

Accounting Transformation in the Age of Artificial Intelligence: A Philosophical Perspective on Epistemological Changes and Professional Ethics

Nastasya Cindy Hidajat ^{1*} Fransiska Natalia Kosasih ² Abdul Hamid Habbe ³ Gagaring Pagalung ⁴

^{1*, 2, 3, 4} Program Doktor Ilmu Akuntansi, Fakultas Ekonomi dan Bisnis, Universitas Hasanuddin, Makassar, Indonesia.

Email: natasyah@fe.untar.ac.id, siska.kosasih@gmail.com, hamidhabbe@fe.unhas.ac.id, gpagalung@gmail.com

ARTICLE HISTORY

Submitted : May 13, 2026
Reviewed : May 16, 2026
Revised : May 26, 2026
Accepted : May 27, 2026
Published : May 28, 2026

Conflict of Interest Statement:

The author(s) declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ABSTRACT

Purpose: This study aims to analyze the transformation of accounting in the era of Artificial Intelligence (AI) from the perspective of the philosophy of science, particularly epistemology and professional ethics.

Research Method: The study employs a conceptual qualitative approach based on a literature review, drawing on sources from indexed academic databases, including Springer, Scopus, and Google Scholar, for the period 2015–2026. The literature was selected for its relevance to the themes of AI, epistemology, technology ethics, and accounting, and then analyzed thematically and philosophically.

Results and Discussion: Research findings indicate that AI is driving a paradigm shift in accounting from rule-based systems toward data- and algorithm-based systems. This transformation is reshaping the role of accountants into that of strategic analysts and evaluators of AI systems, while also raising issues related to epistemology, algorithmic bias, transparency, and the accountability of automated decisions.

Implications: This study underscores the importance of integrating technological competencies, epistemological reflection, and professional ethics in the development of digital accounting practices, as well as the need for adaptive AI regulation and governance within the accounting profession.

Originality: The application of a philosophy-of-science perspective explains the transformation of AI in accounting, particularly the epistemological and ethical changes in the production of accounting knowledge.

Keywords: artificial intelligence; accounting epistemology; technology ethics; philosophy of science; accounting profession.

1. Introduction

Advances in digital technology have brought about a major transformation in business practices and financial information systems, particularly through the development of Artificial Intelligence (AI). AI serves not only as an automation technology but also as a computational system capable of performing predictive analysis, recognizing complex patterns, and supporting real-time data-driven decision-making. In the field of accounting, AI is used for various activities, including transaction recording, financial statement analysis, fraud detection, and data-driven audits, leveraging technologies such as machine learning and natural language processing. The advancement of digital technology and AI has driven fundamental changes in accounting practices, particularly in process automation, data analysis,



and the transformation of accountants' professional roles (Shaleh, 2024). The application of AI can enhance the efficiency of financial data processing while transforming the accountant's role from an administrative executor to an analyst, strategic consultant, and decision-maker. This transformation indicates that AI is beginning to assume some of the cognitive functions previously inherent in accountants' professional judgment when generating and validating financial information. However, this transformation is not merely technical but also raises epistemological and ethical issues within the accounting profession. The development of AI raises questions regarding how accounting knowledge is generated, how the validity of financial information is determined, and how moral responsibility is established when algorithmic systems generate decisions. Additionally, the use of AI also raises issues related to system transparency, algorithmic bias, and decision accountability, particularly when this technology is used in audits, risk assessments, and strategic decision-making that directly impacts various stakeholders.

Research on AI in accounting continues to evolve, with most studies still focusing on technical and managerial aspects, such as improving the efficiency of accounting information systems, automating audit processes, and processing big data. Pabubung (2021) explains that the multidimensional impact of AI requires philosophical analysis and the integration of ethics in addressing technological disruption. Alghafiqi & Munajat (2022) demonstrate that AI, Big Data, and Machine Learning have transformed accounting practices through automation and more complex data analysis, while Rahmawati & Subardjo (2023) identify emerging practices such as real-time accounting, triple-entry accounting, and continuous audit. Beyond influencing technical aspects, AI developments are also reshaping the structure of professional ethics and the ethical responsibilities of accountants. Putri Mafazah (2022) emphasizes the importance of strengthening professional competencies and ethical values, while Azzahra (2021) states that accountants must become "disruptors" to avoid being replaced by automated systems.

Recent studies have begun linking AI to epistemological issues and ethical governance within the accounting profession. Rizal *et al.* (2025) demonstrate that AI is transforming the knowledge production process toward a more dynamic, data-driven approach, thereby challenging traditional accounting paradigms. Perwiro *et al.* (2025) identify a shift in the accountant's role as the moral guardian of algorithmic systems, the emergence of a "responsibility gap" resulting from AI's automated decisions, and an increasing need for techno-ethical governance. Additionally, Hasanah (2024) and Dzulhasni *et al.* (2024) highlight ethical issues such as algorithmic bias, data privacy, and decision transparency, while Bahar (2025) and Ambarita *et al.* (2026) indicate that accountants are beginning to shift toward becoming strategic data analysts and business advisors. Although these various studies have made significant contributions, most research remains focused on system efficiency, professional transformation, and digital technology adaptation. Studies specifically examining how AI influences the epistemological structure of accounting remain relatively limited. Most research has not yet explored in depth how AI alters the mechanisms of accounting knowledge validation, the relationship between humans and algorithmic systems in decision-making, and changes in professional authority in determining the truth of financial information. Furthermore, the application of a philosophy-of-science perspective to the analysis of AI in accounting has not yet been developed systematically. It is often used merely as a conceptual supplement rather than as an in-depth philosophical analysis.

From the perspective of the philosophy of science, technological developments that alter how humans acquire and validate knowledge can be understood as a shift in the scientific paradigm. This concept of paradigm shift is explained by Kuhn (1997) through the idea of scientific revolutions in his



work The Structure of Scientific Revolutions. According to Kuhn, the development of science proceeds through stages of normal science, the emergence of anomalies, a paradigm crisis, and a scientific revolution that yields a new paradigm. If this concept is applied to the context of accounting, conventional accounting practices, based on manual procedures and human professional judgment, can be viewed as a form of normal science that has dominated the validation of accounting knowledge for years. However, the increasing complexity of big data, the need for real-time analysis, and human limitations in processing financial information quickly are creating anomalies that are driving a shift toward AI-based accounting systems. Thus, the development of AI can be viewed as a paradigm shift in how accounting knowledge is produced, validated, and used in organizational decision-making.

Based on this gap, this study poses questions regarding how AI alters the epistemological structure of accounting and what ethical implications arise from the use of algorithm-based decision-making systems within the accounting profession. This study aims to examine the transformation of accounting in the AI era from a philosophy-of-science perspective, with a particular focus on epistemology and professional ethics. The novelty of this study lies in its effort to integrate the study of AI in accounting with the perspective of the philosophy of science, specifically epistemology and Kuhn's theory of paradigm shifts, so that the discussion of AI does not merely focus on issues of technological efficiency but also encompasses fundamental changes regarding the validity of knowledge, professional authority, and moral responsibility in modern accounting practice.

The remainder of this paper is organized as follows. Section 2 provides a literature review and hypothesis development. Section 3 presents the research method and design. Section 4 provides the results and discussion. Section 5 is Concluding Remarks and Recommendations.

2. Literature Review and Hypothesis Development

2.1 Artificial Intelligence in Accounting

Artificial Intelligence (AI) is a technology that enables computer systems to perform cognitive functions such as learning, analysis, and decision-making. In accounting, AI is used to automate processes such as transaction recording, financial data analysis, and data-driven audits. The application of AI not only improves the efficiency of financial data processing but also transforms the mechanisms for producing and validating accounting information through algorithm-based analysis systems and machine learning. Digital technology innovations in modern accounting enhance data analysis capabilities and support faster, more accurate, and technology- and system-based decision-making (Sonjaya *et al.*, 2025). AI's ability to analyze massive volumes of data enables the identification of financial patterns and anomalies that are difficult to detect through conventional manual approaches. However, the use of AI also poses risks, including algorithmic errors, data bias, and overreliance on automated systems. This underscores the need to use AI technology critically and with human oversight.

Research by Sutton *et al.* (2016) indicates that the use of machine learning in accounting can significantly enhance financial data analysis capabilities. AI systems can identify patterns in financial data that are difficult for humans to detect using traditional analytical methods. Additionally, research by Kokina & Davenport (2017) indicates that AI technology can assist the audit process by quickly and accurately analyzing large volumes of data. By utilizing machine learning algorithms, auditors can more effectively detect potential fraud or anomalies in financial statements. These technological advancements indicate that the accounting profession is transforming systems that are more data-

driven and digitally oriented. Although various studies demonstrate that AI can improve the efficiency and accuracy of accounting systems, most analyses still treat AI as a mere technological tool without addressing its implications for the validity of knowledge, professional authority, and changes in the epistemological structure of accounting.

According to Ng (2018), AI's ability to rapidly process and analyze large volumes of data has driven organizational transformation toward data- and algorithm-based decision-making systems. In the context of accounting, the application of AI is driving a shift from manual recording systems to algorithm- and machine learning-based analytical systems. This is leading to a change in the role of accountants from mere transaction recorders to data-driven analysts and decision-makers. Research by Erik Brynjolfsson and Ng (2018) indicates that digital technology and AI have altered the structure of professional work, including the accounting profession. Many routine activities, such as data reconciliation, transaction processing, and account classification, can be performed automatically by AI-based systems. These changes require accountants to develop digital competencies and the ability to evaluate AI systems to remain capable of performing professional functions effectively in a data-driven business environment (Saci & Aliouat, 2026). Consequently, the accounting profession is shifting toward work that is more analytical, strategic, and based on the interpretation of financial information. This transformation affects not only the technical practices of accounting but also the ways accounting knowledge is produced, understood, and utilized.

Therefore, a philosophy-of-science approach is needed to explain how AI alters the mechanisms of knowledge production, the validity of financial information, and the relationship between human judgment and algorithmic systems in modern accounting practice. Furthermore, the use of AI raises epistemological and ethical questions regarding who is responsible for decisions generated by algorithmic systems, particularly when the analytical process is opaque and difficult to explain transparently to users of financial statements.

2.2 Philosophy of Science and Accounting

To understand the changes occurring in accounting as a result of AI technology, it is important to view them through the lens of the philosophy of science. The philosophy of science addresses fundamental questions regarding how knowledge is generated, how truth is determined, and how scientific theories evolve. In this context, accounting is viewed not merely as a financial recording technique, but also as a knowledge system that represents economic reality.

According to Popper (2005), science evolves through falsification, which involves critically testing theories to identify potential errors and weaknesses in knowledge. In the context of accounting, the principle of falsification is reflected in the processes of auditing, verification, and evaluation of financial statements, which aim to test the validity of the information produced. However, the use of AI in financial analysis is beginning to alter these verification mechanisms as the evaluation process increasingly relies on algorithmic systems and automated data modeling.

Meanwhile, Kuhn (1997) explains that scientific development occurs through paradigm shifts. A paradigm is a framework of thought that determines how a scientific discipline understands reality. When analyzed through a Kuhnian perspective, the development of AI in accounting can be understood as a paradigm shift from conventional accounting systems based on manual procedures to systems grounded in data analysis and algorithmic inference. In the old paradigm (normal science), the validity of accounting knowledge relied heavily on manual recording, professional judgment, and human

verification processes. However, the increasing complexity of big data, the need for real-time analysis, and human limitations in processing financial information quickly have begun to create anomalies that are difficult to explain through traditional approaches. These conditions are driving a transformation toward a new paradigm that is more data-driven, leveraging machine learning and artificial intelligence systems in the production and validation of accounting information.

2.3 The Epistemology of Accounting in the Age of Artificial Intelligence

Changes in accounting practices resulting from AI technology can be analyzed through the lens of the philosophy of science, particularly within the framework of epistemology—the study of the origins, validity, and methods of knowledge. In the tradition of the philosophy of science, shifts in the knowledge paradigm generally occur when the methods for acquiring, validating, and applying knowledge undergo fundamental transformations driven by technological advancements and changes in scientific approaches. Epistemology is a branch of philosophy that studies the origins, validity, and limits of knowledge. In this context, data is understood as raw, uninterpreted facts; information is the result of data processing within a specific context; and knowledge refers to understanding that has undergone professional interpretation and validation. In accounting, epistemology concerns how financial information is generated, verified, and used to inform economic decision-making.

In traditional accounting systems, financial knowledge is generated through a systematic process of recording transactions in accordance with accounting standards. This process involves the professional judgment of accountants in determining how a transaction is recorded and reported. However, in the AI era, this process is shifting toward algorithm-based systems that analyze big data, identify financial patterns, and automatically generate information using machine learning and predictive modeling. This shift means that some cognitive processes previously reliant on human professional judgment are now being supported or replaced by computational systems.

This transformation raises epistemological questions regarding how the validity of knowledge generated by algorithmic systems can be ensured, particularly when the analytical process is opaque or difficult to explain transparently to financial statement users. Additionally, questions arise regarding the relationship between human professional judgment and machine-generated knowledge in modern accounting practice. Some researchers refer to this phenomenon as data-driven accounting—an accounting system that generates knowledge based on the analysis of big data using algorithms.

The concept of paradigm shifts in science is explained by Kuhn (1997), who states that scientific development does not always proceed linearly but rather through scientific revolutions that alter the scientific community's perspective on reality. From a Kuhnian perspective, a paradigm shift occurs when the old paradigm can no longer explain anomalies emerging in scientific practice, thereby creating a need for a new, more relevant approach. In the context of accounting, the increasing complexity of financial data, the need for real-time analysis, and human limitations in processing information quickly can be viewed as anomalies that drive a shift from the traditional accounting paradigm toward one based on data, algorithms, and artificial intelligence. In the conventional accounting paradigm, accounting knowledge is obtained through manual recording, measurement, and verification procedures performed by humans. However, in the AI era, these processes increasingly rely on algorithmic systems that automatically generate inferences and identify data patterns through computational analysis. This perspective aligns with Capra's (1975) view, which holds that modern science is moving toward a systemic paradigm that emphasizes interconnections among data,

complexity, and technological integration. In the context of accounting, this systemic paradigm is reflected in the use of big data analytics and AI to generate more comprehensive, rapid, and real-time financial information.

Thus, the transformation of accounting in the AI era demonstrates that technological changes are altering how accounting knowledge is produced, validated, and used in economic decision-making. These changes indicate an epistemological shift, as certain human cognitive processes in the analysis and evaluation of financial information are being replaced or augmented by AI-based algorithmic systems. Consequently, philosophical questions arise regarding the reliability of knowledge generated by AI systems, the transparency of algorithmic analysis, and the limits of human responsibility for ensuring the validity of financial information within automated systems.

2.4 The Accounting Profession and Professional Ethics in the Age of Artificial Intelligence

The accounting profession has traditionally been based on the principle of public trust. Accountants are responsible for ensuring that the financial information presented to the public is honest, transparent, and reliable. With the advancement of AI, accountants' professional responsibilities have become increasingly complex, as the processes of processing, analyzing, and validating financial information now involve algorithmic systems that operate automatically and are data-driven. Accountants are responsible not only for financial reports but also for the technological systems used to generate them. These changes require accountants to possess not only technical competencies in AI and data analysis but also the ability to evaluate the validity of algorithmic systems and understand the ethical implications of using technology in financial decision-making. The integration of technology and professional ethical values is key to maintaining public trust in accounting systems in the digital age.

Professional ethics is a set of moral principles that govern professional conduct in the performance of one's duties. In the accounting profession, professional ethics concerns the principles of integrity, objectivity, professional competence, and responsibility to the public interest. According to the International Federation of Accountants, the accounting profession has a responsibility to ensure that the financial information produced is reliable and not misleading. The use of AI in accounting raises new ethical challenges related to algorithmic transparency, data bias, accountability for automated decisions, and the reliability of information generated by machine-learning-based systems. Additionally, the integration of AI into financial decision-making raises the issue of the "responsibility gap"—a condition in which moral responsibility becomes difficult to determine because decisions are generated through complex interactions among accountants, organizations, and algorithmic systems. In such circumstances, philosophical questions arise regarding the limits of human responsibility for AI-generated decisions, particularly when systems operate in an opaque manner or cannot be explained transparently to users of financial statements.

Floridi's (2013) work in the field of Information Ethics explains that digital technology creates a new ethical landscape demanding moral responsibility in information management. In the context of accounting, information ethics is crucial because financial data underpins economic decision-making with far-reaching impacts on society. One of the primary challenges in using AI is the potential for algorithmic bias, which can lead to financial decisions that are unfair, discriminatory, or inaccurate due to the use of non-representative data or errors in the system's modeling process. Furthermore, AI systems are often "black boxes," making it difficult to explain how specific decisions are generated.

Therefore, the use of AI in accounting requires an ethical framework and technology governance that ensure transparency, accountability, and the integrity of financial information within automated systems.

2.5. Research Gap

The development of AI has become a major focus in modern accounting research. Many studies have examined the impact of AI on the efficiency of accountants' work, the automation of audit processes, and the use of data analysis in financial decision-making. However, most of these studies still focus on technical and managerial aspects. Research by Brynjolfsson & McAfee (2014) and Ng (2018) indicates that AI and digital technologies can enhance organizational productivity by automating work processes. In the context of accounting, such automation is evident in transaction reconciliation, financial statement analysis, and anomaly detection during audits. However, this focus remains stronger on technical efficiency than on the philosophical implications of how AI changes the way accounting knowledge is produced, validated, and accounted for.

Beyond epistemological issues, studies on AI in accounting also remain limited in their in-depth discussion of professional ethical implications. However, the use of algorithmic systems in financial decision-making raises issues regarding transparency, accountability, algorithmic bias, and moral responsibility when decisions are no longer entirely generated by human judgment. From a philosophy of science perspective, the AI transformation in accounting can be understood as a paradigm shift in knowledge because this technology not only changes accountants' tools but also alters the sources, processes, and authority in the formation of financial information. Whereas accounting knowledge was previously dominated by procedural, manual, and human-judgment-based approaches, in the AI era, it increasingly relies on data analysis, algorithms, and artificial intelligence systems. Thus, philosophical inquiry is essential for elucidating the epistemological and ethical implications of AI, particularly regarding the validity of knowledge, algorithmic transparency, professional responsibility, and the limits of human authority in automated accounting practices.

Based on this mapping, the literature on AI in accounting remains dominated by technical and managerial approaches. At the same time, philosophical discussions regarding the status of knowledge, the rationality of practice, and the normative basis of professional ethics remain scattered and have not yet been fully developed. This research addresses this gap by proposing a philosophy-of-science perspective on the transformation of accounting in the AI era, thereby enabling a more critical understanding of technology use through epistemological and ethical reflection. Therefore, the main contribution of this study is to connect two fields that have long run parallel—AI research in accounting and the philosophy of science—to explain how accounting knowledge is formed, tested, and accounted for as algorithmic systems become increasingly dominant in accounting practice.

3. Research Method

This study employs a conceptual qualitative approach through a literature review. This approach was chosen because it allows the researcher to conduct an in-depth analysis of accounting transformations in the AI era from the perspective of the philosophy of science, particularly epistemology and professional ethics. The literature search was conducted using reputable academic databases, including SpringerLink, Scopus, Google Scholar, and ScienceDirect, to identify sources relevant to the research topic. The keywords used in the search process included "Artificial Intelligence and Accounting,"



“Epistemology and Accounting,” “Philosophy of Science and Accounting,” “AI Ethics in Accounting,” and “Data-Driven Accounting.”

The literature search was conducted on publications from 2013 to 2026 to capture modern AI developments in the field of accounting. The initial literature identified consisted of 47 articles and scientific documents. Subsequently, a selection process was conducted based on inclusion criteria, namely: (1) the article discusses AI in accounting, auditing, or financial information systems; (2) the article includes discussions on epistemology, professional ethics, or the philosophy of science; (3) the article is sourced from relevant academic journals or scientific books; and (4) the article is available in full text. Meanwhile, exclusion criteria included non-academic articles, sources not directly relevant to the research focus, and articles that discussed only technical aspects without any connection to philosophical perspectives. Based on this process, 10 primary sources were selected to inform the study’s conceptual analysis.

In addition to journal articles, this study also draws on supporting sources such as books on the philosophy of science, documents from professional accounting organizations, and other relevant academic literature on epistemology, professional ethics, and the digital transformation of accounting. The data were analyzed using a conceptual thematic analysis approach through the stages of theme identification, concept categorization, philosophical interpretation, and literature synthesis. The analysis focuses on epistemological changes in the production of accounting knowledge, the transformation of accountants’ professional roles, and the ethical implications of using algorithmic systems in modern accounting practice.

4. Results and Discussion

4.1 Analysis Results

4.1.1 The Evolution of the Accountant's Role

Advances in AI have brought significant changes to accounting practices, particularly in the automation of transaction recording, financial data analysis, and technology-based auditing. The use of analytics and artificial intelligence in auditing enables auditors to perform large-scale data analysis. It supports the concept of continuous auditing, which enhances the quality of oversight and the effectiveness of financial controls (Vasarhelyi *et al.*, 2015). In addition to improving the efficiency and accuracy of financial information processing, AI is transforming organizational decision-making through algorithm-based data analysis and predictive systems (Kokina & Davenport, 2017). The use of AI is shifting the role of accountants from executors of administrative procedures toward strategic analysts focused on risk assessment, financial information interpretation, and data-driven decision-making. Greenman *et al.* (2024) explain that AI does not entirely replace human professional functions but rather serves as a supporting technology that enhances work effectiveness and efficiency through automation and faster data analysis.

With AI, various routine accounting tasks, such as transaction recording, data reconciliation, and account classification, can be performed automatically by algorithmic systems. This allows accountants to focus more on strategic analysis and decision-making. However, this transformation also requires accountants to possess new competencies such as data literacy, an understanding of digital technology, the ability to interpret AI analysis results, and the ability to evaluate the validity of algorithmic systems. Accountants need to continuously develop their professional competencies and adapt to technology to



remain relevant in an AI-driven business environment. Thus, the transformation of the accounting profession in the AI era is not only about technical changes in the job but also about changes in the structure of professional authority in generating, interpreting, and validating financial information within a digital organizational environment.

4.1.2 Epistemological Challenges in Accounting

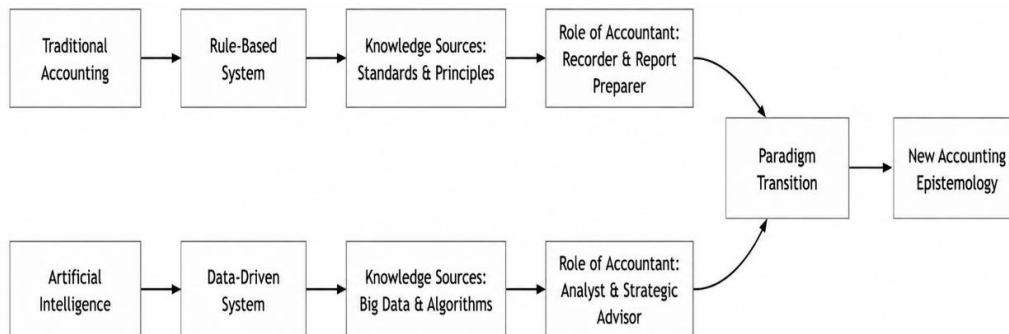
Epistemology in accounting concerns how financial information is generated and how its accuracy can be verified. In the digital age, advancements in AI and big data have transformed the mechanisms of accounting knowledge production through increasingly complex automated data analysis systems and algorithmic modeling (Cahyana & Iswati, 2025). These developments indicate that modern accounting systems are increasingly reliant on analytical technologies that generate real-time financial information from big data. From a philosophy-of-science perspective, accounting can be understood as a knowledge system that represents economic reality through specific methods, standards, and validation processes. In traditional systems, accounting knowledge is generated through a systematic process of recording transactions. However, in the AI era, the production of accounting knowledge increasingly relies on algorithmic analysis that automatically processes large volumes of data. This transformation raises epistemological questions about how the validity and transparency of financial information can be ensured when opaque automated systems perform the analysis.

The application of AI in accounting signals an epistemological shift, as technology not only changes accountants' tools but also alters the sources, processes, and authority in the formation of accounting knowledge. Whereas accounting knowledge was previously obtained through manual recording and human analysis, these processes are now partially performed by algorithmic systems that automatically analyze big data. This change indicates that accounting is undergoing an epistemological transformation in how financial knowledge is acquired, validated, and utilized. In this new paradigm, accounting knowledge is generated not only through recording procedures but also through data analysis based on digital technology. The study of social science paradigms also provides a conceptual framework for understanding the development of accounting as a discipline. Gibson Burrell and Gareth Morgan explain that social research can be understood through various paradigms in understanding social reality (Burrell & Morgan, 2019). In the context of accounting, these paradigms influence how researchers understand the function of accounting within organizations as well as the relationship between financial information and economic reality. In the AI era, these paradigm shifts indicate that accounting practices are no longer understood merely as administrative activities but also as knowledge-production systems increasingly shaped by algorithmic logic, data analysis, and digital technology.

Figure 1 illustrates a fundamental shift in accounting epistemology from a traditional approach toward an artificial intelligence-based approach. In the conventional paradigm, accounting operates as a rule-based system that relies on standards, procedures, and professional judgment as the primary sources of validation for accounting knowledge. In this context, accountants serve as record-keepers and preparers of financial statements. However, with the advent of AI, there has been a shift toward a data-driven system that employs algorithms, machine learning, and big data as the primary tools in the production and analysis of financial information. In this new paradigm, accounting knowledge no longer stems solely from normative standards and human professional interpretation. However, it is also generated through big data analysis, algorithmic modeling, and AI-based predictive systems. These



changes are driving a shift in the accountant’s role from an executor of administrative procedures to a data analyst, evaluator of algorithmic systems, and strategic decision-maker.



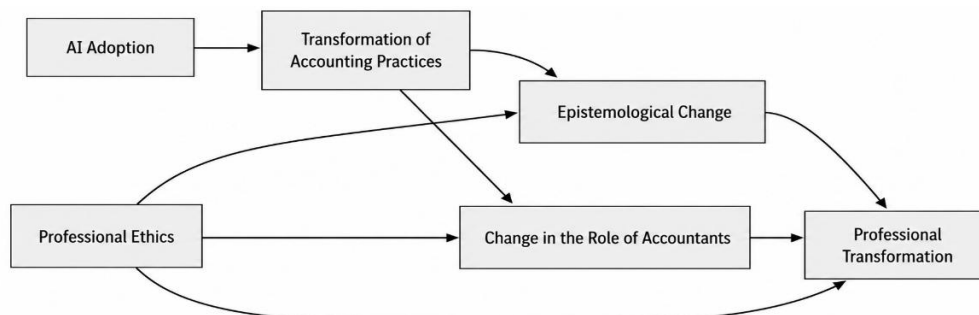
Source: Compiled by the author (2026)

Figure 1. The Epistemological Transformation of Accounting

4.1.3 Ethical Dimensions and Professional Responsibility

The use of AI in accounting also raises various ethical issues, particularly regarding algorithmic transparency, accountability for automated decisions, data bias, and professional responsibility within AI-based systems. According to Luciano Floridi, the development of digital technology demands a new ethical framework to regulate the relationship among humans, technology, and information (Floridi *et al.*, 2018). In the context of accounting, the use of AI must remain within a professional ethical framework that upholds the principles of integrity, objectivity, transparency, and accountability in the management of financial information.

Although AI can support rapid, data-driven decision-making, moral and professional responsibility for financial decisions remains with humans as the system’s controllers. Therefore, accountants have a responsibility to ensure that the use of AI systems is conducted ethically, transparently, and in accordance with professional accounting standards. When algorithmic systems generate financial decisions, a “responsibility gap” arises over who should be held accountable for errors, biases, or decisions that cannot be explained transparently. Furthermore, the use of data in AI systems can introduce algorithmic bias that affects the objectivity and reliability of financial analysis results. Thus, the accounting profession needs to develop an ethical framework and technology governance that accommodate AI developments without compromising integrity, accountability, and public trust in accounting systems.



Source: Compiled by the author (2026)

Figure 2. Conceptual Model of the Study

AI serves as a key driver of the transformation of accounting practices and influences three main dimensions: epistemology, the role of accountants, and professional ethics. In the epistemological dimension, AI is transforming how accounting knowledge is produced and validated through algorithmic analysis and big data. In the professional dimension, AI is driving a shift in the role of accountants from administrative functions toward strategic and evaluative functions. Meanwhile, in the ethical dimension, the use of automated systems raises new challenges regarding transparency, algorithmic bias, and professional responsibility. These three aspects interact with one another and give rise to a new paradigm in accounting. This situation indicates that the transformation of accounting is not merely technical but also involves philosophical and normative changes in how knowledge, professional responsibility, and the validity of financial information are understood. This conceptual model emphasizes that the successful implementation of AI in accounting depends not only on technological capabilities but also on integrating professional ethical values, ensuring algorithmic transparency, and maintaining human oversight of automated systems. The use of AI remains necessary as it enhances efficiency, accuracy, and data analysis capabilities in modern accounting practice. However, ethical responsibility remains essential for safeguarding data security, ensuring unbiased data outcomes, and prioritizing fairness in decision-making (Schweitzer, 2024). Therefore, organizations and companies must develop oversight mechanisms and technology governance frameworks to ensure that ethical principles are upheld in the use of AI.

4.2 Discussion

The epistemological transformation resulting from the integration of Artificial Intelligence (AI) into accounting practice fundamentally changes how the field of accounting is understood, produced, and developed. From the perspective of the philosophy of science, the paradigm shift from rule-based systems to data-driven systems demands a revision of the foundational concepts of accounting epistemology, particularly regarding the sources of validity and authority of knowledge in the production of financial information. Accounting knowledge is now generated not only through manual procedures and normative standards but also through complex algorithmic analysis and big data. These changes open the door to developing accounting theories that account for the relationship between human knowledge and algorithmic systems in the production and validation of financial information.

The ethical complexities of the AI era demand an expansion of the study of professional ethics for accountants, integrating traditional moral values with the new responsibilities associated with digital and algorithmic systems. Theories of information and technology ethics, such as those developed by Luciano Floridi, serve as an important reference for understanding how the principles of integrity, transparency, and accountability must be adapted in the context of AI. Thus, the future development of accounting science needs to emphasize a multidisciplinary approach that holistically integrates epistemology, technology, ethics, and digital governance.

For the accounting profession, this transformation demands enhanced competencies in data literacy, an understanding of AI technology, the ability to interpret algorithmic results, and the ability to evaluate the validity of automated systems. Accountants are no longer merely record-keepers of transactions, but also strategic analysts capable of critically evaluating and overseeing the AI systems in use. Therefore, accounting education and training must be updated to comprehensively incorporate curricula on digital technology, data analytics, the philosophy of science, and AI ethics. Organizations and companies adopting AI in accounting practices must implement technology governance that



upholds the principles of transparency, fairness, and accountability in the use of automated systems. AI systems must be designed with particular attention to potential data bias and “black box” effects, ensuring that analysis results can be professionally accounted for. Human oversight remains a key element in automated decision-making to maintain integrity and public trust.

The philosophical reflection on science offered by this research enables the formulation of policies and professional standards that are not only responsive to the technical opportunities of AI but also consider the accompanying epistemological assumptions and moral values. Accounting education curricula, for example, are not sufficient if they merely add courses in data analytics and programming; they must also incorporate modules on the philosophy of science and technology ethics so that aspiring accountants can critically evaluate and interpret AI's role in knowledge production and decision-making.

In the regulatory context, accounting professional bodies and financial authorities need to develop new standards and guidelines governing the use of AI in digital accounting and auditing practices. These standards must include requirements for algorithmic transparency, technology audits, and accountability mechanisms in the event of errors or harmful decisions made by AI systems. The development of a professional code of ethics must also reflect the new challenges of the digital age and provide practical guidance for accountants on the ethical and responsible use of AI systems.

Furthermore, cross-sector collaboration among regulators, academics, practitioners, and technology developers is crucial for creating a sustainable, secure, and trustworthy digital accounting ecosystem. Policies that are responsive and adaptive to technological advancements are key to addressing the dynamics of the accounting profession's future transformation.

5. Concluding Remarks and Recommendation

This study addresses the issue that the development of Artificial Intelligence (AI) not only transforms technical accounting practices but also influences how accounting knowledge is produced, validated, and accounted for. Using a conceptual qualitative approach grounded in a literature review, this study examines the transformation of accounting in the AI era through the lens of the philosophy of science, particularly epistemology and professional ethics. The findings indicate that AI is driving a shift from accounting based on manual procedures and human professional judgment to systems grounded in data, algorithms, and automated analysis. This shift brings about epistemological changes because the validity of financial information is no longer determined solely by normative standards and the accountant's judgment but also by the computational mechanisms operating within AI systems.

This study also demonstrates that the transformation of AI in accounting presents ethical challenges related to algorithmic transparency, data bias, accountability for automated decisions, and the moral responsibility of accountants. Therefore, the primary contribution of this research lies in positioning AI not merely as a technological issue, but as a matter of the philosophy of science concerning the relationship between humans, data, algorithms, and accounting knowledge. Theoretically, this research enriches the epistemological discussion in accounting by emphasizing that AI can be understood as part of a paradigm shift in the production of financial knowledge. In practice, this study underscores the need to strengthen digital competencies, data literacy, the evaluation of algorithmic systems, and ethical awareness among accountants. From a policy perspective, the findings underscore the importance of professional guidelines and regulations governing transparency, technology audits, and accountability in AI use in accounting practice.



This study has limitations because it employs a conceptual, literature-review-based approach and thus does not present empirical evidence on how AI is applied within specific accounting organizations. Additionally, the number of primary sources used remains limited, so the study's findings are best understood as an initial conceptual foundation rather than empirical generalizations. Further research is recommended to adopt an empirical approach—through case studies, interviews with accountants, auditors, and regulators, or professional policy analysis—to examine how epistemological, ethical, and professional responsibility issues arise in the practical use of AI. Subsequent studies could also develop an AI governance model for accounting that integrates algorithmic transparency, human oversight, technology audits, and professional ethics as a foundation to strengthen public trust in the digital age.

Statement of Use of Generative AI

During the preparation of this work, the author used ChatGPT to assist in improving clarity and readability of the text. The author reviewed and edited the output and takes full responsibility for the content of the publication.

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Corresponding author

Nastasya Cindy Hidajat can be contacted at: natasyah@fe.untar.ac.id

