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The role of Bibliometric Analysis of Artificial Intelligence (AI) in Accounting: A Study from ScienceDirect, Emerald Insight, and Scopus Databases

Muhammad Taufiqurrahman[1], Ade Irma Suryani Lating[2]
[1,2]State Islamic University of Sunan Ampel Surabaya, Indonesia

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ABSTRACT

Objective: *This study aims to examine publication trends related to AI in accounting using a bibliometric approach, by identifying influential authors, key keywords, and patterns of scientific collaboration.* ***Method:*** *Research data was taken from 50 publications on the Scopus, ScienceDirect, and Emerald Insight databases between 2021 and 2025, and then analyzed using VOSviewer 1.6.20 software with co-authorship and co-occurrence techniques.* ***Results:*** *The analysis results confirm that "artificial intelligence" is the most dominant keyword, while visualizations in the form of networks, overlays, and densities reveal the collaboration structure and the development of research themes.* ***Novelty:*** *This study provides a comprehensive mapping of AI literature in accounting and can be an important reference for both researchers and practitioners in identifying emerging trends and issues.*

INTRODUCTION

The transformation of information technology and digitalization has given rise to various innovations with far-reaching impacts, including in the field of accounting. One innovation that has received significant attention is the application of artificial intelligence (AI), which encompasses various techniques such as machine learning, deep learning, natural language processing, robotic process automation, and other computational algorithms. The application of AI is considered capable of increasing operational efficiency, accuracy of financial data processing, fraud detection, financial forecasting, and automation of routine activities that have historically required significant resources, such as audits, report analysis, and forecasting [1].

Research on AI in accounting has experienced significant growth since 2018–2019, with a rapid increase in the number of publications and citations during the 2022–2024 period [2][3]. Recent bibliometric studies confirm an acceleration of research in the post-pandemic era (Stoykova). Additionally, the application of AI is expanding into accounting management functions, including automated budgeting, cost management, forecasting, and inventory control [4][5]. Recent literature indicates that AI has significant potential to increase the speed of analysis, improve the quality of predictions, and generate strategic insights that support managerial decision-making. Nevertheless, empirical research is still limited, so further study is needed on its impact on organizational performance [6].

Although promising, the adoption of AI in accounting also faces various constraints, such as the need for reliable data, ethical and privacy issues, model interpretability, regulation, and human resource readiness. The literature review confirms that there are still research gaps, particularly regarding temporal dynamics, geographical distribution, dominant themes, and collaboration patterns between researchers and institutions [7].

Tlili, for example, found an increase in publications since 2018, with a primary focus on improving accounting processes, the impact of AI on auditing and financial reporting, and its integration into academic studies [1].

In the era of digital transformation, Artificial Intelligence (AI) has become a major driver of change in accounting practices and research, ranging from automating accounting processes, data-driven auditing, fraud detection, to sustainability reporting [8]. The publication trend on this topic shows a significant increase in recent years, with bibliometric studies focusing on identifying themes, influential authors, and collaboration networks [10].

There has not yet been a comprehensive bibliometric study that combines and compares ScienceDirect, Emerald Insight, and Scopus to comprehensively map the development of AI research in accounting, including major themes, temporal evolution, geographical or institutional distribution, and non-technical issues such as ethics, regulation, professional impact, and sustainability [11][12]. Research filling this gap needs to apply a combined approach using bibliometrix, VOSviewer, Gephi, and thematic analysis to provide a holistic overview and identify priority research areas for the future.

Most previous bibliometric studies were limited to a single database, such as Scopus or Web of Science. This potentially introduces bias because not all relevant publications are indexed in a specific database. ScienceDirect excels in applied international journals, Emerald Insight is strong in practical management and accounting, while Scopus offers broad cross-disciplinary coverage. By combining these three databases, the research can provide a more comprehensive and representative overview of AI development in accounting.

This research is designed to address this gap thru a bibliometric analysis of scientific publications on AI in accounting using three major databases: Scopus, ScienceDirect, and Emerald Insight [13]. These databases were chosen for their broad coverage and high credibility in the field of accounting and business. By utilizing this data, this research aims to map AI research trends in accounting, identify the most productive authors, journals, and institutions, and describe the evolving conceptual and thematic structure [14]. The research results are expected to provide a theoretical contribution in the form of a literature map, as well as practical benefits for practitioners and policymakers in understanding the direction of AI development in the field of accounting.

RESEARCH METHOD

This research uses bibliometric analysis methods to provide a comprehensive mapping of patterns, trends, novelty, and research development directions regarding

Artificial Intelligence (AI) in accounting [15]. The analysis was conducted using a co-authorship and co-occurrence approach with VOSviewer 1.6.20 software.

The research stages include determining inclusion criteria such as databases, keywords, and the publication year range. Data was collected from ScienceDirect, Emerald, and Scopus, using the keywords "AI" and "accounting" for the period 2021–2025. From the selection results, 50 relevant articles were obtained. The article was managed thru Mendeley and exported to RIS format. Subsequently, the RIS file was imported into VOSviewer for bibliometric mapping. The results of the analysis are visualized in the form of network visualization, overlay visualization, and density visualization to represent the interconnectedness of authors, themes, and research topics.

RESULTS AND DISCUSSION

Bibliometric Analysis Based on Co-Authorship

Co-authorship analysis was conducted to examine network patterns and collaboration among authors from 50 publications obtained thru literature searches using predetermined keywords. The analysis results show interesting differences between several research topics.

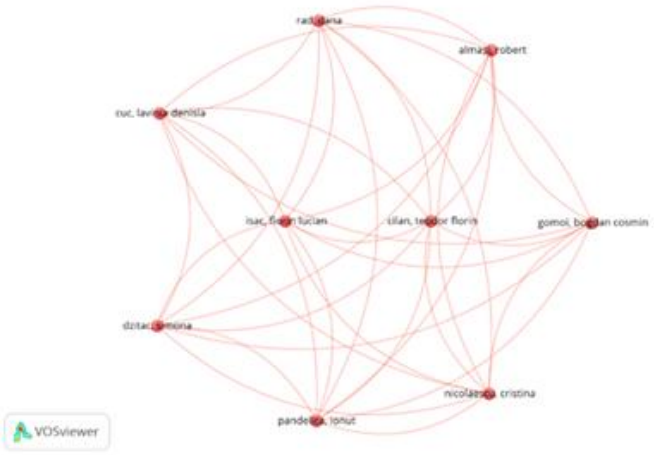

Figure 1. Connected Co-Authorship Network Visualization.

On the topic of AI in accounting, a number of authors are seen connected within a single collaboration network. VOSviewer illustrates this relationship with connecting lines and circle symbols. Out of a total of 141 identified authors, only 9 had collaborative relationships. The network forms a red cluster consisting of Almasi, Robert Cilan, Teodor Vlorin Cuc, Lavinia Denisisa Dzitac, Simona Gomoi, Bogdan Cosmin Isac, Florin Lucian Nicoalescu, Cristina Pandelicia, and Ionut Rad and Dana.

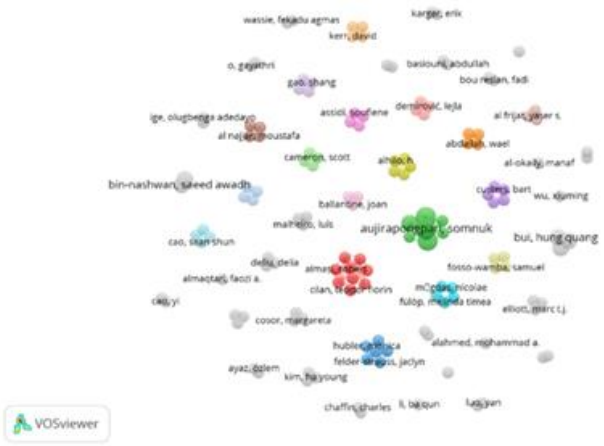

Figure 2. Unconnected Co-authorship Network Visualization.

Conversely, for the topic of AI in accounting and financial reporting, the analysis results show an unconnected network. This means that although there are several authors researching the same issue, they do not collaborate with each other. Of the 141 detected authors, 47 separate clusters were formed, visualized with different colors.

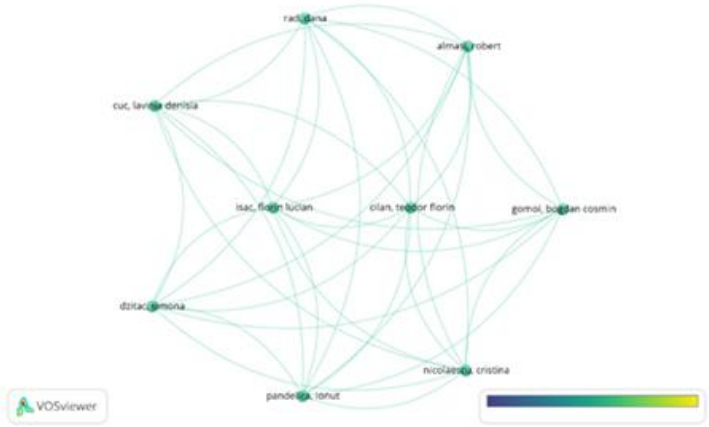

Figure 3. Co-authorship Overlay Visualization.

The overlay visualization results show that research on AI in accounting with co-authorship relationships is concentrated in the same time period, namely 2025, which is indicated by the color green.

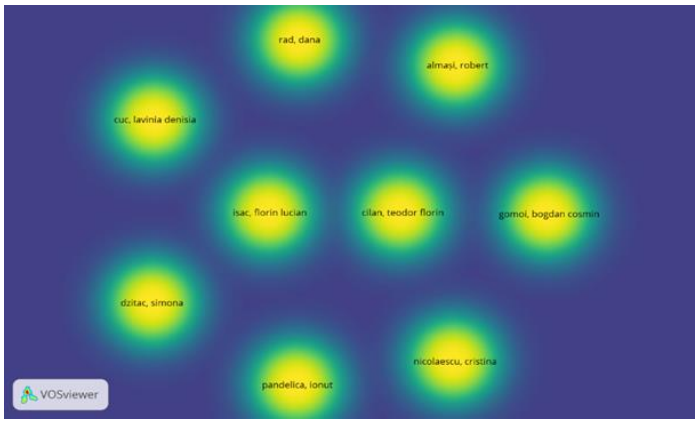

Figure 4. Density Visualization.

The density visualization shows that the network strength between authors is relatively even, with no single author dominating the network.

Bibliometric analysis based on co-occurrence

Co-occurrence analysis was conducted to trace keyword trends in research on artificial intelligence in accounting. A total of 50 articles were analyzed using VOSviewer software, resulting in 170 keywords, 139 of which were interconnected. These keywords were then grouped into 19 clusters, which were visualized in the form of circles and connecting lines.

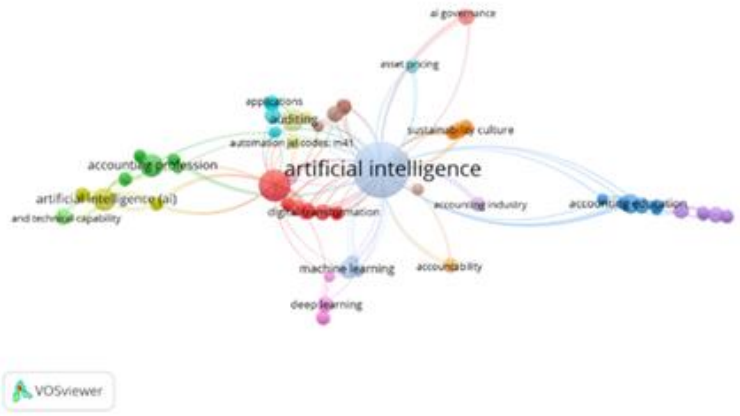

Figure 5. Connected Co-Occurrence Network Visualization.

These clusters cover a variety of themes. For example, the first cluster includes keywords such as accountancy profession, digital transformation, ethics, and industry 5.0. The second cluster focuses on technology adoption, big data technologies, and technology readiness, while the third cluster highlights accounting education, the use of AI tools, ChatGPT, and large language models [16]. Other clusters discuss AI literacy, Generation Z skills, automation-based accounting, fraud detection, as well as sustainability issues and green intellectual capital.

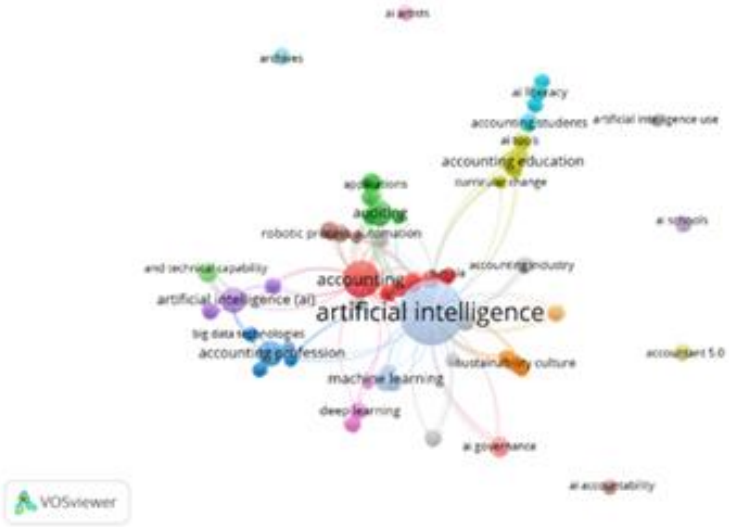

Figure 6. Unconnected Co-Occurrence Network.

Visualization In the unconnected network visualization, keywords are divided into 25 clusters, with "artificial intelligence" being the most dominant term. Larger font sizes indicate a higher frequency of use compared to other keywords.

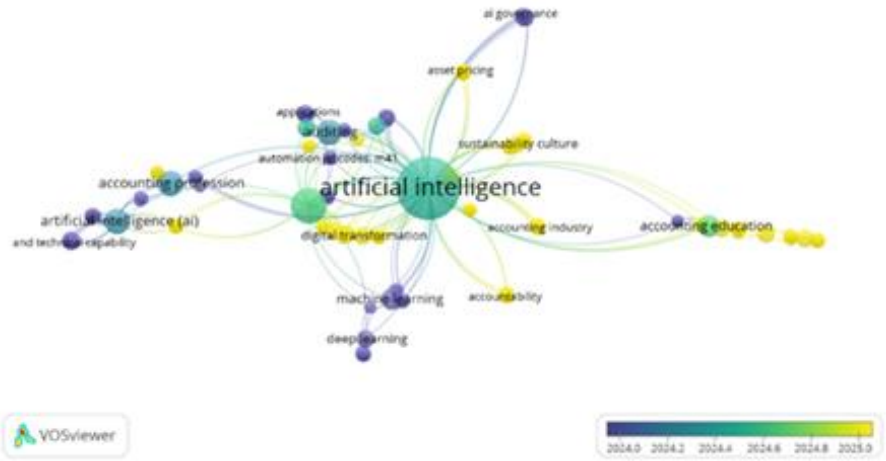

Figure 7. Co-occurrence Overlay Visualization.

The overlay visualization analysis provides a temporal overview of research trends. The newest keywords in 2025 are shown in yellow, while those that appeared in 2024 are light green, 2023 dark green, 2022 blue, and 2021 purple. This pattern shows how research themes evolve over time.

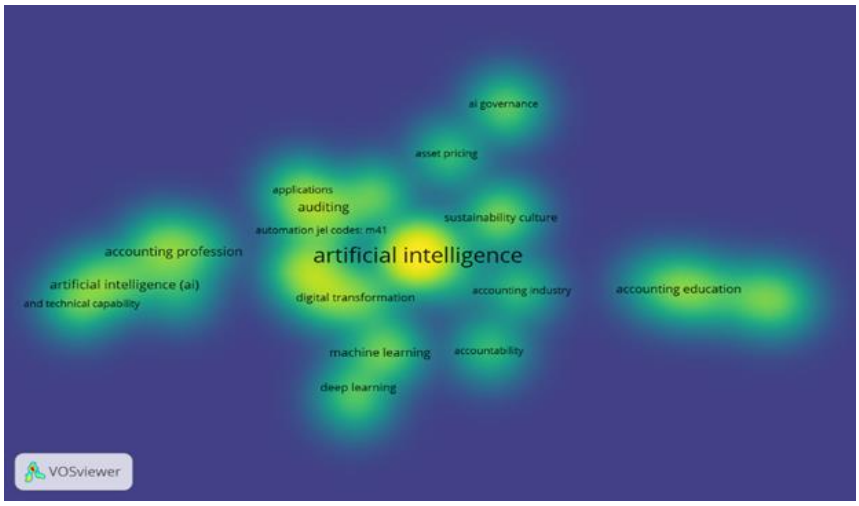

Figure 8. Co-Occurrence Density Visualization.

Meanwhile, the density visualization reveals that "artificial intelligence" is the most prominent keyword, both in terms of frequency and intensity of use. Other keywords that also frequently appear are "auditing," "accounting profession," "accounting education," "machine learning," and "digital transformation."

CONCLUSION

Fundamental Finding : This research demonstrates that bibliometric analysis using VOSviewer provides a comprehensive overview of trends, patterns, and interconnections in Artificial Intelligence (AI) research in accounting from 2021 to 2025. The analysis

revealed that although numerous authors have explored AI in accounting, collaboration between researchers remains limited, as evidenced by a sparse co-authorship network. The study found that research topics in this field are diverse, spanning areas such as accounting education, auditing, digital transformation, machine learning, sustainability, and AI adoption. The keyword "artificial intelligence" emerged as the most frequently occurring, underscoring its central role in AI-related accounting research. **Implication :** The findings suggest that while AI in accounting is a rapidly evolving area of study, there is a need to foster stronger collaborations among researchers to enhance the breadth and depth of AI-related research in this field. The dominance of AI-related topics in accounting research highlights the importance of further exploring how AI can be integrated into accounting practices, education, and auditing. Additionally, the dynamic nature of the field, particularly with the rise of generative AI and chatbots in 2025, emphasizes the need for researchers to keep up with emerging technological trends in both the academic and professional domains of accounting. **Limitation :** A limitation of this study is the relatively low level of collaboration among researchers in the AI and accounting domain, which may hinder the generation of more comprehensive and impactful research outcomes. The study also only covers the period from 2021 to 2025, and the findings may not fully capture long-term trends or the emergence of new research themes that could arise beyond this timeframe. Furthermore, the research did not examine the quality or depth of the individual studies, focusing instead on quantitative metrics like co-authorship and keyword frequency. **Future Research :** Future studies should aim to strengthen international research networks and encourage cross-institutional collaborations to increase the overall impact of AI research in accounting. There is also potential to explore new areas such as digital ethics, sustainability, and AI governance, which are becoming increasingly important in the context of AI adoption in accounting. Researchers can investigate how these themes intersect with traditional areas of accounting, such as auditing and financial reporting, to contribute to a more holistic understanding of AI's role in transforming the profession.

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Muhammad Taufiqurrahman
State Islamic University of Sunan Ampel Surabaya, Indonesia

***Ade Irma Suryani Lating (Corresponding Author)**
State Islamic University of Sunan Ampel Surabaya, Indonesia
Email: ade.irma@uinsa.ac.id