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Use of Artificial Intelligence (AI) and Machine Learning (ML) in Corporate Governance against Financial Fraud

Alfiyah Aditya Rahmawati[1] Zakia Maulida Antono[2] Vina Yunistiyani[3]

[1] Politeknik Negeri Semarang, Indonesia; alfiyah.aditya@polines.ac.id
[2] Politeknik Negeri Semarang, Indonesia; zakia.maulida@polines.ac.id
[3] Politeknik Negeri Semarang, Indonesia; vina.yunistiyani@polines.ac.id

Abstract

Financial fraud continues to pose significant risks to global economic stability, encouraging the growing adoption of artificial intelligence (AI) and machine learning (ML) within corporate governance frameworks. This bibliometric review analyzes 46 articles published between 2017 and 2025, revealing a strong annual growth rate of 35.7%, indicating increasing scholarly attention to this research domain. The findings show that China and India are the most productive countries, followed by the United Kingdom, reflecting the expanding geographical distribution of AI- and ML-based fraud research. Key contributing authors include Chen Y, Li Y, and Wu Z. Keyword and trend analyses highlight emerging research themes such as fraud detection, deep learning, learning systems, and crime-related risk assessment. Recent studies increasingly emphasize advanced ML techniques and AI-driven governance mechanisms to strengthen fraud prevention and monitoring. Future research should further explore comparative empirical evidence on AI and ML effectiveness in corporate governance systems, particularly across different regulatory and institutional contexts, while integrating emerging techniques such as deep learning and hybrid intelligent systems.

Keywords

Artificial Intelligence, Machine Learning, Corporate Governance, Financial Fraud, Bibliometric Review

Corresponding Author
First name Last name
Affiliation, Country; e-mail@e-mail.com

1. INTRODUCTION

Over the past decades, financial fraud has brought shocking losses to the global economy, threatening the efficiency and stability of capital markets (Amiram, Cox, Dupont, Karpoff, & Sloan, 2018). The great losses caused by financial fraud have attracted continuous attention from academia, industry, and regulatory agencies. More concerning, the ongoing coronavirus pandemic (COVID-19) unexpectedly shocks the global financial system and accelerates the use of digital

financial services, which brings new challenges in effective financial fraud detection (Xiaoqian, et al., 2021).

Research on the use of technology in finance was also conducted by (Ahmed, Muneer, Anis El, & Helmi, 2022) who reviewed the literature of artificial intelligence (AI) and machine learning (ML) in the field of finance. The study revealed an upward trajectory in publication trends starting from 2015 and found the application of AI and ML in bankruptcy predictions, stock price predictions, portfolio management, oil price predictions, anti-money laundering, behavioural finance, big data analytics, and blockchain. The results of the study did not provide a comparison of the performance of various ML techniques and deep ensembles. Research by (Ahmed, Muneer, Anis El, & Helmi, 2022) has not specifically examined the relationship between the use of technology and financial fraud.

In addition to the use of artificial intelligence (AI) and machine learning (ML) in financial fraud, an interesting topic of concern for this study is about corporate governance against financial fraud, the research of (Sabău (Popa), Safta, Achim, & Rus, 2022) reviewed corporate governance with four elements: audit committee, board diversity, board independence and remuneration. Data used by (Sabău (Popa), Safta, Achim, & Rus, 2022), i.e. financial fraud and profit management. Study from Sabyu et al., 2022 in reviewing corporate governance against financial fraud has not used technologies such as artificial intelligence (AI) and machine learning (ML).

This study presents a bibliometric review of the research on the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud published involving the following research questions:

RQ1. What are the future trends in the study of the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud?

RQ2. Which country and author is the most prolific and influential?

RQ3. What are the latest topics related to the study of the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud?

This paper has been divided into four parts containing introduction, data and methodology, results and discussion and research conclusions. This study aims to gain a greater understanding of the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud, especially the rise of financial fraud around the world due to the coronavirus (COVID-19) pandemic. The study will also help researchers propose future research recommendations by examining the publication of the Scopus database in financial fraud.

2. DATA AND METHODOLOGY

2.1. Database collection sources

The literature data present in the study are taken from the database Scopus. Scopus is one of the most comprehensive bibliographic sources, database accessible which lists the most reputable journals in the field of finance.

2.1.1. Keyword Selection Strategy and refinement process

The keyword selection process was carried out with the Scopus database on November 30, 2025. Keyword searches on Scopus TITLE-ABS-KEY ("financial fraud" AND "artificial intelligence" OR "corporate governance" OR "machine learning") and found as many as 578 documents.

To obtain the most relevant articles in the scope of our research, we limit the data based on the type of document, namely the article and produced as many as 159 documents, can be seen in figure 1. After that, due to the scope of our research around finance, our data was re-limited based on two subject areas namely (business, management and accounting), (economics, finance) and (social sciences) obtained data as many as 61 documents. We again limit the data according to the scope of our research based on the keywords "corporate governance", "financial fraud", "machine learning", and "artificial intelligence" as many as 46 documents were found.

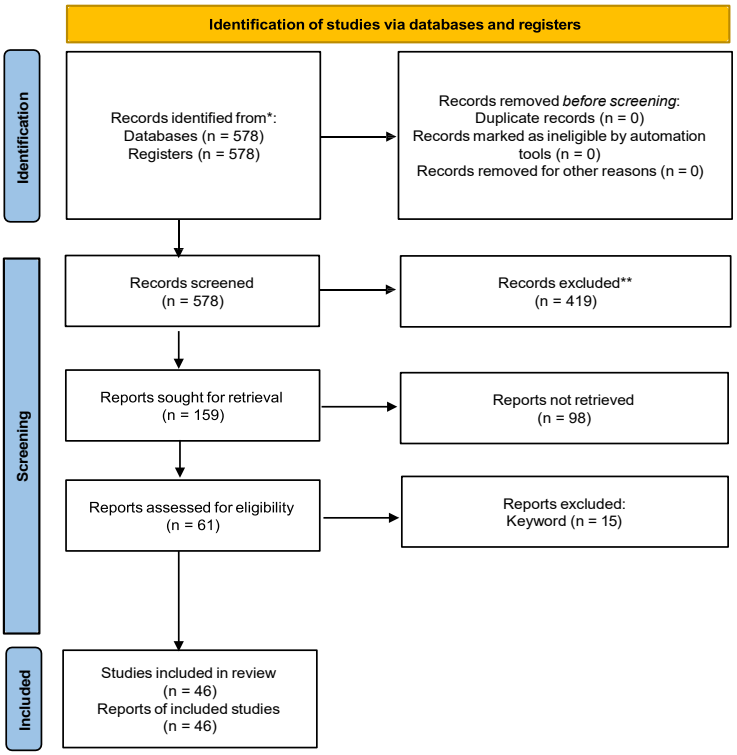

Figure 1. Prisma Flow Diagram

So that the final query on Scopus that is used for data collection is TITLE-ABS-KEY(*"financial fraud"* AND *"artificial intelligence"* OR *"corporate governance"* OR *"machine learning"*) AND (LIMIT

TO (DOCTYPE , *"ar"*)) AND (LIMIT-TO (SUBJAREA , *"BUSI"*) OR LIMIT-
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TO (EXACTKEYWORD , *"Machine Learning"*) OR LIMIT-
TO (EXACTKEYWORD , *"Artificial Intelligence"*))

The final data on Scopus were collected and analyzed with a bibliometric approach using VOSviewer and RStudio (biblioshiny) to perform co-occurrences, co-authorship, trend analysis.

3. RESULTS AND DISCUSSION

3.1. General information and performance analysis

The bibliometric dataset consists of 46 articles published between 2017 and 2025, sourced from 42 journals and related scientific outlets. The results indicate a high annual scientific growth rate of 35.7%, reflecting the rapidly expanding scholarly interest in the application of artificial intelligence (AI) and machine learning (ML) within corporate governance to combat financial fraud. The average citation per document is 23.17, while the average document age is 2.54 years, suggesting that this research stream is relatively recent and continues to attract academic attention. In total, 150 authors contributed to the dataset, with an average of 3.33 authors per document, indicating a moderate level of research collaboration.

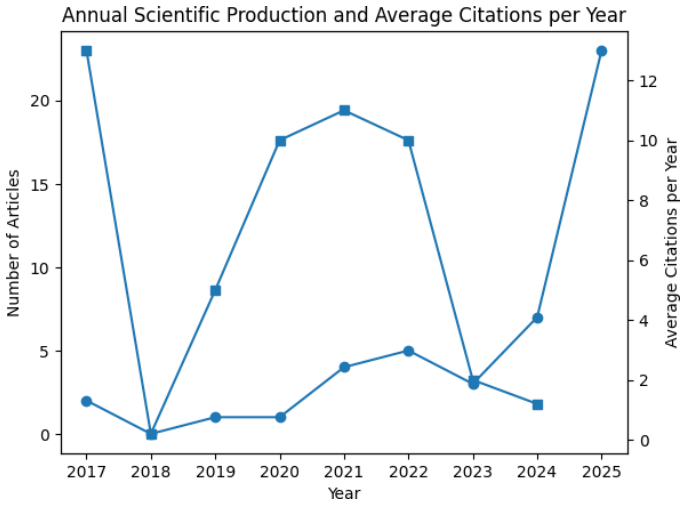

Figure 2. Growth of research on the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud
Source: Biblioshiny, 2025

Figure 2 illustrates the distribution of research from 1990 to 2023. It is seen that the productivity of research was almost stable from 1990 to 2014. However, figure 2 shows that from 2015 to 2019 it shows

a pretty good growth compared to the previous year, then we can see a considerable growth occurring in 2020 to 2022, this shows an increase in the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud, this trend is expected to increase over the next few decades. In addition, Figure 2 shows that earlier publications receive higher average citations, reflecting their foundational influence in this research area. The lower citation averages in 2023–2025 are mainly due to the shorter citation window of recent studies rather than reduced scholarly relevance. The sharp increase in publications during 2024–2025, combined with evolving citation patterns, indicates that research on AI- and ML-based corporate governance against financial fraud is in a rapid growth phase with strong future impact potential.

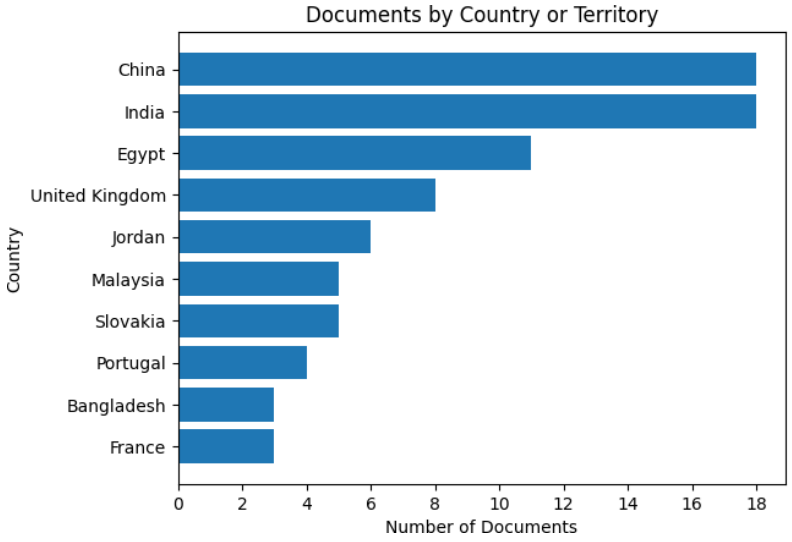

Figure 3. Countries most active in the literature on the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud
Source: Biblioshiny, 2025

Figure 3 depicts country production over time, revealing that China and India emerge as the most productive countries, particularly after 2021, followed by the Egypt, United Kingdom, and Jordan. The temporal analysis shows that China and India experienced substantial growth in publication output toward the end of the observation period, reflecting strong national research engagement in AI, ML, and financial fraud governance topics.

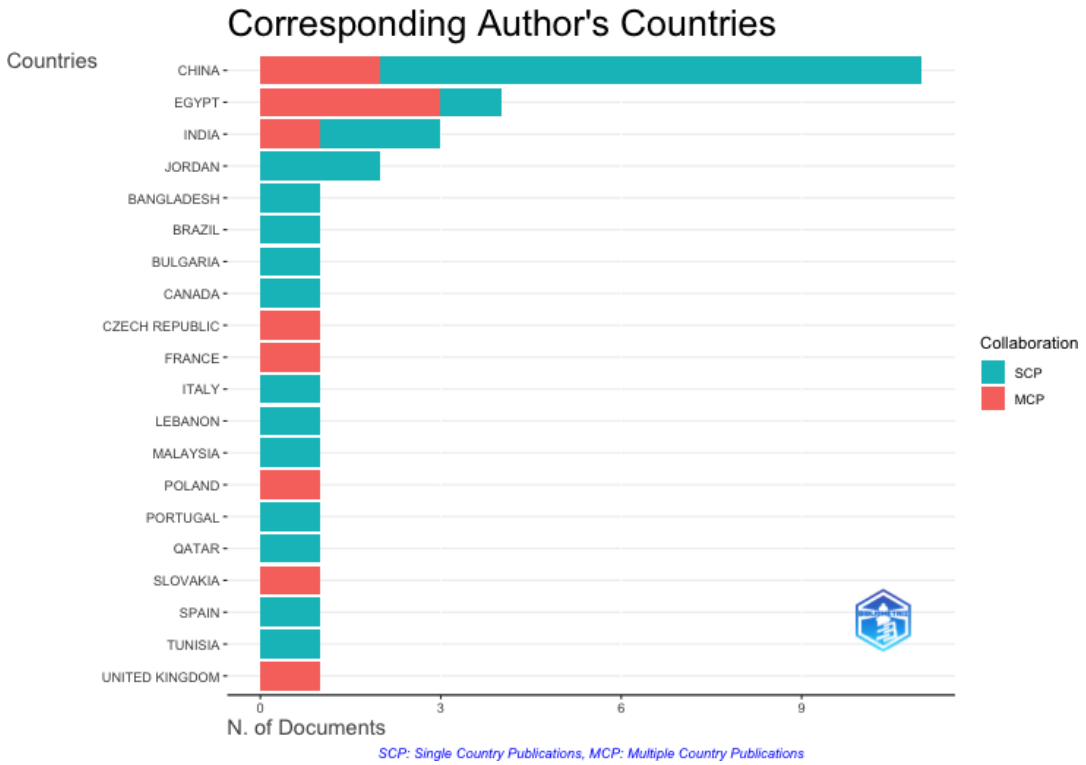

Figure 4. Countries production based on the corresponding authors.

Figure 4 analyzes corresponding authors' countries, distinguishing between single-country publications (SCP) and multiple-country publications (MCP). China shows the highest number of publications, with a significant proportion of international collaborations (MCP), indicating its central role in cross-border research networks. Other countries such as Egypt, India, and the United Kingdom also demonstrate varying degrees of international research collaboration, highlighting the increasingly global nature of this research field.

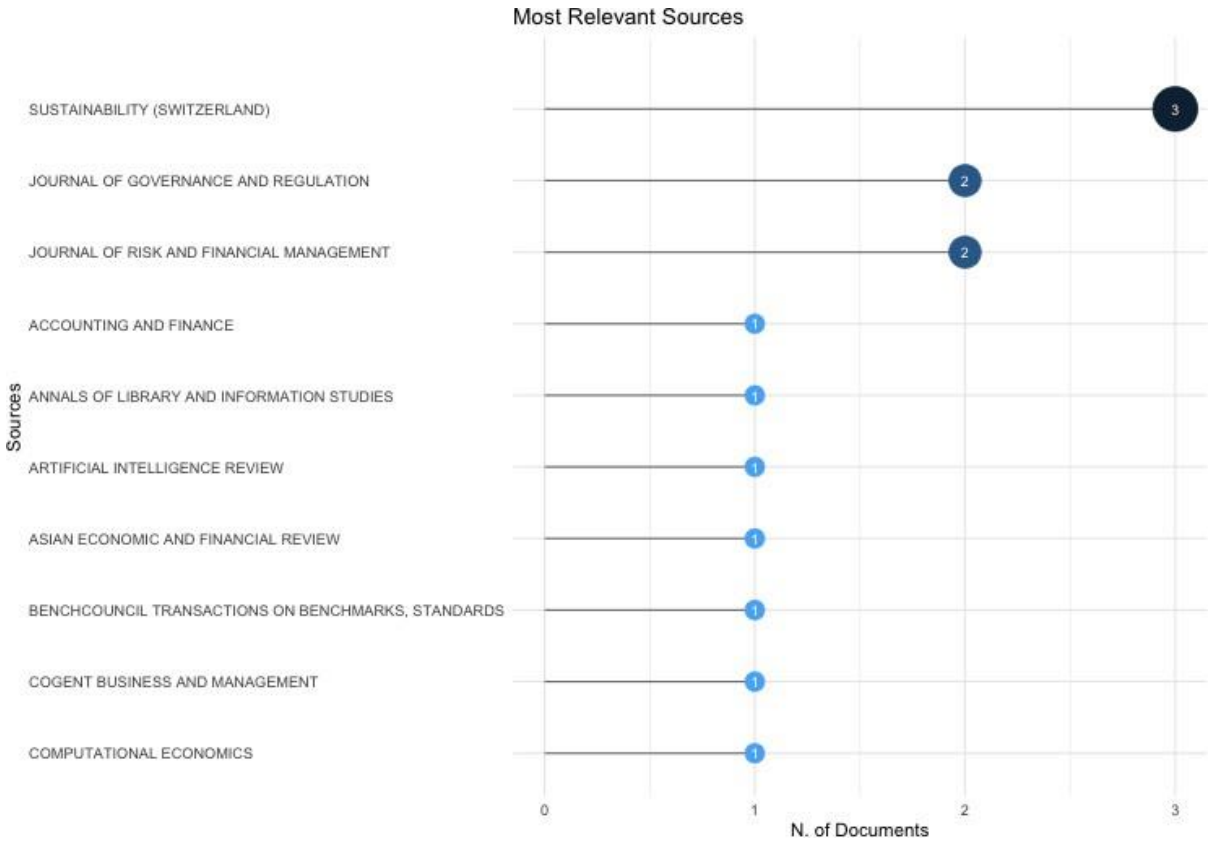

Figure 5. Most Relevant Sources
Source: Biblioshiny, 2025

Figure 5 shows the most relevant sources, with Sustainability (Switzerland) emerging as the leading journal, followed by the Journal of Governance and Regulation and the Journal of Risk and Financial Management. Although the number of publications per source remains relatively limited, this suggests that the research domain is still evolving and offers substantial opportunities for future scholarly contributions.

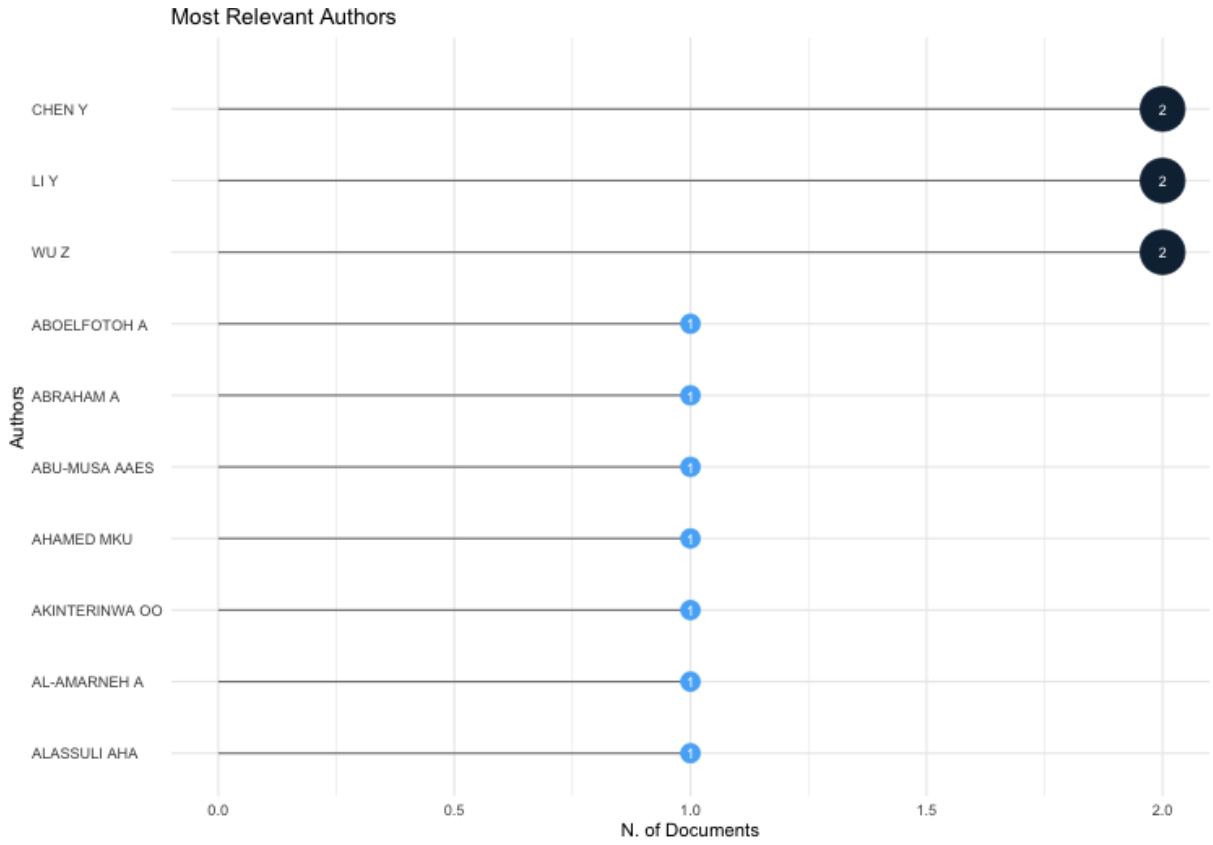

Figure 6. Most Relevant Authors

Source: Biblioshiny, 2025

Figure 7 presents the most relevant authors, identifying Chen Y, Li Y, and Wu Z as the most productive contributors, each with multiple publications. Further insights from author productivity over time indicate that author contributions have intensified in recent years, aligning with the overall growth in scientific output. The increasing size and intensity of publication markers confirm that a growing number of scholars are actively engaging in this emerging interdisciplinary research area.

3.2 Citation Analysis

Co-citation occurs at the time when the publication of different studies is cited in other studies, the purpose of the co-citation analysis is to reveal hidden patterns of author relationships based on their publications (Feng, Zhu, & Lai, 2017). In the graphical results provided by VOSviewer software, the co-citation network is represented by lines and circles that can be seen in Figure 7. In addition, the graphic results of co-citation can be used to find out the co-citation that is trending by looking at the color of the circle (see Figure 8), the more the trend of co-citation, the color of the circle is yellow.

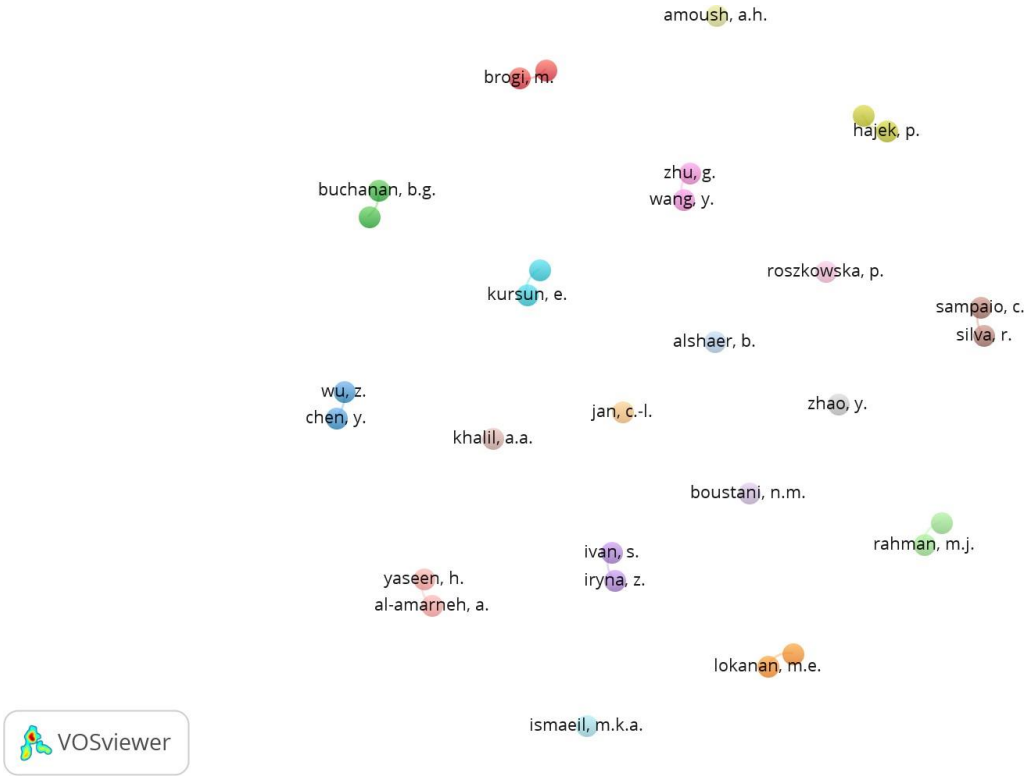

Figure 7 Network Visualization co-citation

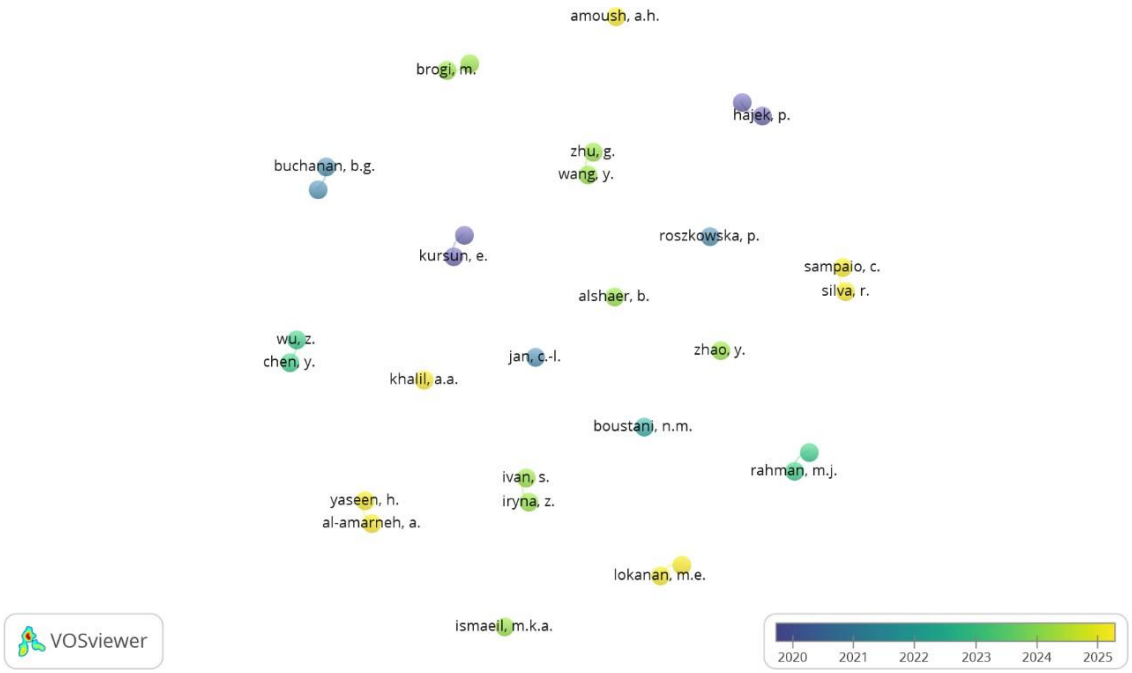

Figure 8 Overlay Visualization co-citation

3.3 Cartographic Analysis

We do keyword analysis using VOSviewer software. Cartographic analysis shows a map of keywords based on their emergence and relevance about the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud (Figure 9).

Figure 10 reveals the latest topics that can be researched. The new topic is colored in yellow, indicating that recent research includes evidence theory, corporate fraud, risk assessment related to the use of artificial intelligence (AI) and machine learning (ML) in corporate governance against financial fraud.

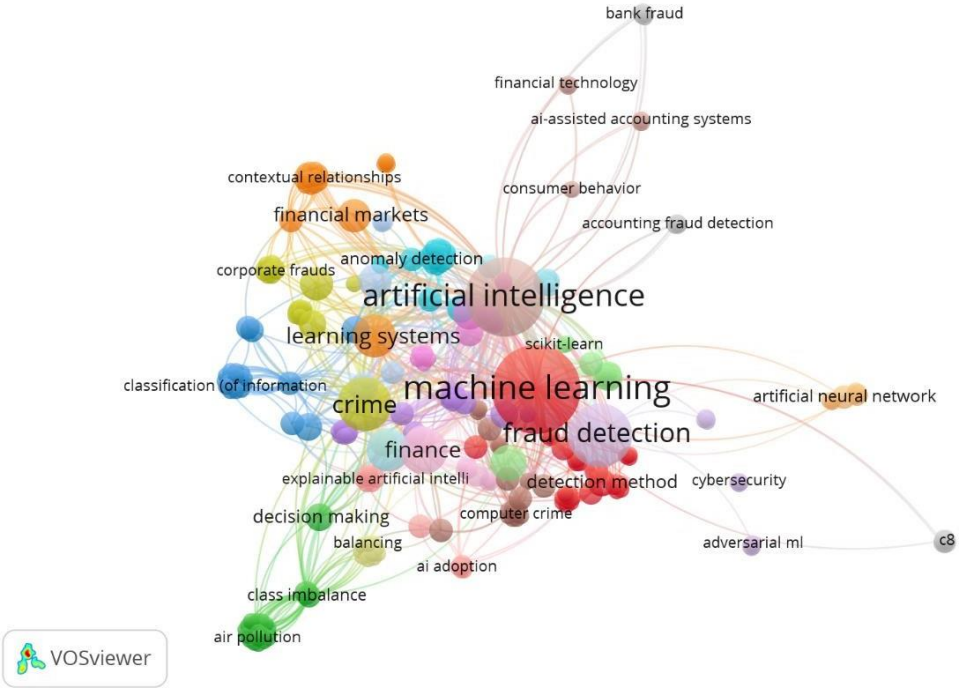

Figure 9 Network Visualization co-occurrences

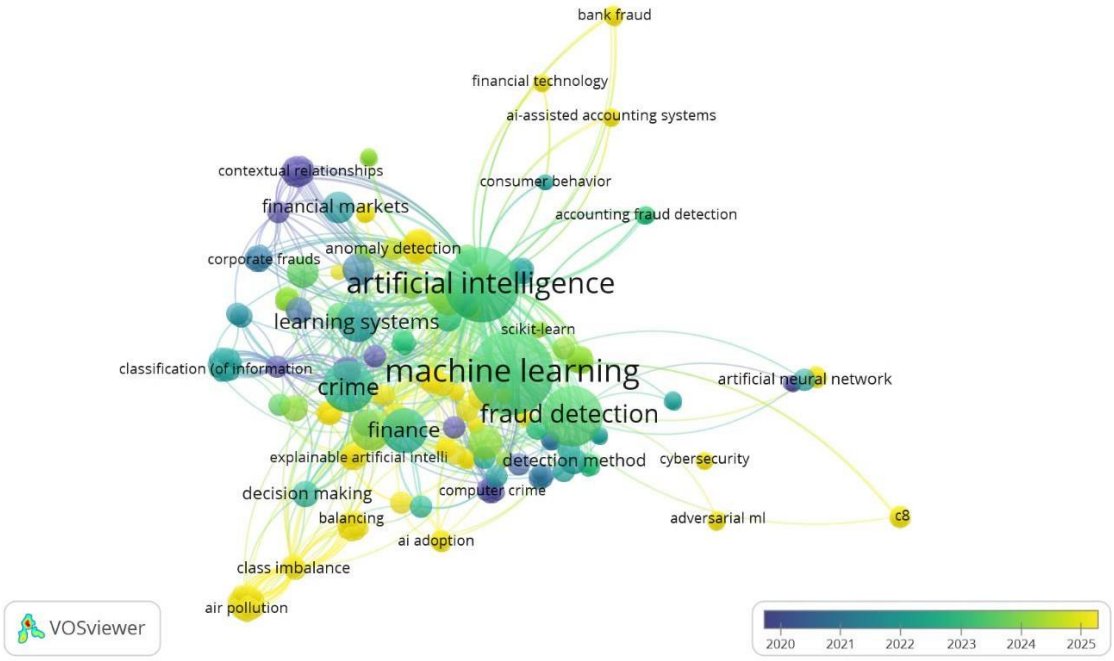

Figure 9 Overlay Visualization co-occurrences

4. CONCLUSION

The study provides a comprehensive bibliometric analysis of research on the application of artificial intelligence and machine learning in corporate governance to prevent financial fraud. The findings reveal a rapidly growing body of literature, particularly after 2020, indicating increasing scholarly and practical interest in AI and ML based governance mechanisms.

The analysis shows that China and India are leading contributors to this research field, supported by strong international collaboration networks. Key journals such as Sustainability and Journal of Risk and Financial Management play a central role in disseminating related studies, while a growing number of researchers actively contribute to this emerging domain.

Citation and keyword analyses further indicate a shift toward advanced analytical topics, including fraud detection models, risk assessment, and evidence-based governance frameworks. The emergence of these themes suggests that future research will increasingly focus on integrating AI-driven tools into corporate governance systems to enhance transparency, accountability, and fraud prevention.

Overall, the results confirm that research on AI and ML in corporate governance is still in a developmental stage but shows strong growth potential. Future studies are encouraged to explore empirical validations, cross-country comparisons, and the practical implementation of AI-based governance systems to strengthen organizational integrity and reduce financial misconduct.

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