



The Integration of Artificial Intelligence and Machine Learning in Accounting: Benefits, Challenges, and Their Alignment with the Conceptual Framework

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ABSTRACT

The research shows that AI and ML can make data more consistent. AI and ML can accelerate the preparation of financial reports. AI and ML can improve the accuracy of decisions. However, the use of AI and ML still faces challenges. These challenges include data quality, algorithm bias, ethical issues, and data privacy risks. All of these can threaten the integrity and reliability of financial information. This study concludes that although AI and ML contribute significantly to strengthening accounting practices and are in line with the objectives of the conceptual framework, their implementation needs to be accompanied by ethical guidelines and strong data governance to ensure reliability, transparency, and accountability in financial reporting.

INTRODUCTION

In the era of digitalization, rapid technological advances have transformed various fields, including accounting. Rapid technological developments have led to many innovations, such as Artificial Intelligence. Artificial intelligence or AI has transformed conventional accounting practices into more modern ones because it can improve efficiency, accuracy, and decision-making capabilities (Judijanto & Mulyadi, 2025). Donleavy (2022) also emphasizes that accounting must continue to adapt to social, economic, and technological changes in order to remain relevant to the needs of stakeholders. In this context, the application of technologies such as artificial intelligence (AI) has given rise to a new paradigm in which the process of collecting, processing, and presenting financial information can be done more quickly and accurately.

In the accounting conceptual framework (ACF), this implies two characteristics: relevance and accurate representation (Donleavy, 2018). This is also in line with the statement by Fitriana et al. (2025) that the conceptual framework balances accurate representation and relevance to provide information that is useful to users of financial statements. Relevance in financial decisions means covering all information that is important to users, and accurate representation requires completeness, so that reports must provide sufficient descriptions of events and transactions so that users can make decisions based on accurate information.

Incorporating Artificial Intelligence (AI) does enable efficient data integration, but its application in accounting still poses challenges. AI raises issues regarding the concepts of relevance and representation. In fact, some information generated by AI does not always reflect the actual conditions. Furthermore, even though AI is rich in data, there is still uncertainty as to whether the results provided by AI meet the basic principles of accounting, and how to ensure that the results of AI-based systems continue to meet the qualitative characteristics of financial statements, namely relevance and representation. It is important to review the extent to which AI conflicts with the basic principles in the conceptual framework of accounting (Deby et al., 2025). Donleavy (2018) argues that conceptual frameworks are designed when there are inconsistencies without clear reasons. A significant evaluation of the conceptual framework is needed to assess how the framework remains relevant and capable of responding to contemporary financial reporting challenges (Pratiwi et al., 2025).

Based on this background, this study aims to conduct a Systematic Literature Review (SLR) on the relationship between Artificial Intelligence and the Accounting Conceptual Framework. This SLR will explore how the literature explains the implementation of AI and the role of machine learning in supporting or challenging the accounting conceptual framework. The results of this study are expected to contribute to enriching the theoretical understanding of the integration of intelligent technology in accounting and to offer directions for future research based on adaptive and sustainable accounting theory.

LITERATURE REVIEW

Accounting Conceptual Framework

The accounting conceptual framework is the normative basis for the development of accounting standards and financial statements (Pratiwi et al., 2025). According to Donleavy (2018), before the 1970s, accounting mostly followed existing customs and practices, known as Generally Accepted Accounting Principles (GAAP). However, due to many differences and inconsistencies between countries, accounting experts began to develop a conceptual framework so that accounting theory and practice could move in the same direction. With this framework, accounting is no longer just an activity of recording transactions, but also a system that has a strong theoretical basis and serves to maintain the reliability and consistency of financial reporting.

The purpose of the conceptual framework is to meet the information needs of financial statement users such as investors. In the past, financial statements were only recognized as a means of fulfilling the main objective of accountability, but over time, information has become the main focus, as many investors want accurate estimates of future profits. However, predicting financial statements is difficult, requiring the best alternative of preparing financial statements as accurately as possible. Based on the IASB Framework in Donleavy (2018), relevance and accurate representation are two characteristics of the framework for financial information. Information is considered relevant if it can help users make decisions, and accurate representation provides information that is presented in accordance with the actual circumstances. These two aspects are very important so that financial statements can be useful and trusted.

Despite its many benefits, the conceptual framework still faces several challenges and criticisms. Some studies state that the conceptual framework is too theoretical and does not fully address the challenges of modern accounting practices, such as the issue of asset valuation or risk assessment. However, Donleavy (2018) states that without a conceptual framework, the accounting world would return to a time when standards varied from country to country and were difficult to compare. In other words, the conceptual framework is an important foundation that makes international accounting standards more consistent and provides legitimacy for existing financial reporting rules and practices.

Artificial Intelligence

Artificial Intelligence (AI) has brought a new paradigm in data and information management by automating processes, analyzing data on a large scale, and even predicting trends, thereby potentially revolutionizing the way information systems work (Pribadi & Dewayanto, 2025). Artificial intelligence is a technology used in various industries and institutions to improve operational efficiency and effectiveness and drive innovation to provide good service to users (Tampubolan & Dewayanto, 2025). AI has three basic concepts that generate extraordinary innovation, including big data, which involves collecting and analyzing large amounts of data to find patterns and trends. Furthermore, according to Indriani (2025), AI encompasses various technologies such as machine learning, natural language processing, and pattern recognition.

Therefore, AI has grown to become a major force in technological transformation, and its use in software development is increasingly important.

In a theoretical context, AI is seen as part of the evolution of information rationalization in line with the goals of modern accounting – namely, providing relevant and reliable information for decision makers. AI, in Donleavy's (2018) accounting theory perspective, serves as a means to strengthen principles through more accurate data presentation and expand the relevance of information by providing machine learning-based predictions. Thus, the application of AI is not only a technological innovation but also a logical consequence of the development of information theory within the conceptual framework of modern accounting.

The link between AI and accounting is getting stronger as the business world needs faster and more accurate financial reporting. The accounting sector, which plays a role in recording and analyzing company financial activities, has felt the significant impact of this technology (Jernih. & Laksono, 2025). AI technology, which includes machine learning algorithms, is now used to automate routine tasks such as data entry and transaction categorization, which were previously the basis of traditional accounting practices. Furthermore, with machine learning supporting more efficient decision-making through big data analysis and machine learning algorithms that improve prediction accuracy, it is important for forecasting and strategic planning (Judijanto & Mulyadi, 2025). Donleavy (2022) adds that the role of AI in accounting is not only technical but also conceptual. This is because, within the framework of accounting theory, AI supports the main objectives of financial reporting by generating relevant, reliable, and comparable information. With AI's ability to manage big data and perform predictive analysis, the concepts of relevance and representation take on new meaning, namely not only describing the past but also predicting possible futures. According to Deby et al. (2025), modern accounting uses a continuous model that processes financial data in real-time. From the above explanation, it can be concluded that AI minimizes the risk of human error through fast and accurate data processing, supporting the provision of real-time financial information for responsive decision-making.

METHODOLOGY

The method used in this study is a literature review (SLR) research method. A literature review is a method of collecting and examining library data and focuses more on a comprehensive review of related literature. There are two types of data used in this study, namely primary data and secondary data, as follows:

1. Primary Data: Donleavy's book (2018)
2. Secondary Data: Scientific articles published in 2025 in 15 journals relevant to the research topic. The data consisted of research results published in online journals. Data searches were conducted through Scopus, Emerald, and Google Scholar. Article searches were also conducted using a combination of keywords: artificial intelligence, machine learning, and accountant conceptual framework.

RESEARCH RESULT

Benefits of AI And ML Application

Based on the review results, the ten selected articles describe how the development of AI and ML has brought about many changes to modern accounting practices and understanding. AI and ML contribute to two aspects, namely improving data consistency and accelerating the presentation of financial reports. Thus, this technology supports the achievement of the qualitative characteristics of financial reports as described in the conceptual framework.

Abbas (2025) explains that the application of AI in management accounting helps companies perform data analysis quickly, accurately, and sustainably. Furthermore, research by Molis & Molinari states that the use of AI has the potential to have a significant impact on non-financial reporting, such as increasing insight and new perspectives on operational patterns and trends. The conclusion from both studies is that in both management and decision-making functions, AI and ML have become strategic tools that make work more efficient and effective.

Furthermore, Tampubolon & Dewayanto (2025) argue that AI and ML play a crucial role in internal auditing by accelerating the examination process, detecting transaction anomalies, and improving audit accuracy. This is also in line with Alruwaili's (2025) research, which shows that the application of AI and ML has brought significant changes to the way accounting is carried out in modern organizations. AI helps automate routine processes such as transaction recording, data reconciliation, and financial report preparation, allowing accountants to focus more on analysis and strategic decision-making. In addition, Manuhuruk & Dewayanto (2025) found that by relying on AI-based automated systems, the potential for errors due to human fatigue or negligence can be significantly reduced. Based on the results of the above studies, it can be concluded that AI and ML make audit systems more responsive and strengthen internal controls.

However, this change cannot be separated from the basic principles of accounting because the application of AI and ML is directly related to the basic objectives of financial reporting, namely to provide relevant and representative information for report users. It should also be emphasized that relevant information must have predictive and feedback value. Donleavy (2018) states that every technological innovation must still adhere to a conceptual framework so that accounting information does not lose its integrity. Thus, even though AI speeds up the process, the end result must still maintain the quality of information.

Overall, the SLR results show that AI and ML bring significant advances in the provision of financial information, but the success of their implementation depends heavily on the extent to which the technology aligns with the conceptual framework of accounting. This improvement underscores the potential of AI to revolutionize traditional accounting practices by automating repetitive tasks, detecting anomalies, and ensuring compliance with financial standards (Judijanto & Mulyadi, 2025). With the above opinions supporting the research results, digital transformation makes the monitoring and decision-making processes faster, more accurate, and more adaptive to change. Thus, the use of AI

and ML not only supports the effectiveness of internal audits but also strengthens the strategic role of non-financial management accounting in facing the digital era.

Challenges Faced in the Implementation of AI and ML

Although Artificial Intelligence (AI) promises various benefits in financial reporting, its implementation process is not without a number of complex challenges (Manihuruk & Dewayanto, 2025). Issues such as human resource adaptation, data security, technical barriers, and ethical issues, including data privacy and algorithmic bias, remain obstacles (Judijanto & Mulyadi, 2025). The main challenge in applying AI and Machine Learning in accounting is how to ensure that the information generated still meets the qualitative characteristics of financial reports.

According to the results of research by Tampubolon & Dewayanto (2025), internal audits based on AI are sometimes inconsistent. In line with Abbas's (2025) research, a challenge often encountered in the application of AI is data quality because AI is highly dependent on clean, complete, and bias-free data. If the data used is problematic, the results of the AI analysis will also be incorrect and potentially misleading. Furthermore, according to Ali (2025), if the data does not reflect the actual business conditions, machine learning will produce incorrect predictions. Of course, this is very much against the principles of the conceptual framework. According to Donleavy (2018), the accounting information produced must be relevant and accurate. Therefore, it can be concluded that the biggest challenge in AI implementation is poor data, which causes the information produced to contradict the principles of the conceptual framework.

Another challenge, according to Manel et al. (2025), is that AI in management accounting, apart from facilitating decision-making, raises challenges such as ethical issues in the use of AI. Misuse occurs because AI requires large volumes of data, thereby increasing the risk of privacy violations (Abbas, 2025). In its application, AI is often used to help access data that is sometimes sensitive and confidential, which can pose a risk of leakage (Ali, 2025). This contradicts the ethical principles of accounting. According to Donleavy (2018), the conceptual framework has accounting information qualities such as faithful representation and depends on data that is secure and not misused. It can be concluded that if an AI system accesses or manages data, there is a risk of privacy violations and data leaks, which would threaten the conceptual framework principle of faithful representation, which requires information to be free from error and bias.

DISCUSSION

The use of Artificial Intelligence (AI) and Machine Learning (ML) in accounting contributes significantly to improving the quality of information in line with the conceptual framework of accounting. AI helps generate more relevant, faster, and more accurate information through real-time data processing and deeper analytical capabilities compared to manual processes. ML also strengthens the aspect of faithful representation because it can reduce human error and analyze financial patterns consistently, so that the information produced is more reliable and easier to compare between periods.

However, despite these benefits, AI and ML also present challenges closely related to the qualitative characteristics of accounting information. The biggest challenge lies in data quality, because AI will perform better if the data used is unbiased and accurate. Biased, incomplete, or unstructured data can produce misleading outputs and undermine the principle of faithful representation. In addition, AI often operates as a black box, making its decision-making process difficult to explain and undermining the principles of verifiability and understandability in the conceptual framework. Other problems arise in the areas of ethics, data security, and privacy, given that AI requires extensive access to sensitive company data that is prone to leaks. This vulnerability has the potential to reduce the reliability of information and stakeholder trust due to a failure to maintain information quality in accordance with the principles of the conceptual framework.

CONCLUSIONS AND RECOMMENDATIONS

The conclusion of this study shows that the integration of Artificial Intelligence (AI) and Machine Learning (ML) contributes significantly to improving the quality of accounting information. Various studies confirm that AI and ML improve the relevance, speed, and accuracy of data processing. AI enables the automation of accounting processes, reduces human error, and improves the accuracy of financial predictions, which ultimately strengthens the quality of data-based decision making (Nazari & Mukhtaruddin, 2025). The development of this technology also helps strengthen qualitative characteristics such as faithful representation, consistency, and comparability because it is capable of processing data consistently and reducing the potential for manual errors. Thus, AI and ML are becoming increasingly important strategic tools in enriching the decision-making process and supporting the objectives of the conceptual framework of accounting.

However, findings from the literature also confirm that these benefits are accompanied by various challenges that cannot be ignored. Although artificial intelligence provides efficiency and accuracy, a deep understanding of the implications and risks that may arise needs to be a major focus (Jernih & Laksono, 2025). The biggest challenges lie in data quality, algorithmic bias, security, and information privacy. Thus, the use of AI needs to be closely monitored to ensure it remains in line with the basic principles of financial reporting within the conceptual framework. Overall, this SLR emphasizes the importance of balancing the use of AI and ML technology with the application of a strong conceptual framework. With these steps, AI and ML will not only be technical innovations,

but will become the foundation for a more accurate, transparent, and future-oriented accounting transformation. The hope is that as technology continues to evolve, these challenges will diminish, allowing companies to fully utilize the capabilities of AI for greater efficiency and effectiveness in its use.

ADVANCED RESEARCH

Still conducting further research to learn more about The Integration of Artificial Intelligence and Machine Learning in Accounting: Benefits, Challenges, and Their Alignment with the Conceptual Framework.

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