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Research Article

Investment Behavior and Fintech Transformation: A Bibliometric Perspective on Global Research Trends

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Abstract: The rise of financial technology (fintech) has significantly reshaped global investment over the last decade. Fintech innovations are increasingly applied in areas such as digital investment platforms, robo-advisors, blockchain-based assets, and cryptocurrency trading. The adoption of fintech in investment continues to grow due to the rising demand for accessibility, transparency, and efficiency in financial markets. Fintech has the potential to democratize investment by lowering entry barriers, expanding financial inclusion, and offering diverse investment instruments for retail investors. Therefore, research on fintech and investment has become an essential topic in recent years. This study uses a qualitative approach with data obtained from the Scopus database, which includes a total of 4,794 articles on fintech and investment published in the last decade (2020–2025). In addition, several software tools such as R Studio, VOSViewer, and Publish or Perish were used for data processing and bibliometric visualization. This study aims to analyze the development of research trends in fintech-driven investment, explore how technology is changing investor behavior, and provide insights for policymakers and practitioners in strengthening a sustainable and inclusive investment ecosystem.

Keywords: Bibliometric Analysis; Blockchain; Finance; Financial Technology; Investment

1. Introduction

The global financial system has grown significantly with the rise of digitization, automation, and interconnectivity, which has driven the wider use of digital payments, peer-to-peer lending, crowdfunding, online trading platforms, and electronic fund transfers. Unlike conventional financial services, fintech provides smoother transactions, greater convenience, lower costs, and higher efficiency (Jafri et al., 2025). In Indonesia, the fintech industry has experienced rapid growth, driven by digitalization, a tech-savvy young population, and government initiatives to promote financial inclusion. This has expanded access to financial markets evenly while influencing investor psychology and decision-making.

The Indonesian Stock Exchange number of investors in Indonesia's capital market has once again set a new record, reaching 17,016,329 Single Investor Identification (SID) as of July 2025. This achievement indicates that the growth in the number of investors has surpassed the target of 2 million new investors set by PT Bursa Efek Indonesia (IDX) for 2025. The number of capital market investors has increased by 2,144,690 SID (11.42%) compared to the end of 2024, which stood at 14,871,639 SID. These data illustrate how fintech not only promotes financial inclusion but also reshapes the investment landscape by drawing in first-time and small-scale investors. Therefore, the convergence of investment behavior and fintech transformation has emerged as a key research domain, drawing significant attention from experts in finance, economics, and behavioral sciences. Thus, examining global research trends on investment behavior and fintech transformation through a bibliometric lens not only enriches academic discourse but also offers practical implications for Indonesia. By situating Indonesia within a broader international context, this study aims to highlight how insights from global research can support the sustainable development of fintech and foster inclusive investment practices in emerging markets.

This review seeks to explore the evolving patterns of research on investment and fintech between 2020 and 2025. Data sources: A comprehensive literature search was conducted in the Scopus database to identify publications addressing these themes up to 2025. Additional relevant works were incorporated through manual searching and reference list screening. The

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purpose of this review is to map recent developments and highlight global research directions concerning investment behavior and fintech transformation, with a specific focus on Indonesia's position within this landscape.

2. Literature Review

Investment behavior refers to psychological, social, and economic factors that influence how individuals and institutions make investment decisions. Although traditional financial theory assumes that investors act rationally based on risk and return optimization, contemporary research shows that biases such as overconfidence, herding, and loss aversion still play a role, especially in the fintech and digital application environment (Eichler & Schwab, 2024). For example, the use of trading apps significantly changes investment behavior over time, reinforcing impulsive investment tendencies and herd behavior (Freibauer et al., 2024). In recent years, fintech transformation has begun to be studied in greater depth in the context of financial stability and banking risk. Hasanah & Azansyah (2025) found that fintech elements such as e-money contribute positively to the long-term stability of Indonesia's financial system, although P2P lending and ATM cards have had a negative impact in some periods. In addition, research by Yudaruddin et al. (2024) reveals that the development of fintech is related to credit risk and liquidity management in the Indonesian banking industry. A literature review by Kou & Lu (2025) shows that new technologies (AI, blockchain, Machine Learning) play a central role in the global fintech transformation that drives operational efficiency and financial inclusion.

The relationship between investment behavior and fintech transformation is becoming an increasingly prominent and dynamic field of academic and practical interest. The rapid development of digital financial platforms has fundamentally changed the traditional decision-making environment by providing easier access to information, reducing transaction costs, and enabling investors to participate in capital markets in real time. These technological innovations have not only accelerated transaction speeds but also created more transparent market data flows, allowing investors to make decisions based on timely and accurate insights. In addition, the adoption of fintech has played a significant role in expanding financial inclusion, particularly by encouraging the participation of younger generations and novice investors who may have previously struggled to access conventional financial systems. Robo-advisors, for example, provide an alternative form of investment guidance by offering automatic portfolio diversification, systematic risk assessment, and personalized recommendations based on user profiles. This automation can effectively reduce common behavioral biases such as overconfidence, herd behavior, or loss aversion, which often influence investor decisions in traditional markets. According to (Lam, 2025), machine learning algorithms in fintech applications such as fraud detection systems and robo-advisors have the potential to change the way investors evaluate risk and choose investment strategies, especially on high-speed, real-time data-driven digital platforms. This technology enables high-speed analysis of large amounts of data, making it possible to identify hidden patterns, anomalies, and market trends that are difficult to detect using traditional methods. In the context of fraud detection, machine learning algorithms can dynamically study transaction behavior and immediately recognize suspicious activity, ultimately improving the security of digital financial systems. Meanwhile, robo-advisors provide more personalized investment recommendations by adjusting portofolios based on risk profiles, financial goals, and investor preferences, while reducing emotional bias in decision-making. With the integration of this technology, fintech not only expands access to financial services, but also promotes efficiency, accuracy, and trust in the modern investment process.

Although global literature on fintech and investment behavior is growing rapidly, there are still a number of research gaps. First, most studies focus on developed countries, while research in emerging markets such as Indonesia is still limited. Second, studies in Indonesia are generally descriptive and have not yet linked local findings to global trends. Third, although bibliometric analysis has been used in fintech research, studies that specifically map the relationship between fintech transformation and investment behavior are still rare. Therefore, research using a bibliometric approach has the potential to make academic and practical contributions, both in enriching theory and in supporting policy formulation in Indonesia.

3. Research Method

The initial search was conducted in the Scopus database, and the evaluation of the documents obtained was divided into three main phases (Figure 1). The first phase (Data Collection) included establishing search criteria to identify relevant documents in the Scopus database, using article titles, abstracts, and the keyword "Fintech." The selection was limited to article types (research, reviews, and conference proceedings) published between 2020 and

2025. The filtered documents were then classified based on the publishing institution and field of study. The second phase (Data Visualization) involved exporting the documents to VOS Viewer software for bibliometric analysis. In this phase, information was visualized to identify research trends through metrics such as author collaboration, country distribution, journal productivity, and inter-author relationships. The third phase (Data Analysis) is the stage of analyzing and discussing the results of the previous visualization. The findings are then used to conduct a literature review and explore future perspectives related to the development of fintech and investment in Indonesia.

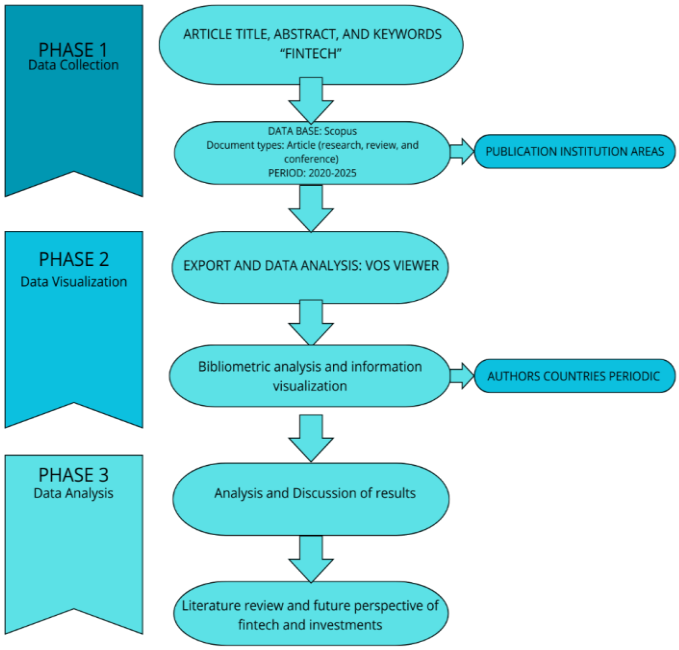

Figure 1. Methodology Phases Applied to the Present Work

The search results were downloaded using the Scopus export tool in .csv format and synchronized with Mendeley Desktop for reference management. Descriptive analysis including metrics such as annual publication trends, number of publications per author, and journal distribution was conducted using Microsoft Excel. In the second phase, the exported documents were analyzed using VOS Viewer version 1.6.20. Bibliometric analysis and information visualization were performed using keyword co-occurrence as the unit of analysis. The resulting topic trend map included both keyword network visualization and keyword density mapping (hotspots), providing insights into research clusters and dominant themes in fintech studies. In the final phase, the visualized data were analyzed and discussed to identify current research trends. The study concluded with a literature review and an exploration of future perspectives in fintech and investment research.

4. Results and Discussion

The bibliometric data in the figure below shows the trends and characteristics of scientific publications between 2020 and 2025, a total of 4,794 scientific documents were published across 823 different sources. This reflects a relatively high level of research productivity over the five-year period. With an annual growth rate of 23.21%, there has been a significant year-on-year increase in publication output. This trend indicates a growing interest and engagement in scientific research, possibly supported by increased funding, institutional backing, and global scientific challenges that require rapid knowledge production.

A total of 15,515 authors contributed to these publications, demonstrating the involvement of a large and active research community. Interestingly, only one document was written by a single author, underscoring the dominant role of collaboration in current scientific publishing practices. The average number of authors per document was 8.58, highlighting the prevalence of teamwork and interdisciplinary cooperation. This aligns with global trends where research is increasingly collaborative, involving experts from multiple disciplines and institutions.

Figure 2. Main Information Overview (using R Studio)

Approximately 30.08% of publications are the result of international author collaboration, indicating a strong level of cross-border scientific collaboration. Such collaborations are often associated with higher research quality and greater visibility, as they combine diverse perspectives, resources, and access to global data sets. These documents also have a significant impact, with an average of 14.06 citations per document, indicating that the research results are well received and frequently cited in the academic community.

The authors used a total of 12,081 keywords, reflecting the breadth of research topics explored. The documents collectively referenced 27,699 sources, indicating a strong foundation in existing literature and deep academic engagement. The average age of the documents was 1.85 years, suggesting that most publications are relatively recent and still highly relevant. Overall, the data not only illustrates quantitative publication trends but also provides insights into the collaborative nature, academic influence, and thematic diversity of scientific research during this period.

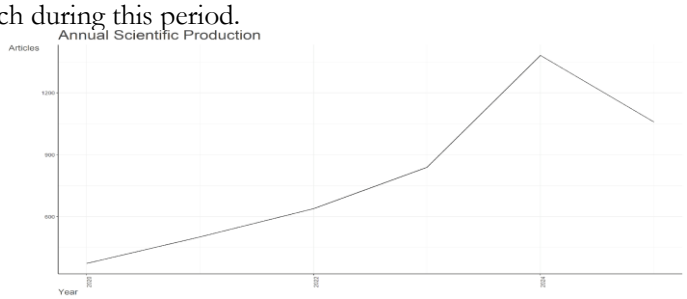

Figure 3. Annual Scientific Production (using R Studio).

The graph titled "Annual Scientific Production" in (Figure 3) illustrates the number of scientific articles published each year from 2020 to 2025. The data shows a consistent upward trend in production from 2020 to 2024, followed by a decline in 2025. In 2020, there were 373 articles published, increasing to 501 in 2021, and continuing to increase to 639 in 2022 and 839 in 2023. The most significant growth occurred in 2024, reaching a peak of 1,382 articles. However, in 2025, the number of articles decreased to 1,059, representing a decline of more than 300 articles compared to the previous year. This indicates strong expansion in research output over five years, with a slight decline in the final year. The overall trend still reflects significant growth in scientific productivity during the period observed.

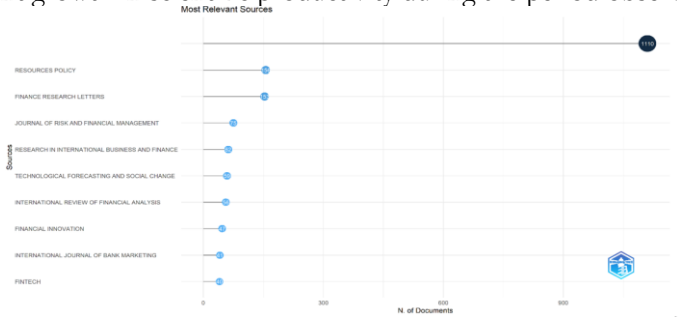

Figure 4. Most Relevant Sources (using R Studio)

The chart titled "Most Relevant Sources" in (Figure 4) shows the number of documents published by various academic sources., sorted by the number of documents they contributed. These sources are displayed on the left side, while the number of documents is shown on the x-axis. The top source, represented by the largest bubble, has 1110 documents. Other important sources include Resources Policy (156 documents), Finance Research Letters (153 documents), Journal of Risk and Financial Management (75 documents), Research in International Business and Finance (62 documents), Technological Forecasting and Social Change (59 documents), International Review of Financial Analysis (56 documents), Financial Innovation (47 documents), International Journal of Bank Marketing (41 documents), and Fintech (40 documents). Each source is marked with a bubble representing the number of documents it has contributed.

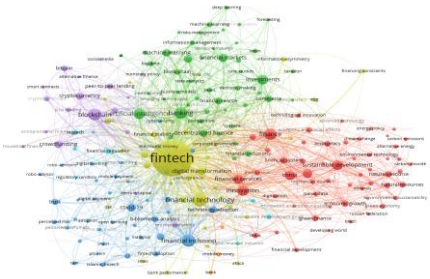

Figure 5. Network Visualization (using Vos Viewer)

The intersection between financial technology (fintech) and investment represents one of the most transformative developments in modern financial systems. Fintech has significantly reshaped how individuals and institutions approach investment by democratizing access to financial markets and introducing innovative digital tools. Through platforms such as robo-advisors, peer-to-peer lending, equity crowdfunding, and cryptocurrency exchanges, fintech enables broader participation in investment activities that were once limited to high-net-worth individuals or professional investors. As illustrated in the bibliometric visualization, keywords such as "investments", "financial markets", "machine learning", and "data analytics" appear closely linked with "fintech", indicating a strong co-occurrence and thematic overlap in the academic literature. These technological tools allow investors to make data-driven decisions, automate trading strategies, and assess risk more efficiently. Moreover, fintech plays a critical role in enhancing financial inclusion by offering low-cost, accessible investment options to underserved populations, particularly in developing economies. The use of big data and artificial intelligence in investment platforms exemplifies how fintech is not only improving efficiency but also driving personalization and transparency in investment services. In return, the growth of fintech attracts substantial venture capital and institutional investment, further fueling innovation in the sector. Overall, the convergence of fintech and investment signals a paradigm shift in the way capital is allocated, risks are managed, and financial empowerment is achieved in the digital age.

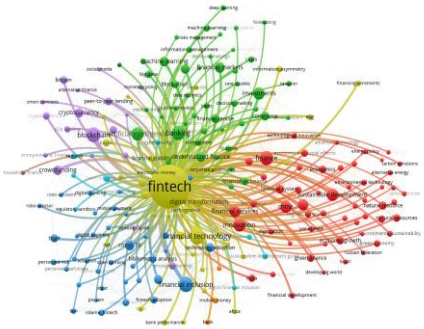

Figure 6. Network Visualization of Fintech (using Vos Viewer)

The image is a detailed co-occurrence network map used to visualize the relationships between key terms in the bibliometric research field of financial technology (fintech). The network is composed of nodes (representing terms or concepts) and edges (lines connecting them) that indicate the frequency with which these terms co-occur in academic publications. The map uses color-coded clusters to represent distinct thematic areas within the broader fintech domain, revealing how various subfields are interconnected.

The central node in this map is "fintech", represented by a large yellow node at the center. Its size and position reflect its prominence as the core subject in the literature. Surrounding fintech are several tightly connected terms such as financial technology, financial services, digital transformation, and innovation, which form the structural foundation of this research area. Additionally, clusters extend into specialized domains: for instance, the green cluster connects fintech with machine learning, financial markets, investments, and risk management, indicating a strong research focus on the integration of advanced data analytics and AI in investment and decision-making processes. The red cluster centers on sustainable development, green finance, and economic growth, highlighting the role of fintech in driving environmentally conscious financial innovation.

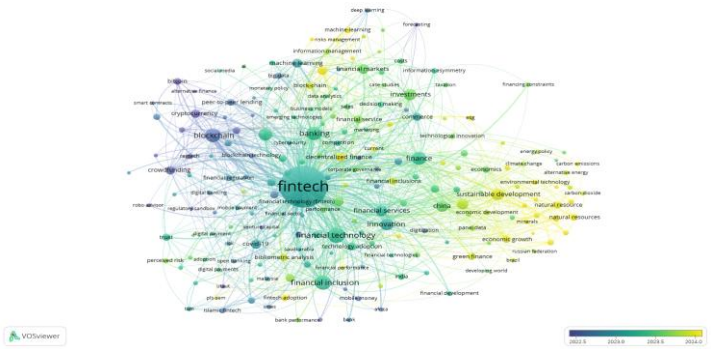

Figure 7. Overlay Visualization of Fintech (using Vos Viewer)

Based on the co-occurrence keyword network visualization generated by VOSviewer, it can be seen that the term "fintech" is at the center of various interconnected research topics. One topic that is closely related to fintech is "investment." The relationship between fintech and investment is illustrated through its connection to other terms such as financial markets, machine learning, risk management, technological innovation, and decision making. This shows that the development of fintech directly influences the way investments are made, especially in the use of technologies such as artificial intelligence and data analytics for smarter and more efficient investment decision-making. In addition, the colors in the visualization, which gradate from blue (2022) to yellow (2024), indicate that topics such as investment, green finance, sustainable development, and ESG are becoming the main focus of recent research. This signifies that currently, investing through fintech platforms is not only oriented towards financial gain, but also begins to consider aspects of sustainability and social responsibility. Thus, the relationship between fintech and investment is developing in a more strategic direction and has a broad impact on the future of the global financial sector.

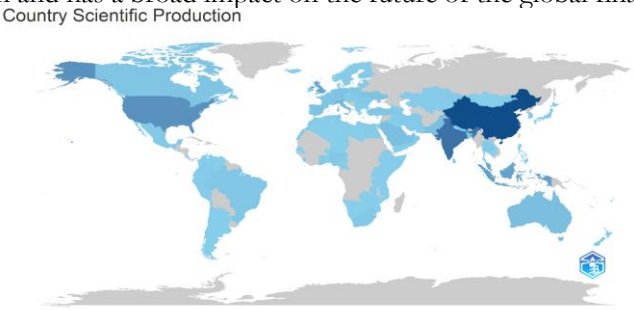

Figure 8. Country Scientific Production (Using R Studio)

The world map of scientific production shows in (Figure 8) each country's contribution to global scientific development based on color intensity. The darker the blue color, the higher the country's scientific production. This map is a visual representation of global inequality in scientific contributions, which is generally influenced by factors such as investment in research and development, higher education infrastructure, and national policies in science and technology. Countries such as China, the United States, and India dominate this map with dark blue colors, indicating that they are among the countries with the highest volume of scientific publications. This dominance reflects the success of these countries in developing productive and integrated research systems, as well as strong government support for the education and research sectors. In addition, they are also centers for international collaboration and the publication of reputable scientific journals.

Countries in Western Europe such as Germany, the United Kingdom, France, and Italy also contribute significantly to global scientific production. This is in line with the strong academic tradition and the existence of renowned research institutions in the region. These countries also demonstrate stable and consistent research performance, reflecting mature and structured research policies. Several regions in Africa, Southeast Asia, and the Middle East still show low levels of scientific production, as indicated by the gray or light blue colors. The low contribution of these countries is likely influenced by limited resources, a lack of higher education infrastructure, and low funding allocations for research. These conditions indicate the need for international support and national policy reforms to strengthen local research capacity. This map provides a clear picture of global inequalities in scientific production and the importance of collaboration and research capacity building in developing countries. This visualization can serve as a basis for the formulation of national strategies and international cooperation to promote equitable scientific contributions in order to strengthen global knowledge development.

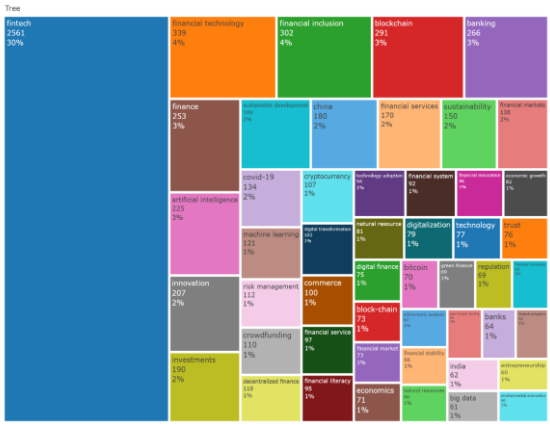

Figure 9. Words Tree Map (Using R Studio)

The treemap presented in the figure was generated using R Studio, employing a bibliometric analysis approach. This method involves extracting and analyzing large sets of bibliographic data typically from databases such as Scopus or Web of Science to identify dominant themes, keywords, and research trends. The visualization reflects the frequency and relative prominence of keywords in the academic literature, providing a comprehensive overview of how research in a particular field, in this case financial technology (fintech), is structured and interconnected. The most dominant node in the treemap is clearly labeled "fintech", representing 2,561 occurrences or 30% of the total dataset. This indicates that fintech serves as the central axis around which much of the scholarly conversation revolves. Its significant size compared to other keywords suggests not only high research interest but also its multidisciplinary role across innovation, finance, technology, and regulation. The visual hierarchy emphasizes how deeply embedded fintech is within the broader discourse on financial transformation.

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This bibliometric tree map provides valuable insights into the structure of academic discourse surrounding fintech. It not only shows the centrality of fintech itself, but also its close relationship with related themes such as investment, inclusion, and digital innovation. By mapping these relationships, researchers and practitioners can understand emerging trends, identify research gaps, and predict future directions in the rapidly evolving landscape of financial technology.

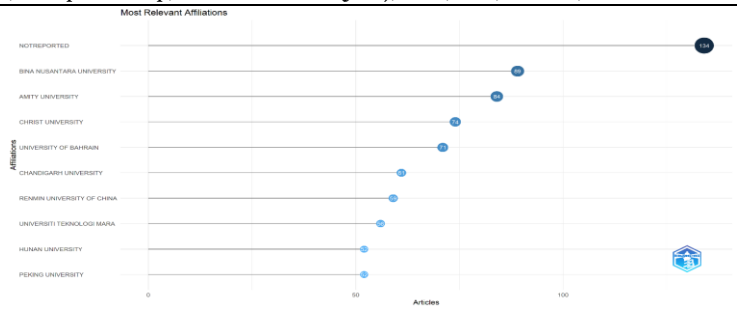

Figure 10. Most Relevant Affiliations (Using R Studio)

The image represents the result of a bibliometric analysis conducted using R Studio with the Bibliometrix package, focusing on the keyword "fintech". The visualization highlights the most relevant affiliations based on the number of scientific publications in this field. It provides insights into which institutions are most actively engaged in research related to financial technology, a sector that has seen significant growth alongside the digital transformation of global financial systems. According to the chart, the leading contributor is the category labeled "NOTREPORTED", with 134 articles, indicating a substantial number of publications without clearly stated institutional affiliations. Among the reported affiliations, Bina Nusantara University (89 articles), Amity University (84 articles), and Christ University (74 articles) stand out as the top contributors. These institutions demonstrate high levels of research productivity in fintech, suggesting a strategic academic focus on digital innovation within the financial sector. Several universities from various countries also made significant contributions, including the University of Bahrain (71 articles), Renmin University of China (59 articles), and Universiti Teknologi MARA (56 articles). This reflects the global and cross-continental nature of fintech research. The active involvement of institutions from India, China, Indonesia, and Malaysia highlights Asia as a major center for fintech development, in line with the region's evolving technological landscape and the need for financial inclusion. Therefore, this affiliation map not only illustrates academic productivity but also indicates the strategic direction of global fintech research.

5. Conclusion

This study provides strong evidence that financial technology (fintech) has significantly reshaped global investment patterns during the 2020–2025 period. Through a bibliometric analysis of 4,794 documents indexed in Scopus, the research identifies a substantial growth in academic interest, with an average annual increase of over 23%. These findings reflect a growing recognition of fintech's transformative role in modernizing the global financial ecosystem. Innovations such as robo-advisors, peer-to-peer lending, blockchain-based assets, and cryptocurrency platforms have served as catalysts for expanding financial inclusion and lowering entry barriers for a diverse range of investors. Fintech has opened new opportunities for previously underserved populations to participate in investment activities. This increased accessibility has expanded the investor base both geographically and demographically reaching younger generations, minority communities, and small business owners. By leveraging digital technology, individuals can now access financial services more quickly, affordably, and efficiently. This has been a key driver in shifting from an exclusive financial system to a more inclusive one, democratizing access to wealth-building tools.

A striking feature of the fintech and investment literature is the high level of international collaboration among researchers and institutions. Scholars across the globe are actively engaging in joint studies, creating a robust global research network. This collaboration is essential, as fintech-related challenges and opportunities often transcend national borders and require interdisciplinary and global perspectives. However, there remains a geographic imbalance in the literature, which continues to be dominated by contributions from developed countries.

Thematic mapping reveals that traditional clusters such as investment, financial markets, machine learning, and data analytics continue to be dominant. However, emerging themes such as green finance, environmental, social, and governance (ESG) criteria, and sustainable development are gaining prominence. This shift indicates a growing academic and practical interest in transitioning from purely return-focused investments to more transparent, socially responsible, and environmentally sustainable financial ecosystems. Fintech is increasingly seen as a bridge toward a more ethical and future-oriented financial system. Despite the promising growth of fintech adoption and research, several challenges remain. One major concern is the generally low level of financial literacy in many developing countries, which may lead to misuse or overreliance on automated platforms. Additionally, insufficient regulation and weak consumer protection mechanisms within digital financial ecosystems

could pose risks to financial stability. The digital divide and the underrepresentation of developing regions such as Southeast Asia, particularly Indonesia highlight the urgent need for more inclusive and context-specific research.

This study enhances our understanding of how fintech transformation intersects with global investment behavior. The findings offer valuable insights for academics, policymakers, and industry stakeholders to support the development of a more inclusive, sustainable, and secure investment ecosystem. Future research should prioritize developing countries to uncover local dynamics and ensure that fintech innovation contributes positively to economic growth and financial equity. In doing so, fintech can be a powerful tool not only for market efficiency but also for broader, socially beneficial development

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