

Artificial Intelligence in Emerging Finance Research: A Bibliometric Analysis

1. Pradinsha E T

Research scholar

Research Department of Commerce, Farook College (Autonomous), Kozhikode,
University of Calicut, Kozhikode 673632, India

<https://orcid.org/0000-0002-7798-9238>

2. Dr R. Reshmi

Professor

Research Department of Commerce, Farook College (Autonomous), Kozhikode,
University of Calicut, Kozhikode 673632, India

<https://orcid.org/0000-0001-9300-0269>

Abstract

The rapid advancement of artificial intelligence (AI) has significantly transformed the landscape of emerging finance, influencing areas such as fintech, digital payments, algorithmic trading, and decentralized finance. Despite the growing body of literature, a systematic understanding of the intellectual structure and evolving trends in this domain remains limited. This study aims to provide a comprehensive bibliometric analysis of AI-driven research in emerging finance. A total of relevant publications indexed in the Scopus database were examined using advanced bibliometric tools, including VOSviewer and Biblioshiny, to analyse publication patterns, citation structures, collaboration networks, and thematic evolution.

This study contributes to the literature by offering a structured overview of the AI finance nexus and identifying key research frontiers. The insights are valuable for academics, practitioners, and policymakers seeking to understand the transformative role of AI in shaping the future of financial markets and institutions.

Keywords: Artificial Intelligence, Bibliometric Analysis, Science Mapping.

Introduction

The rapid advancement of digital technologies has fundamentally transformed the global financial landscape, with artificial intelligence (AI) emerging as a key driver of innovation in emerging finance. AI technologies, including machine learning, natural language processing,

and big data analytics, are increasingly being applied in areas such as algorithmic trading, credit risk assessment, fraud detection, and portfolio management, thereby enhancing the efficiency and accuracy of financial decision-making processes (Bhatia et al., 2021; Cao, 2021). The integration of AI into financial systems has also accelerated the development of fintech ecosystems, reshaping traditional financial intermediation and enabling more inclusive and data-driven financial services (Lee & Shin, 2018).

In recent years, the concept of emerging finance has gained significant attention, encompassing fintech innovations, blockchain technologies, digital payments, decentralized finance (DeFi), and alternative lending platforms (Gomber et al., 2018). These developments have expanded access to financial services and improved operational efficiency; however, they have also introduced new challenges related to cybersecurity, regulatory oversight, and systemic risk (Arner et al., 2017). AI plays a crucial role in addressing these challenges by facilitating predictive analytics, real-time monitoring, and intelligent automation in financial markets (Philippon, 2016).

To address this gap, the present study adopts a bibliometric approach to systematically analyse the intellectual structure and evolution of AI research in emerging finance. Bibliometric analysis has been widely used as a robust methodological tool to evaluate scientific output, identify influential contributions, and map knowledge structures within a research field (Donthu et al., 2021). By employing advanced tools such as VOSviewer and Biblioshiny, this study examines publication trends, citation networks, co-authorship patterns, and keyword co-occurrences to provide a holistic understanding of the research landscape.

The findings of this study are expected to benefit researchers by highlighting underexplored areas and guiding future research agendas. Furthermore, the study provides valuable insights for practitioners and policymakers seeking to understand the transformative role of AI in financial systems and to design effective regulatory frameworks that ensure sustainable and inclusive financial development.

Literature review

Artificial intelligence (AI) has become a transformative force in modern financial systems, enabling enhanced data processing, predictive modelling, and automation of complex decision-making processes. AI techniques such as machine learning, deep learning, and natural language processing are widely used in financial applications including stock price prediction, credit

scoring, fraud detection, and portfolio optimization (Fischer & Krauss, 2018; Gu et al., 2020). These technologies have improved forecasting accuracy and reduced information processing costs, thereby increasing market efficiency.

From a theoretical perspective, the adoption of AI in finance can be linked to the Efficient Market Hypothesis (EMH), which suggests that asset prices reflect all available information (Fama, 1970). AI enhances the speed and accuracy of information assimilation, potentially pushing markets closer to efficiency. However, recent studies argue that AI may also create new inefficiencies due to model overfitting, algorithmic biases, and herding behaviour among automated trading systems (Cao, 2021).

The rise of fintech has significantly reshaped the financial services industry by introducing innovative technologies that improve accessibility, efficiency, and customer experience. Fintech innovations such as mobile banking, peer-to-peer lending, blockchain, and robo-advisory services have disrupted traditional financial intermediation (Gomber et al., 2018; Lee & Shin, 2018). AI plays a central role in these developments by enabling intelligent automation, risk assessment, and personalized financial services.

Theoretical frameworks such as financial intermediation theory and transaction cost economics explain how fintech reduces operational inefficiencies and lowers transaction costs in financial markets (Philippon, 2016). At the same time, the integration of AI into fintech has raised concerns regarding data privacy, cybersecurity risks, and regulatory challenges, necessitating the development of robust governance frameworks (Arner et al., 2017).

This study addresses these gaps by providing a comprehensive bibliometric analysis of AI in emerging finance. By integrating insights from finance, technology, and information systems literature, the study offers a holistic understanding of the research landscape and identifies key trends, influential contributions, and future research directions.

Methodology

This study adopts a quantitative bibliometric approach to systematically analyse the research landscape of artificial intelligence in emerging finance. Relevant publications were retrieved from the Scopus database using carefully selected keywords related to artificial intelligence, fintech, and digital finance. After applying inclusion and exclusion criteria, the final dataset was refined to ensure accuracy and relevance. The analysis was conducted using established bibliometric tools, including VOSviewer and Biblioshiny, to examine publication trends,

citation structures, co-authorship networks, and keyword co-occurrence patterns. Descriptive analysis was used to assess the growth of literature over time, while network and thematic mapping techniques were employed to identify influential contributors, collaboration patterns, and emerging research themes. This methodological framework enables a comprehensive and objective evaluation of the intellectual structure and evolution of AI-driven research in emerging finance.

Results and Discussion

4.2 Citation Analysis of Artificial Intelligence in Finance research.

Source	Documents	Citations
Finance research letters	28	957
Knowledge-based systems	12	831
Journal of behavioral and experimental finance	8	724
Electronic commerce research and applications	5	692
Decision support systems	16	633
International journal of financial studies	9	592
Technological forecasting and social change	14	524
Research in international business and finance	9	455
Journal of the operational research society	9	377
Energy economics	12	375

Source: Compiled by author

Table 1: Most cited journals of Artificial Intelligence in Finance research.

The above table (Table 1) shows citation analysis of the top journals in metaverse and AI related researches. Finance research letters has highest number of citations (957) across 28 documents, followed by Knowledge based systems with 831 citations for 12 documents. The Journal of Behavioural and Experimental Finance has received 724 citations for 8 publications. Journals like Decision Support Systems and the International Journal of Financial Studies follow, with 633 and 592 citations, respectively. Additionally, Technological forecasting and social change (524 citations), Research in international business and finance (455 citations), Journal of operational research society (377 citations) and energy economics (375 citations) are also among the highly cited sources of metaverse and AI related researches.

Sl No.	Document	Author	citations
1	Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy	dwivedi (2021)	3181
2	Yahoo! for amazon: Sentiment extraction from small talk on the Web	das (2007)	971
3	Artificial Intelligence in FinTech: understanding robo advisors adoption among customers	belanche (2019)	587
4	ChatGPT for (Finance) research: The Bananarama Conjecture	dowling (2023)	453
5	Industry 4.0 in finance: the impact of artificial intelligence (ai) on digital financial inclusion	mhlanga (2020)	396
6	Study on a prediction of P2P network loan default based on the machine learning Light GBM and XG boost algorithms according to different high dimensional data cleaning	ma (2018)	378
7	Artificial intelligence and machine learning in finance: A bibliometric review	ahmed (2022)	303
8	The evolution of the financial technology ecosystem: An introduction and agenda for future research on disruptive innovations in ecosystems	palmié (2020)	271
9	Mining corporate annual reports for intelligent detection of financial statement fraud – A comparative study of machine learning methods	hajek (2017)	264
10	Applications of big data in emerging management disciplines: A literature review using text mining	kushwaha (2021)	256

Source: Compiled by author

Table 2: Most cited Documents of Artificial Intelligence in Finance research.

The above table (Table 2) shows top ten most cited publications in metaverse and ai related research. The most highly cited article is Dwivedi (2021), titled “*Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy,*” with 3,181 citations, indicating its strong influence on the field.

This is followed by Das (2007) with 971 citations for the study on sentiment extraction from web-based communication. Belanche (2019) ranks third with 587 citations for research on AI adoption in FinTech, particularly focusing on robo-advisors.

Recent influential contributions include Dowling (2023), Mhlanga (2020) and Ma (2018) also show significant citation impact, reflecting strong research attention on AI-driven financial inclusion and machine learning-based credit risk prediction.

Further notable contributions include Ahmed (2022), who conducted a bibliometric review on AI and machine learning in finance (303 citations), Palmié (2020) on the evolution of the

fintech ecosystem (271 citations), Hajek (2017) on fraud detection using machine learning (264 citations), and Kushwaha (2021) on big data applications in management (256 citations).

Country	Documents	Citations
United kingdom	70	5699
India	77	4939
China	164	4014
United States	109	3644
Netherlands	14	3259
Denmark	7	3252
Australia	39	1453
Spain	29	1087
United Arab Emirates	15	1016

Source: Compiled by author

Table 3: Most cited Documents of Artificial Intelligence in Finance research.

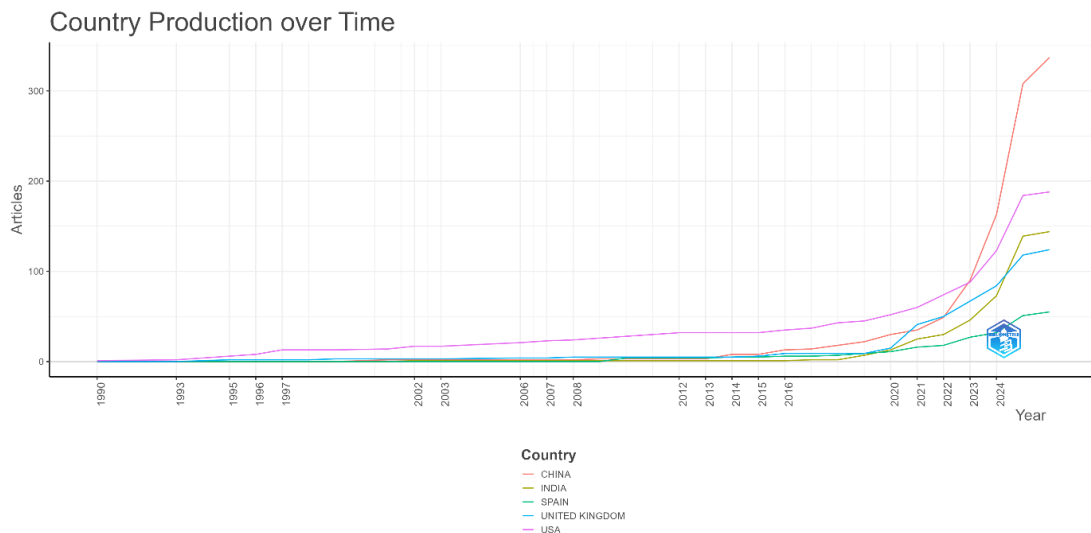


Figure 5: Country production over time

The above table (Table 3) presents the most cited countries in Artificial Intelligence-related research. The United Kingdom has the highest number of citations (5,699), followed by India with 4,939 citations. China and the United States have 164 and 109 documents, receiving 4,014 and 3,644 citations, respectively.

In addition, the country production curve illustrates the publication trends of major countries contributing to Metaverse and Artificial Intelligence research over time. In the early years,

research output from all countries remained very low. The United States showed steady contributions from the beginning, maintaining a gradual upward trend over time.

However, after 2020, a sharp increase in publications is visible across all major countries. China demonstrates the most significant growth, especially after 2022, emerging as the leading contributor in recent years. The rapid rise indicates strong research investment and academic focus in this domain.

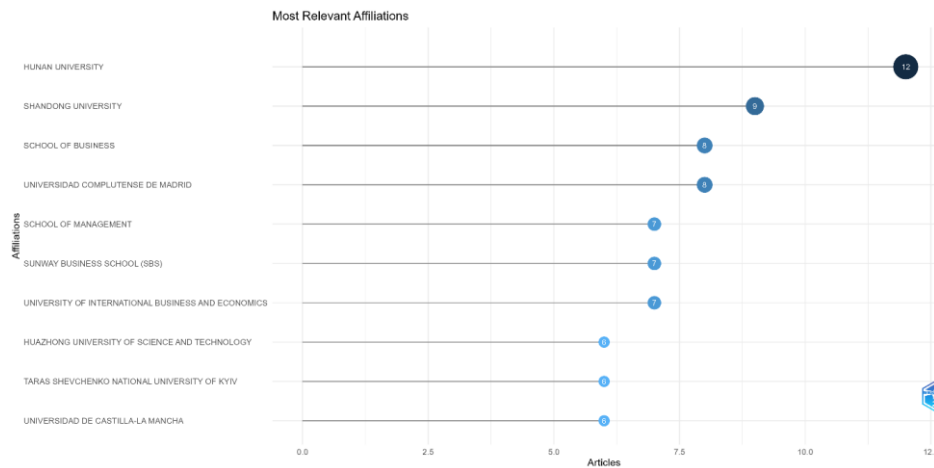


Figure 6: Most relevant affiliations of Metaverse and AI research

The figure (Figure 6) presents the top institutions contributing to research in the Metaverse and Artificial Intelligence. Among them, Hunan University leads with the highest number of publications (12 articles), indicating a strong research focus in this area. It is followed by Shandong University with 9 publications. Several institutions have made notable contributions with 8 publications each, including the School of Business and Universidad Complutense de Madrid. Overall, the results indicate that research output is concentrated among a few key institutions, with a strong presence of Chinese universities among the top contributors.

Keyword Analysis of Documents in Metaverse and AI research

keyword	Occurrences	Link strength
Artificial intelligence	338	1285
Finance	182	959
Machine learning	74	292
Fintech	52	205
Decentralized finance	41	194
Decision making	41	265
Decision support systems	40	260
Blockchain	36	155
AI	32	106

Investments	29	201
Learning systems	29	203
Risk management	29	202
Forecasting	28	157

Source: Compiled by author

The above table(Figure 7) and tree present the keyword frequency analysis of the most frequently used keywords in Metaverse and Artificial Intelligence research, based on their occurrence and percentage share. Artificial intelligence appears as the largest theme, with 338 occurrences (21%), followed by finance with 182 occurrences (12%), indicating a strong connection between AI and financial research. Other important themes include machine learning (74 occurrences), fintech (52 occurrences), and decentralised finance and decision making (41 occurrences each). Several technology driven themes such as blockchain, big data, deep learning, neural networks, and forecasting also appear frequently, highlighting the strong technical foundation of the field.

Conclusion

This study provides a comprehensive bibliometric analysis of the evolving research landscape of artificial intelligence (AI) in emerging finance. By systematically examining a large body of scholarly publications, the study maps the intellectual structure, key contributors, collaboration networks, and thematic developments within this rapidly growing domain. The findings reveal a significant surge in research output in recent years, particularly driven by the increasing integration of AI technologies into financial systems such as fintech, digital payments, algorithmic trading, and decentralized finance.

The analysis highlights the interdisciplinary nature of the field, with strong contributions from finance, computer science, and data analytics. Core research themes identified include machine learning, blockchain, fintech innovation, and risk management, while emerging areas such as decentralized finance, explainable AI, and sustainable finance indicate promising future research directions. The study also underscores the growing importance of global collaboration in advancing AI-driven financial research.

From a theoretical perspective, the findings reinforce the relevance of concepts such as information asymmetry, market efficiency, and financial intermediation in understanding the role of AI in transforming financial markets. At the same time, the study acknowledges the dual

impact of AI while it enhances efficiency and reduces information gaps, it may also introduce new challenges related to algorithmic bias, market concentration, and regulatory complexity.

The study contributes to the literature by offering a structured and holistic overview of the AI–finance nexus, thereby addressing the fragmentation in existing research. It provides valuable insights for researchers by identifying underexplored areas and guiding future research agendas. For practitioners and policymakers, the findings highlight the need for balanced regulatory frameworks that support innovation while ensuring financial stability, transparency, and data security.

Despite its contributions, the study has certain limitations. The analysis is based on data retrieved from a single database, which may not capture all relevant publications. Additionally, the rapidly evolving nature of AI and emerging finance suggests that new developments may not be fully reflected in the dataset. Future research can extend this work by incorporating multiple databases, conducting longitudinal analyses, and exploring specific applications of AI in greater depth.

In conclusion, artificial intelligence is poised to play a transformative role in shaping the future of financial systems. A deeper and more integrated understanding of its applications, implications, and challenges will be essential for fostering sustainable and inclusive financial innovation.

Practical Implications

The findings of this study offer important practical insights for multiple stakeholders in the financial ecosystem. For financial institutions and fintech firms, the identification of core themes such as machine learning, risk analytics, and blockchain highlights key areas for strategic investment and innovation to enhance operational efficiency and competitive advantage. Policymakers and regulators can benefit from the study by understanding emerging trends like decentralized finance and explainable AI, enabling them to design adaptive regulatory frameworks that balance technological advancement with financial stability and data security. For investors and market participants, the insights into AI-driven financial applications can support more informed decision-making and risk management strategies. Additionally, the study provides guidance for technology developers and startups to align their innovations with evolving research frontiers, thereby fostering sustainable and inclusive growth in the digital financial ecosystem.

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