accounting.

AI is defined as a new human superpower that improves efficiency and accuracy in data processing (Bui et al., 2025). As part of the big data revolution, AI has rapidly evolved and brought significant changes across multiple fields, including accounting education (Cai, 2022). AI is a system capable of learning from data, adapting flexibly, and making decisions based on analysis (Fachrurrozie et al., 2025). This aligns with Hu (2022), who argues that the advancement of AI in accounting education must be accompanied by curriculum transformation, system security, regulation, and human resource training.

AI is shifting the traditional role of accountants from mere record keepers to information managers and strategic analysts (Cai, 2022). The advancement of information technology, particularly AI, has facilitated rapid access to information; however, it also poses risks that may lead to violations of academic integrity, such as plagiarism (Atmini et al., 2024).

Although AI enhances efficiency and accuracy, its implementation raises a variety of complex ethical challenges. These include issues of data privacy, algorithmic bias, lack of

transparency in AI-based decision-making, and limited accountability in systems that rely heavily on machine logic. Therefore, it is crucial to establish an ethical framework for AI implementation that incorporates the principles of transparency, fairness, data security, and professional responsibility (Schweitzer, 2024).

The use of AI has re-examined the fundamental principles of professional ethics among accountants, particularly in terms of objectivity, professional competence, and due care. Studies have shown that technology cannot replace the moral responsibility of accountants, highlighting the need for continuous improvement of professional competence and ethical awareness in the digital era (Barišić, 2022). AI is still unable to fully embody essential moral components such as ethical awareness, moral judgment, moral values, and moral character. Therefore, AI cannot serve as an independent ethical decision-maker; rather, it should function as a supportive tool that remains under human supervision (Lehner et al., 2022). While AI is expected to take over most routine tasks, it will simultaneously create new roles for accountants, particularly in controlling, interpreting, and communicating the outcomes produced by AI-based systems (Leitner-Hanetseder et al., 2021).

Despite offering vast opportunities for innovation and efficiency, AI also presents ethical challenges that cannot be overlooked. Accountants continue to play a central role in upholding integrity, objectivity, and social responsibility, even as they work alongside intelligent technologies. Hence, a robust governance and policy framework is required to ensure that AI is utilized in an ethical, transparent, and accountable manner within the accounting profession in the future. AI mampu mengotomatisasi tugas-tugas akuntansi yang repetitive dan terstruktur seperti pencatatan transaksi dan pembuatan laporan keuangan. Sistem berbasis AI diprediksi akan dapat membantu sekitar 30 % dari audit Perusahaan pada tahun 2025 (Bui et al., 2025). Profesi akuntansi tradisional mulai tergeser oleh kebutuhan akan talenta yang mampu mengelola teknologi informasi, termasuk AI. AI berperan dalam mengubah metode pembelajaran, mengoptimalkan system pembelajaran online dan mengintegrasikan kecerdasan mesin dalam pelatihan calon akuntan (Cai, 2022). Kemajuan AI berimplikasi pada peningkatan risiko kecurangan akademi dibidang Pendidikan akuntansi, AI dianggap memperluas peluang bagi mahasiswa untuk melakukan plagiarisme melalui kemudahan dalam menentukan, mengedit dan menyajikan informasi (Atmini et al., 2024). AI tidak cukup hanya diadopsi dari sisi teknologi, tetapi perlu dibingkai dalam tanggung jawab etis dan hukum untuk menjamin hasil yang andal, aman dan sah terutama dalam konteks pelacakan kejahatan digital dan audit forensic (Quang Huy & Kien Phuc, 2025)

In practice, AI—along with other technologies such as data mining and blockchain—has become an essential instrument in forensic accounting for detecting and preventing financial misconduct. AI is utilized to identify potential threats, criminal patterns, and emerging forms of cybercrime (Quang Huy & Kien Phuc, 2025). Meanwhile, major firms such as Ernst & Young, Deloitte, PwC, and KPMG have adopted data analytics, automation, and AI to enhance the efficiency and effectiveness of their audit processes.

The integration of AI presents both opportunities and challenges for auditors, who are required to possess strong technical skills, adaptability, and a commitment to continuous learning (Leocádio et al., 2024). Furthermore, AI can facilitate the digitalization of accounting systems among small and medium-sized enterprises (SMEs) through the combination of AI and cloud computing technologies (Zhao et al., 2022).

## LITERATURE REVIEW

### 2.1 Artificial Intelligence in Accounting Education

A study by Bui (2025) highlights the relationship between AI and accounting education, which is manifested through the adoption of AI technologies by accounting students. The research indicates that AI literacy, perceived usefulness, ease of use, social influence, technological readiness, and institutional support are critical determinants of AI utilization. This finding suggests that accounting education needs to adjust its curriculum to prepare students for the digitalization of the profession, particularly through training and the integration of AI into teaching and learning processes.

Similarly, Cai (2022) emphasizes the need for accounting education reform in higher education institutions in line with the growing influence of AI. AI is positioned as a key driver in developing intelligent learning models and AI-based accounting training platforms. The relationship between AI and accounting education is transformational, shifting traditional learning approaches toward automated, data-driven, and multidisciplinary learning systems that foster graduates who are adaptive to technological advancements.

Furthermore, Hu (2022) discusses the application of neural networks and algorithms based on partial differential equations (PDEs) in developing collaborative AI–accounting training systems. The study underscores the importance of interdisciplinary collaboration among mathematics, AI, and accounting in creating accurate and efficient training methods. In vocational education, accounting programs are positioned to adopt AI not only as a supportive tool but also as a practical and evaluative learning framework that enhances the sophistication of training and assessment.

Fachrurrozie (2025) examined the relationship between AI and accounting education through the use of AI-based tools such as ChatGPT and Canva in accounting instruction by Indonesian lecturers and teachers. The study identified that both the intention and actual behavior of AI usage in learning are influenced by IT competence and performance expectations. Accounting education, therefore, is required not only to teach substantive content but also to develop the pedagogical and technological capabilities of educators so that they can utilize AI ethically and effectively.

Meanwhile, Atmini (2024) explored the connection between AI and accounting education from the perspective of ethics and academic integrity, particularly concerning plagiarism. The study found that a higher level of understanding of AI may, paradoxically, strengthen students' rationalization for committing plagiarism. This finding serves as a warning that accounting education must incorporate ethical literacy in the use of AI, ensuring that students are not only proficient in using technology but also possess moral awareness of its academic and professional implications.

The transformation of accounting through AI is not merely a matter of technological adoption but requires a comprehensive restructuring of accounting education—ranging from the development of AI-based curricula and digital competency training to the reinforcement of strong professional ethics. Education thus serves as the foundation for creating future accountants who can harness AI strategically, responsibly, and ethically to address the challenges of a disruptive business environment.

## 2.2 Artificial Intelligence in Accounting Ethics

Schweitzer (2024) emphasizes that the implementation of AI in accounting must take into account ethical principles such as transparency, accountability, fairness, and privacy. While AI can enhance the efficiency of accountants' work, it also introduces potential risks, including biased decision-making, data privacy violations, and a lack of transparency in decision processes. Accountants are therefore expected to possess adequate ethical competence to understand and manage these risks.

According to Leitner (2021), AI will significantly transform the roles and responsibilities of accountants. Routine tasks will increasingly be replaced by technology, while accountants will focus more on ethically informed decision-making and strategic analysis. Consequently, ethical competence becomes increasingly essential, as accountants remain the moral agents responsible for decisions generated by AI-based systems.

Savu (2023) argues that the transformation brought by AI in accounting is not merely about achieving efficiency but also about establishing new ethical standards. The accountant's role is shifting from an executor to a supervisor of AI systems—responsible for ensuring that AI is applied with transparency, fairness, and accountability. Without a strong ethical framework, the benefits of technology may turn into risks for organizations and society.

Lehner et al. (2022), using Rest's Four-Component Model, examined how ethical decision-making occurs within the context of human–AI collaboration. They identified five key ethical challenges in AI-based decision-making in accounting: objectivity, privacy, transparency, accountability, and trust. Since AI lacks moral capacity, ethical responsibility ultimately remains with humans. Similarly, Barišić (2023) asserts that fundamental principles of professional ethics—such as objectivity and professional competence—need to be re-evaluated in the context of digitalization and AI adoption. Accountants must acquire new technological and ethical skills to remain relevant and uphold the principle of due care amid rapid digital transformation.

Furthermore, Pham (2025) found that legal and ethical considerations (LEC) significantly enhance the effectiveness of forensic accounting when using AI, with AI competence (AIC) acting as a key mediating factor. This finding clarifies that the application of AI in accounting should not solely focus on efficiency but must also align with prevailing ethical and legal standards.

AI offers tremendous opportunities to improve the productivity of the accounting profession; however, it also demands the strengthening of ethical capacity and moral responsibility among accountants. Therefore, the integration of AI into accounting practice must be accompanied by the establishment of robust ethical policies, digital ethics training, and clear human accountability in every AI-supported decision-making process.

## 2.3 Artificial Intelligence in Accounting Regulation

Mgammal (2024) demonstrates that AI acts as a catalyst in simplifying accounting procedures, enhancing reporting efficiency, and supporting data-driven decision-making. The study reveals that accountants' awareness and engagement with AI significantly improve the efficiency of accounting processes. The integration of AI encourages accountants to consider compliance with international standards, continuous auditing, and data transparency. Thus, AI not only promotes efficiency but also strengthens accountability in financial reporting.

Melnychenko (2020) provides a critical perspective on the use of AI to assess a company's financial security. While AI possesses the capability to process vast amounts of data and perform pattern-based predictions, it also raises concerns about the limitations of algorithms in detecting non-quantitative market signals and the need to adjust auditing standards to accommodate the interpretive nature of AI's predictive analytics, which are not always transparent.

Furthermore, the concept of financial reporting is shifting from a static to a real-time approach, challenging traditional accounting standards regarding periodicity, documentation, and the reliability of audit evidence (Zhao, 2022). This transformation suggests that regulatory frameworks in accounting must evolve to address the implications of AI-driven automation and predictive reporting mechanisms.

## **2.4 Artificial Intelligence and the Future of Accounting Prediction**

Ajayi (2024) identifies AI as a key pillar of future accounting due to its capacity for big data analysis and predictive modeling. Through machine learning algorithms, AI can analyze historical financial data and forecast future trends such as cash flow projections, client default risks, and budgetary needs. As a result, the accountant's role is expected to transform from a traditional record keeper into a strategic advisor who provides data-driven recommendations rather than merely documenting transactions.

Puaschunder (2020) conceptualizes AI as a new economic force capable of transforming the paradigm of growth theory. AI has the potential to shift the source of economic growth from human labor to digital agents with virtually unlimited productive capacity. Consequently, traditional accounting approaches are considered inadequate, and the integration of AI components into future accounting and economic theories becomes essential.

Although AI lacks human-like consciousness or moral reasoning, it is capable of achieving predictive outcomes that are equal to or superior to human analysis in specific contexts, particularly in data-driven decision-making. The concept of equifinality—that a desired outcome can be achieved through multiple different processes—highlights the potential of AI to generate useful results for predictive auditing, fraud detection, and decision simulation. This underlines that the future of accounting will not be defined by AI replacing humans, but by humans leveraging AI-generated insights to enhance strategic and predictive functions within the profession.

## **RESEARCH METHODOLOGY**

This study employs a systematic literature review (SLR) approach to evaluate and synthesize findings from previous studies that discuss issues related to the application of Artificial Intelligence (AI) in the context of accounting transformation. The focus of this review is directed toward three main dimensions: Opportunities, Challenges, and Ethical Imperatives.

The analyzed literature is categorized into four thematic perspectives: (1) the role of AI in accounting education, (2) the integration of AI in accounting professional ethics, (3) the implications of AI for accounting rules and standards, and (4) the contribution of AI to predictive and decision-making processes in the future.

A total of 20 peer-reviewed articles indexed in Scopus and published between 2020 and 2025 were analyzed. The articles were selected based on specific inclusion criteria: the main

topic must focus on Artificial Intelligence (AI) and Accounting, with clear relevance to one or more of the four thematic perspectives mentioned above. Only empirical research articles—including case studies based on data analysis or interviews—were included, while literature review papers were excluded from the selection.

### 3.1 Data Analysis

Through a literature review approach, data analysis in this study was conducted by thoroughly examining 20 scientific articles that discuss Artificial Intelligence (AI) and its relationship with accounting. The selected articles were analyzed in depth across four key perspectives: (1) the role of AI in accounting education, (2) the integration of AI in accounting professional ethics, (3) the implications of AI for accounting rules and standards, and (4) the contribution of AI to predictive decision-making in the future.

Following the thematic analysis based on these perspectives, the findings were further reviewed and synthesized within the three overarching dimensions of Opportunities, Challenges, and Ethical Imperatives. The complete metadata of all reviewed articles is presented in the following table.

**Tabel 1. Data Analysis – Metadata of Reviewed Articles**

No.	Title	Studies	Main Focus Of studies
1.	Training Mode Of Innovative Accounting Talents in Colleges Using Artificial Intelligence (Can cai )	Conceptual + experimental study	Transformation of AI-based accounting learning models in higher education
2.	AI adoption ; a new perspective from accounting students in Vietnam (quang bui )	Empirical (quantitative, SEM-PLS)	Factors influencing AI adoption by accounting students in Vietnam
3.	Exploring the use of Artificial Intelligence in Indonesian accounting classes (fachrurrozie )	Empirical (descriptive quantitative and SEM)	Factors influencing the intention and actual use of AI in accounting learning by teachers and lecturers
4.	plagiarism among accounting and business postgraduate students : a fraud diamond framework moderated by understanding of Artificial Intelligence ( sari atmini )	Empirical (quantitative, moderated regression)	Plagiarism among accounting graduate students as reviewed by Fraud Diamond and AI moderation
5.	partial differential Equation-Assisted accounting professional education and training	Conceptual + experimental study	Development of a collaborative accounting training system based on AI and partial differential equations

	Artificial Intelligence collaborative course system construction ( jingnan hu )		
6.	a profession in transition : Actors, task and roles in AI-based accounting ( Susanne leitner )	Delphi Study & Workshop	Analyzing the changing role of accountants in the AI-based digital era.
7.	Artificial Intelligence (AI) Ethics in Accounting (Schweitzer)	Descriptive	Examining the ethical benefits and risks of applying AI to accounting practice.
8.	The contribution of Artificial Intelligence to future accounting (savu andreea )	Descriptive	Assessing the contribution of AI to the efficiency and accuracy of future accounting systems.
9.	Ethical principles and the implementation of Artificial Intelligence in accounting and auditing practice (ivana barisic)	Descriptive	Highlighting the ethical challenges of accounting professionals related to the use of AI technology.
10.	Artificial Intelligence based decision-making in accounting and auditing : ethical challenges and normative thinking ( lehner )	Narrative	Identifying ethical challenges of using AI in accounting decision making.
11.	insight into how legal and ethical considerations of Artificial Intelligence enhance the effectiveness of cyber forensic accounting (pham quang huy )	Quantitative (SEM-PLS)	Examining the relationship between legal, ethical, and effectiveness aspects of AI-based forensic accounting in the SME sector.
12.	Artificial Intelligence legal personality, and accountabilities and challenges for instrument boundary (staszkievicz)	Qualitative study (interview)	Developing a legal framework for AI personality and responsibilities in accounting and auditing based on interviews with auditors



13.	Is Artificial Intelligence improving the audit process ? ( Fedyk )	quantitative and qualitative (interview)	analyzing the impact of AI on audit quality, cost efficiency and changes in the auditor workforce structure
14.	The future of accounting : predictions on automation and AI integration (adeola olusola)	Predictive	Predicting accounting transformation through automation and AI.
15.	digital accounting trends of future a behaviorak analysis ( puaschunder)	Conceptual and Exploratory	Presenting future trends in digital accounting, including AI, blockchain, and big data.
16.	some prognostications : Artificial Intelligence and accounting (weber)	Reflective & Philosophical	Examining the limitations of AI in imitating human intelligence and its implications for accounting.
17.	design of accounting earnings forecasting model based on Artificial Intelligence (jia liu)	conceptual, experimental study based on AI model	development of an AI-based accounting profit prediction model to improve the accuracy and relevance of financial information in decision making
18.	the influence of Artificial Intelligence as a tool for future economies on accounting procedures : empirical evidence from Saudi Arabia (mgammal)	Empirical (Quantitative, PLS-SEM)	Analyzing the impact of accountants' engagement with AI on accounting efficiency in Saudi Arabia.
19.	is Artificial Intelligence ready to assess an enterprise's financial security ? ( oleksandr melnychenko)	Theoretical & Critical	Criticizing AI's ability to evaluate a company's financial security.
20.	informatization of accounting system in small-and-medium-sized enterprises based on Artificial Intelligence-enabled cloud computing (jingjie zhao)	Applied & Technological	Examining the application of AI and cloud computing in SME accounting systems in China.

From Table 1, the articles are grouped into focused perspectives. The article by Can Cai, Quang Bui, Fachrurrozie, Sari Atmini, and Jingnan Hu discusses Artificial Intelligence (AI) in the dimension of accounting learning. This research has focused on how AI can develop in

accounting education. The article by Susanne Leitner, Schweitzer, Andreea Savu, Ivana Barisic, Lehner, and Pham Quang Huy focuses more on the dimension of AI's role in accounting professional ethics. Then, the article by Adeola Olusola, Pusachunder, and Weber discusses AI in the dimension of future accounting predictions. And the final dimension can be seen in the article by Jia Liu, Mganmal, Melnychenko, and Jingjie Zhao, which discusses AI in accounting regulations.

AI is considered capable of accelerating data processing, making financial analysis more accurate and increasing the efficiency of accounting work so that AI users believe that AI will improve their performance in accounting studies, then AI can be accessed without the need for high technical skills so that it can be widely adopted and AI literacy influences how comfortable students are using AI in academic activities. The influence of friends, lecturers or the social environment makes students feel encouraged to use AI. The availability of technical support, infrastructure and training for the use of AI on campus. The mental readiness of students in accepting new technological changes including AI (Bui et al., 2025) .

AI is bringing about a major transformation in teaching methods. Lecturers and universities must adapt from traditional methods to intelligent classrooms that utilize AI. AI functions to optimize the learning process, save time, and increase the efficiency of student assignment completion, such as using AI-based scheduling algorithms. The curriculum needs to incorporate AI and big data competencies so that future accountants master not only basic accounting but also modern digital technologies. The development of an AI-based online learning platform allows students to learn flexibly and independently (Cai, 2022) .

An accounting learning system that combines AI and Partial Differential Equations (PDE) is able to increase the efficiency and effectiveness of education, automate technical accounting work and provide adaptive and contextual learning, but regulations, increased technological literacy and information risk management are still needed for optimal implementation (Hu, 2022) .

The greater the belief that AI improves performance, the higher the use, the higher the ability of information technology, the more frequently AI is used, effort expectancy, social influence, facilitating conditions, IT experience are not proven to directly influence the intention to use AI in accounting learning. (Fachrurrozie et al., 2025) the ethics of using AI are important to maintain academic integrity, students' addiction to AI is feared to reduce critical thinking skills, limitations of devices and infrastructure such as the internet and hardware, the need for training and improving educator competencies, the rapid development of AI makes it difficult to always kebutuhan pelatihan dan peningkatan kompetensi pendidik, cepatnya perkembangan AI sulit keep up with the latest technology. AI needs to be designed so that it supports active student involvement, not just makes students passive.

Students who understand AI better are more likely to plagiarize due to easy access to information and content, and AI facilitates the instant creation of original texts. AI is not only a tool, but also a potential threat to academic integrity that can go unchecked. Higher education must adapt its policies and ethical approaches to respond to the development of AI. Instilling academic integrity and controlling academic pressure are important solutions (Atmini et al., 2024) .

The use of AI can improve efficiency, accuracy, and transparency in financial reporting , but it poses significant challenges, such as ethical issues, privacy, and the openness of

algorithms. AI is considered a tool, not a complete replacement for accountants, and it is important to balance the roles of humans with technology (Schweitze, 2024).

AI is predicted to enhance collaboration between humans and machines, creating a more flexible and interdisciplinary accounting team structure. The main challenge lies in the readiness of human resources to face these changes, particularly regarding trust in technology and the necessary digital skills (Leitner-Hanetseder et al., 2021). AI can automate routine tasks, reduce human error, and free up accountants' time to focus on strategic analysis and other value-added activities. The application of machine learning in accounting can effectively detect fraud, increase trust, and accelerate the audit process on an ongoing basis (Savu, n.d.). There are ethical implications of the application of AI in accounting practice, which emphasizes ethical principles such as objectivity, competence, professionalism, and the responsibility of accountants. Although AI helps improve work efficiency, the responsibility for ethical decisions remains with humans (Barišić, 2022). In the research (Hasan, 2022) which is a literature study discussing the development of AI in the field of accounting and auditing, from the results of the literature study AI accelerates the financial reporting process and reduces human error, as well as opening up new potential in real-time data-based audits, however, in this study it is felt that there is further research to overcome ethical challenges, data security and trust in AI results in audits. There are five main ethical challenges of AI-based decision making in the field of accounting, namely objectivity, privacy, transparency, accountability and trust, AI is not yet able to carry out the ethical decision-making process completely without human involvement. AI is able to automate various accounting tasks such as data entry, reconciliation and invoice processes thereby increasing work efficiency and reducing the time required for routine work. This is in accordance with research conducted by (Schweitze, 2024), then (Leitner-Hanetseder et al., 2021) added that digitalization will change the way of working in accounting organizations as a whole, enabling new forms of collaboration between humans and intelligent systems, meanwhile (Savu, nd) shows that automation with Ai especially through continuous reporting and automatic classification of documents can greatly reduce the administrative burden on accountants and increase work speed. AI increases accuracy by reducing errors in reporting and enabling faster anomaly detection (Schweitze, 2024), (Savu, nd) emphasizes these benefits by explaining how AI and machine learning can detect potential fraud in real time and automatically, while minimizing errors caused by human error. (Lehner et al., 2022) acknowledge that AI is capable of processing complex data quickly but also emphasize the risks if this process is not ethically and transparently supervised. The issue of transparency is a key focus in research conducted by (Schweitze, 2024), as AI is often perceived as a black box whose working logic cannot be easily explained. AI systems must be explainable so that accountants can be held accountable for their decisions (Barišić, 2022), a problem categorized as one of the main ethical challenges. The inability to explain how AI makes decisions can obscure accountability and undermine trust (Lehner et al., 2022).

Privacy is a crucial issue because AI relies on sensitive personal and financial data. This makes it crucial for the use of AI in accounting to adhere to strict privacy standards. (Schweitze, 2024). Accountants' professional responsibility in maintaining privacy amidst digitalization (Barišić, 2022). Privacy issues are also a global ethical challenge, especially in terms of collecting and using data without explicit consent (Lehner et al., 2022). AI can improve accountants' ability to detect and analyze fraud and data misuse, especially in the context of

cyber forensic accounting. The use of AI cannot be separated from the legal and ethical context. Without privacy protection, system transparency, and accountability, the use of AI can pose serious legal and ethical risks in accounting practice (Quang Huy & Kien Phuc, 2025) . In research (Staszkievicz et al., 2024) analyzed the role and legal limitations of AI in human-based services such as audits. Auditors see challenges in implementing AI related to legal responsibilities and ethical decision-making. This study suggests the creation of a sui generis AI personality to address the dilemma of shared accountability between humans and AI systems. However, AI is widely used in fraud detection and risk assessment, and efficiency increases with the automation of low-risk tasks (Fedyk et al., 2022) . Although AI brings significant benefits, there is an urgent need for an ethical framework in its application. AI must be used while still considering the values of fairness, non-discrimination, and social responsibility (Schweitze, 2024) . Responsibility remains with accountants, not technology (Barišić, 2022) . AI lacks moral conscience, so ethical accountability cannot be completely transferred to automated systems; humans must still be actively involved (Lehner et al., 2022)

The rapid development of AI has led to predictions from several studies conducted by (Beerbaum Dr. et al., 2021). Through a forum discussion with five experts consisting of academics and digital practitioners, this study successfully identified four main megatrends that are expected to dominate accounting transformation: blockchain, big data, agile organizational models, and artificial intelligence (AI). Blockchain is projected to eliminate information asymmetry and simplify audits by storing data directly in a distributed network. Big data accelerates value analysis and reduces uncertainty in financial decision-making. Agile models bring organizational flexibility in responding to technological changes, while AI enables broader, deeper, and predictive data processing. This has resulted in a shift in the focus of accountants from manual record-keeping to data-driven strategic decision-making, also considering aspects of human behavior and ethics in the use of technology. Meanwhile, research conducted by (Adeola Olusola Ajayi-Nifise et al., 2023) provides a broad overview of the future of the accounting profession in facing the wave of automation and AI integration. Automation, particularly through Robotic Process Automation (RPA), will dominate manual tasks, allowing accountants to focus on value-added work such as analysis and consulting. AI plays a significant role in bringing intelligence to accounting processes, particularly in pattern analysis, anomaly detection, predictive modeling, and business scenario simulations to support financial planning and risk management. AI can also improve service interactions through responsive and personalized chatbots and virtual assistants. However, research conducted by Adeola Olusola Ajayi-Nifise et al. (2023) also highlights emerging ethical and professional challenges, including algorithmic bias, vulnerability to data tampering, and the potential for human role displacement.

This necessitates adaptive regulation and a balance between technology and human accountability. Then the role and limitations of AI in the context of assessing the financial security of an entity that is in the realm of financial management and has an intersection with accounting. Although AI can process big data and provide fast financial predictions, AI has not been able to completely replace human intuition, holistic understanding and professional judgment needed in assessing the Company's financial security as a whole, so AI is recognized as developing in the context of data processing and prediction but is considered immature to replace decision-making that requires human judgment (Melnychenko, 2020) . AI has

transformed the accounting sector by increasing efficiency and automating operations. AI not only automates repetitive processes but also increases accuracy and effectiveness. Advanced fraud detection methods have been developed to reduce the possibility of financial losses. AI integration is changing the role of accounting professionals with estimates showing that AI can improve global economic development. In research conducted by (Mgammal, 2024) shows that there is a significant direct relationship between awareness and use of AI, AI involvement with accountants, and the impact of AI and accounting procedures. This indicates that accountants who have knowledge and utilize AI tend to be more involved with AI, which leads to positive changes in accounting procedures. Furthermore, the strong positive relationship between the impact of AI on accounting procedures and accountant efficiency indicates a significant positive influence. The involvement and impact of AI play a significant mediating role in this relationship. AI will never fully replicate the workings of human intelligence, including in the context of understanding, judgment, professionalism, and intuition in accounting (Weber, 2023) . AI is currently capable of performing technical accounting tasks, but it lacks the capacity to understand the context, ethics, and social responsibilities of accountants. AI is also unable to replace professional judgment in complex or ambiguous situations (Weber, 2023) . Traditional systems still widely used by SMEs have several obstacles such as inefficiency, dependence on manual processes, and difficulties in integrating with external systems, so AI and cloud computing technology become strategic solutions (Zhao et al., 2022).

## DISCUSSION

### 4.1 Transforming Accounting Through Artificial Intelligence

#### 1. Transforming Accounting Through Artificial Intelligence Opportunities

AI opens new horizons for the world of accounting, particularly in terms of automation efficiency and accuracy. In accounting education, the application of AI can transform conventional learning paradigms into intelligent, data-driven systems. A study by **Cai and Hu** shows that AI supports the development of intelligent classrooms, adaptive learning, and simulation- and algorithm-based accounting training that can improve the efficiency of accounting training in the future. The potential use of Artificial Intelligence (AI) can also be company's financial performance. Furthermore, AI can be used to detect systemic risks between companies, not just individual failures, which is highly relevant in preventing financial crises. AI-based managerial decision predictions are also important, such as simulating the impact of mergers or investments on cash flow. The integration of AI with behavioral approaches allows for analysis of investors' or managers' emotional reactions to financial information. In the field of taxation, AI can adaptively predict tax burdens and audit risks. Furthermore, the concept of explainable AI (XAI) needs to be researched to increase auditors' and regulators' confidence in AI predictions. Predictions in the context of Islamic accounting, accounting policy simulations, and adaptability mapping are essential for designing an ethical, accountable, and sustainable AI-based future for the accounting profession. In professional practice, AI can automate routine tasks such as data entry, reconciliation, initial audits, and even predicting financial trends (**savu, jia liu**). This allows accountants to focus more on strategic decision-making and value-added analysis. This advantage is reinforced by **Leitner's findings** , which state that AI encourages flexibility in work structures and the role of accountants. AI also drives innovations in

financial reporting and business forecasting . Through machine learning, accountants can now perform cash flow projections, real-time fraud detection, and simulate financial scenarios that were previously difficult to perform manually (ajayi).

2. Transforming Accounting Through Artificial Intelligence Challenges

Despite promising high efficiency, the integration of AI in accounting poses technical, structural, and social challenges. In the educational context, these challenges include infrastructure disparities, gaps in faculty competency, and a tendency for students to use AI passively and even misuse it for plagiarism (atmini) . This shows that AI literacy needs to be paired with strengthening academic integration.

In the professional realm, the main challenge is AI's limited ability to understand context, human intuition, and the complex dynamics that are essential to financial assessment and auditing. *Melnychenko and Weber* emphasized that AI cannot yet replace human professional judgment in ambiguous and multi-interpretable situations.

In addition, there is still resistance to AI adoption due to a lack of trust in intelligent systems, algorithmic bias and limited transparency in AI decision-making (*Lehner, Schweitzer*) . Companies, including SMEs, also face structural adaptation challenges and implementation challenges, although technologies such as cloud computing can be a mitigation solution (*zhao*) . This resistance is also a major challenge where conventional work culture and reliance on manual systems become barriers to technology adoption such as SMEs, where these SMEs do not yet have adequate digital infrastructure, both in terms of hardware, software, and technological literacy of their human resources. Another challenge is the digital skills gap among professional accountants, who are still not ready to face the complexity of algorithms and the effective operation of AI systems. The lack of regulations and technical standards governing the use of AI in the accounting field also creates legal uncertainty, especially in automated audits and machine-based decision-making. On the other hand, AI transformation raises social challenges in the form of job displacement, where traditional accounting roles become obsolete, creating the need for workforce restructuring and reorientation of accounting education. In addition, the issue of trust deficit towards AI systems that are considered black boxes also slows down their widespread implementation. This requires a holistic approach that combines technology, policy, and change management to ensure effective and inclusive AI transformation in accounting.

3. Ethical Imperatives of Transforming Accounting Through Artificial Intelligence

Ethical issues are the most critical concern in the use of AI in accounting. The risks of data privacy breaches, algorithmic bias, and decisions without human accountability raise serious concerns. AI lacks moral capacity, so the final decision must remain with human accountants ( *Barisić, Lehner* ).

*Schweitzer* emphasized that the principles of transparency, fairness, accountability, and privacy must be pillars of AI governance. Research by *Quang Huy and Kien Phuc* shows that legal and ethical aspects have been proven to strengthen the effectiveness of AI-based forensic accounting, indicating the importance of synergy between technology, law, and ethics. The discussion on the legal personality of AI ( *Staszkievics* ) also opens an important question : who is responsible for AI-based decisions in auditing and financial reporting?

Therefore, an ethical and legal policy framework is needed that is adaptive and applicable in global and local contexts.

## 4.2 Major Research Trends

The results of a systematic review of 20 scientific articles analyzed in this study reveal several key trends shaping the research landscape on accounting transformation through Artificial Intelligence (AI):

### 1. Shift from Transactional accounting to strategic advisory

One dominant trend is the shift in the role of accountants from transactional tasks to strategic roles as data-driven analysts and advisors. This is demonstrated by the growing research exploring AI's capabilities in forecasting, risk analysis, and real-time fraud detection. Future accounting is projected to focus more on strategic decision-making than simply recording transactions.

### 2. Emergence of AI-Empowered Learning Ecosystems

In the accounting education domain, there is growing interest in developing AI-based learning ecosystems. Studies such as those by *Cai, Hu, and Fachrurrozie* highlight the importance of integrating AI into the accounting curriculum through intelligent platforms, algorithm-based training, and personalized learning. This demonstrates a trend toward accounting education that is not only based on substantive content but also oriented toward digital competencies and technology adaptation.

### 3. Ethical and legal reframing in the digital profession

The digital dimension of law has become a major focus in recent literature, as awareness of privacy risks, algorithmic bias, and the accountability crisis in AI systems grows. Research such as that by *Schweitzer, Barisic, and Lehner* emphasizes the need to redefine professional ethical principles and strengthen human moral responsibility in AI-assisted decision-making. This trend signals a shift from technical compliance to value-driven accounting ethics.

### 4. Integration on AI with Emerging Technologies

Many studies show that AI does not stand alone, but is integrated with other technologies such as blockchain, cloud computing and data mining to form a more responsive and real-time accounting system (*zhao, mgammal*). This reflects the technological trend in modern accounting practices, where AI is at the core of digitalizing the audit process and financial reporting.

### 5. AI Governance and Accountability Frameworks

Recent literature also points to the emerging need to develop a governance framework for AI in accounting. This includes issues surrounding AI explainability, legal personality, and the boundaries of accountability between humans and intelligent systems (*Staszkiwicz*). This trend highlights the importance of a multidisciplinary approach in shaping the future of technology-based accounting.

### 6. Focus on SME Digitalization and Accessibility

A new trend is emerging that focuses on the digitalization of accounting systems in the small and medium-sized enterprise (SME) sector. *Zhao's study* emphasizes the role of AI and cloud computing in simplifying SME financial systems that were previously manual and inefficient. This reflects the trend

### 4.3 Benefits of Transforming Accounting Through Artificial Intelligence

The application of Artificial Intelligence (AI) to accounting practice offers numerous tangible benefits, not only technical but also strategic and systematic. This transformation encompasses operational, managerial, and educational aspects, as well as the ethical and professional values that accompany contemporary accounting practice.

1. Process automation and operational efficiency

One of the key benefits of implementing AI in accounting is the ability to automate routine and repetitive tasks. Tasks such as transaction recording, bank reconciliation, invoice processing, and financial reporting can be performed with greater accuracy and speed than conventional methods. Technologies like robotic process automation (RPA) and machine learning enable organizations to reduce reliance on manual work, reduce human error, and improve operational efficiency.

2. Improved accuracy and anomaly detection

Artificial Intelligence (AI) has the ability to analyze large amounts of data and detect unusual patterns or anomalies that could potentially indicate fraud. Deep learning and predictive analytics technologies have been used in auditing and forensic accounting to identify potential fraud in real time, strengthening internal control processes and corporate governance.

3. Transforming the role of accountants

By taking over routine tasks, Artificial Intelligence (AI) is opening up space for accountants to focus on strategic functions, such as providing business insights, financial consulting, and risk analysis. The role of accountants is no longer limited to number crunching, but is evolving into a business advisory role based on data and predictive modeling. This makes the accounting profession increasingly integral to managerial decision-making.

4. Real-time reporting and decision-making support

Artificial Intelligence (AI) enables real-time financial reporting, something previously unfeasible with conventional systems. This technology supports continuous auditing, where the audit process is carried out continuously and adaptively. Furthermore, AI-based systems can provide financial analysis dashboards that accelerate business decision-making and respond to market conditions.

5. Personalization and effectiveness in accounting education

In the educational context, Artificial Intelligence (AI) enables the implementation of intelligent tutoring systems, adaptive learning, and interactive simulations that adapt to students' learning styles. This contributes to producing accounting graduates who are not only technically competent but also adaptable to technological developments. Artificial Intelligence (AI)-based learning platforms also enable independent, flexible, and data-driven learning.

6. Increased compliance and transparency

Artificial Intelligence (AI) supports improved compliance with international accounting standards and regulations through automated monitoring and compliance checking. Furthermore, transparency in financial reporting can be enhanced with AI-based analytics that present information in a structured and easy-to-understand manner, even for non-accountants.



7. Accessibility for SMEs and digital ecosystems

Accounting transformation through AI also has a significant impact on the SME sector. Cloud-based accounting systems and AI can reduce technology implementation costs, simplify reporting systems, and provide access to financial analysis previously only available to large companies. This contributes to digital inclusion and strengthens the lower-middle economic sector.

8. Integration with Other Technologies

Artificial Intelligence (AI) becomes even more beneficial when integrated with other technologies such as blockchain, the Internet of Things (IoT), and data mining. This combination enables the creation of intelligent accounting systems that not only automatically record data but also verify and analyze it with high integration. This paves the way for automated audits, real-time reporting systems, and stronger financial data security.

#### 4.4 Further Research Directions

The results of this systematic literature review reveal several research gaps that remain wide open and urgently require further action. Future research directions should focus on interdisciplinary approaches, the development of governance frameworks, and the practical and normative aspects of applying Artificial Intelligence (AI) to accounting.

1. Artificial Intelligence (AI) Ethics Framework in Accounting

Although several studies have addressed ethical aspects in AI, few have produced a practical framework for applying ethics to AI-based decision-making. Future research needs to develop an ethical model that is applicable and can be adopted by accounting organizations on a global and local scale.

2. A longitudinal study of the impact of Artificial Intelligence (AI) on the accounting profession

Most current studies are exploratory and cross-sectional. Longitudinal studies are needed to see how AI actually changes the role of accounting over the long term, including aspects of job satisfaction, career adaptation, and the relationship between humans and technology in the accounting workplace.

3. Artificial Intelligence (AI) and forensic accounting: Effectiveness and limitations

The field of forensic accounting has begun to adopt AI, but its effectiveness and limitations have not been clearly defined. Further research is needed to investigate how accurate and reliable AI systems are in detecting complex fraud, as well as how these results are admissible in courts and other legal institutions.

4. Interaction of Artificial Intelligence (AI) with international accounting principles

The application of AI poses challenges to existing accounting principles and standards, such as the principles of periodicity, prudence, and relevance. Further research is needed to examine how AI can accommodate or even drive changes in international financial reporting standards (IFRS) and national standards.

5. literacy among accounting professionals and students

There is still limited research on the extent to which accounting practitioners and students understand AI. Experimental research could be conducted to measure the effectiveness of AI training in improving professional competence and ethics.

6. Artificial Intelligence (AI) Governance and Personalization : The Need for New Regulations

The issue of AI's legal personality demands interdisciplinary research across accounting, law, and information technology. A deeper study is needed to determine who is legally responsible for decisions made by AI in audits or financial reporting.

7. Artificial Intelligence (AI) Integration in the SME Sector: Adaptive Implementation Model

The SME sector has limited resources to adopt AI. Therefore, research is needed on adaptive and cost-effective AI adoption models, as well as the development of cloud-based platforms that suit the characteristics of local SMEs.

8. Artificial Intelligence (AI) Explainability and audit trail

One of the main barriers to using AI in accounting is its lack of explainability. Research is needed on how to create AI systems that are auditable, transparent, and capable of providing audit trails that can be verified by auditors and regulators.

9. The impact of AI on accounting education and curriculum

Artificial Intelligence (AI ) demands a transformation of the accounting curriculum. Future research needs to develop a digital competency-based curriculum model that encompasses basic programming, data analytics, digital ethics, and an understanding of AI for accountants.

10. Cultural perspectives in AI applications

Social and cultural contexts significantly influence technology acceptance. Cross-national and cross-cultural research can reveal how local values influence perceptions of AI, particularly regarding issues of ethics, trust, and professional responsibility.

## **CONCLUSION**

The transformation of accounting through Artificial Intelligence (AI) is a major dynamic that not only impacts the technical aspects of accountants' work but also challenges the way of thinking, professional ethics, and the overall approach to accounting education. Through a systematic review of 20 relevant scientific articles, researchers identified that the integration of AI in accounting is not simply a matter of technology adoption but also involves cognitive, pedagogical, professional, and normative restructuring within the accounting world.

In general, Artificial Intelligence (AI) offers significant opportunities to improve efficiency, accuracy, and analytical capabilities in accounting practice, education, and forensic auditing. Artificial Intelligence (AI) also expands the potential for future predictions based on big data and machine learning, transforming the role of accountants from mere record-keepers to strategic advisors or data-driven analysts.

However, several critical challenges arise with the implementation of Artificial Intelligence (AI). These challenges include technological gaps in institutions, the risk of misuse in academic contexts, regulatory limitations that are not yet responsive to the dynamics of Artificial Intelligence (AI), and the limitations of Artificial Intelligence (AI) systems in understanding the moral context and complexity of professional decisions.

On the other hand, there are ethical imperatives that cannot be ignored. Artificial Intelligence (AI) cannot yet replace human intuition, moral values, and responsibility. Therefore, while AI can support decision-making, the ultimate responsibility remains with

human professionals. Transparency, fairness, data privacy, and accountability must be the primary principles in the governance of AI technology in the accounting field.

This research also identifies major trends in Artificial Intelligence (AI) and accounting research, including: the shift of accountants' functions to strategic roles, Artificial Intelligence (AI)-based learning in higher education, the integration of Artificial Intelligence (AI) with other technologies such as blockchain and cloud computing, and the urgent need for an adaptive regulatory and ethical framework.

The integration of Artificial Intelligence (AI) in accounting must be viewed not only as a technological revolution, but also as a revolution in values and the profession. Only with a balanced approach between technological efficiency and ethical principles can the accounting profession survive, thrive, and remain relevant in the disruptive digital era.

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