# AI REVOLUTION IN FINANCIAL INSTITUTIONS: IMPACT, CUTTING-EDGE APPLICATIONS AND A COMPREHENSIVE BIBLIOMETRIC ANALYSIS OF EMERGING TRENDS

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## EXTENDED ABSTRACT

**Purpose** Financial institutions are rapidly following the applications of artificial intelligence (AI) allowing them to better organize and perform job duties and understand their customers. With the application of AI, employees in financial institutions will not be burdened with the performance of operational activities and will have more time to devote themselves to their professional and personal growth and development. In this way, technology such as AI will not replace people but will be their support. This current topic is the main incentive to delve deeper into the application of AI in financial institutions through bibliometric data visualization and analysis.

Many managers have an aversion to using artificial intelligence algorithms in decision-making, despite their superior performance (Mahmud *et al.*, 2023). Banks, as the most important actors for the continuity of the financial system, should conduct evaluation and measurement of branch performance and set goals for them and portfolio managers, which is an important process for decision-making and strategic planning in the banking industry (Met *at al.*, 2023). Poor decision-making in financial institutions is likely to cause financial crises (Weng and Huang, 2021). Artificial intelligence and machine learning are helping many managers to focus on key and strategic aspects and spend less time on repetitive tasks, enabling better financial risk management (Mahalakshmi *et al.*, 2022). The artificial intelligence system enables development accompanied by better performance and optimization (Dennis *et al.*, 2023). The gradual application of artificial intelligence in corporate financial risk management results in a decent performance in recalling fraudulent firms (Lin and Gao, 2022). COVID-19 has affected the change of digitalization and technological development of financial institutions (Aziz *et al.*, 2022). Many challenges for financial services have opened up with the transition to digital freedom (Narsimha *et al.*, 2022). Detecting activities related to financial cybercrime is a major problem, as a highly restrictive algorithm can block all suspicious activities that interfere with customers' real business (Nicholls *et al.*, 2021). Customers are increasingly facing many fraudulent attacks and scams in financial banking operations, and cybercriminals have found the opportunity to use financial transactions to carry out their fraudulent activities (Narsimha *et al.*, 2022). A large volume of sensitive customer-related data circulates and accumulates in

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financial institutions every day (Park *et al.*, 2021). In the financial sector, machine learning algorithms, in addition to being used in fraud detection and providing financial advice to investors, can also examine a large database in a short period (Lei *et al.*, 2022).
**Design/methodology/approach** The data for the bibliometric analysis has been downloaded from the Scopus database. By applying the Prisma protocol, in the first phase-identification, we searched for the terms “financial institutions”, “artificial intelligence” and “AI”. 467 documents were identified during the period 1987-2023. The language of the documents was English. In the second phase-screening, no document was excluded because non-English documents and duplicates were not identified. In the third phase-eligibility, 281 documents were excluded because only the articles were eligible and the total sample in this phase consisted of 186 articles. In the fourth phase-inclusion, we undertook a manual check of the relevance of each article based on an analysis of the abstracts 70 articles were excluded due to their irrelevance and the total sample in this phase consists of 116 articles. Furthermore, the VOSviewer software was employed for authors' co-authorship, organizations' co-authorship, and countries' co-authorship analysis, keyword co-occurrence analysis of the abstracts for the whole period and the last five years and keyword co-occurrence analysis for the last five years for the used methods, models, and software.
**Findings** The number of articles related to AI in financial institutions has been growing in the last three years of the analyzed period. 84% of the articles were published by co-author teams and 16% by a single author. The most cited single author is Mhlanga D. and the journal Expert Systems with Applications takes the first place in terms of the source of published articles and number of citations. From the analysis made with VOSviewer software, it can be concluded that: it does not mean that if some countries are geographically closer, the authors will write papers in co-authorship, USA is in first place both in terms of the number of citations and in terms of the number of published articles, from all the clusters the terms that occur the most for the whole period are learning, implication, tree, statistical method and risk evaluation. According to their occurrences, the terms that appear most concerning methods, models, and software in the last five years of the period are prediction model, correlation, discriminant analysis, statistical technique, classification method, and clustering.
**Originality/value** The analysis of abstracts and citations is of great importance in the exchange of knowledge as well as the monitoring of trends. The obtained results and conclusions can be used for further research both by academics and by all those who have an interest in researching financial institutions and artificial intelligence.

***Keywords:*** *AI, Artificial intelligence, Financial institutions.*

***JEL classification:*** *G21, G22, J29, O31.*

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