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Bibliometric Analysis of Financial Technology Adoption by MSMEs in Indonesia

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Abstrak. Penelitian ini bertujuan untuk memetakan arsitektur pengetahuan dan lanskap penelitian mengenai adopsi teknologi keuangan oleh Usaha Mikro, Kecil, dan Menengah (UMKM) di Indonesia. Meskipun UMKM sangat penting bagi perekonomian nasional, menyumbang 61% dari PDB, pemahaman komprehensif tentang tren penelitian, jaringan kolaborasi, dan kesenjangan tematik masih terfragmentasi. Untuk menjembatani kesenjangan ini, studi ini menyajikan pandangan menyeluruh melalui sintesis literatur yang komprehensif. Penelitian ini menggunakan desain analisis bibliometrik. Data dikumpulkan dari basis data terkemuka Dimension.ai menggunakan kata kunci spesifik. Kemudian, data dianalisis untuk memvisualisasikan jaringan sitasi, kepenulisan bersama, dan pemetaan kata kunci menggunakan perangkat lunak VOSviewer. Hasil penelitian menunjukkan bahwa fokus penelitian terbagi menjadi tiga klaster tematik utama: Klaster Merah (fintech Islami, pinjaman P2P), Klaster Hijau (ekonomi digital, adopsi teknologi), dan Klaster Biru (kinerja UMKM dan manajemen risiko). Jaringan kolaborasi menunjukkan pola yang kuat, didominasi oleh penulis utama yang berafiliasi dengan universitas-universitas besar di Indonesia, seperti Universitas Airlangga dan Universitas Indonesia. Meskipun demikian, jurnal internasional terkemuka (Heliyon, Sustainability) tetap menjadi referensi sitasi utama, yang menyoroti kesenjangan antara produktivitas penelitian nasional dan tingkat sitasi global. Penelitian ini secara teoritis mengkonfirmasi pergeseran dalam penelitian adopsi fintech dengan menggabungkan dimensi kontekstual dan struktural.

Kata kunci: Bibliometrik; Teknologi Keuangan; UMKM; Adopsi Fintech; Literasi Keuangan.

Abstract. This research aims to map the knowledge architecture and research landscape regarding the adoption of financial technology by Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. Although MSMEs are vital to the national economy, contributing 61% of the GDP, a comprehensive understanding of research trends, collaboration networks, and thematic gaps remains fragmented. To bridge this gap, this study presents a helicopter view thru a comprehensive literature synthesis. This research uses a bibliometric analysis design. Data was collected from the leading database Dimension.ai using specific keywords. Then, the data was analyzed to visualize citation networks, co-authorship, and keyword mapping using VOSviewer software. The results revealed that the research focus was divided into three main thematic clusters: Cluster Red (Islamic fintech, P2P lending), Cluster Green (digital economy, technology adoption), and Cluster Blue (MSME performance and risk management). The collaboration network shows a strong pattern, dominated by key authors affiliated with major universities in Indonesia, such as Airlangga University and the University of Indonesia. Nevertheless, reputable international journals (Heliyon, Sustainability) remain the primary citation references, highlighting a gap between national research productivity and global citation rates. This research theoretically confirms the shift in fintech adoption research by incorporating contextual and structural dimensions.

Keywords: Bibliometrics; Financial Technology; MSMEs; Fintech Adoption; Financial Literacy.

Introduction

The development of financial technology (fintech) has brought significant changes to the global financial landscape, especially for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. In 2023, the number of MSMEs in Indonesia is projected to reach around 66 million businesses (Sulaiman & Depayanti, 2024). MSMEs also have a vital role in the national economy with a contribution of 61% to Indonesia's Gross Domestic Product (GDP) or around Rp9,580 trillion, and are able to absorb around 97% of the total national workforce (Suryanto *et al.*, 2020). This rapid growth of the MSME sector highlights the importance of understanding how fintech adoption can improve their operational efficiency and financial accessibility, ultimately driving economic development in a region (Ragimun & Yosepha, 2018). Financial technology is a new breakthrough in the financial sector. These innovations empower MSMEs to simplify their operations, reduce costs, and drive sustainable growth in an ever-growing digital economy (Setiawan *et al.*, 2021). The application of fintech has enabled MSMEs to access financial services more efficiently, increase their competitiveness and drive the economic growth of a region (Sumantri & Prasetya, 2022).

This shift to digital financial services not only facilitates easier transactions but also provides banks with valuable data, which allows MSMEs to make informed decisions and adjust their marketing to better meet customer needs (Lestari *et al.*, 2020). It is hoped that the integration of fintech into the MSME business model can encourage the resilience, adaptability and position of MSMEs to thrive in the broader market landscape (Purnamasari *et al.*, 2020). MSMEs are legally defined in Indonesia through Law Number 20 of 2008 (Law 20/2008), which distinguishes them based on the criteria of net worth and annual sales results (Law 20/2008, Article 1). MSMEs are the main pillars of the national economy, accounting for more than 61% of the Gross Domestic Product (GDP) and absorbing about 97% of the national workforce (DJPb, 2023). This vital role makes MSMEs the focus in

every economic development and digitalization initiative. Despite having a large role, MSMEs face classic challenges, especially in access to capital (financing gap) and operational inefficiencies due to limited financial literacy and technology adoption (Santosa *et al.*, 2025). The existence of these limitations makes MSMEs vulnerable to economic shocks, so it requires technological interventions such as fintech to increase resilience and competitiveness. MSME performance is often measured through increased profits, cost efficiency, and sales growth. In addition, fintech adoption has been proven to positively and significantly encourage the growth of MSMEs by providing wider and more efficient access to financing (Oktaviani & Yulhendri, 2025). Good financial literacy allows MSMEs to manage cash flow from fintech more effectively, which ultimately stabilizes their financial performance (Puspitasari & Astrini, 2021). Financial literacy is defined as a person's ability to understand and manage their financial resources effectively (Atkinson & Messy, 2012; Nurkholid, 2023). In MSMEs, high financial literacy allows business actors to: (1) Manage finances well, (2) Evaluate fintech risks, and (3) Make optimal use of digital financial products (Muhammad Astri Yulidar Abbas *et al.*, 2025). Thus, low financial literacy is the main obstacle to fintech adoption (Wardani & Darmawan, 2020).

In line with these findings, Naufal & Purwanto (2022) in the case study of the F&B Industry in Jember emphasized that Financial Literacy has a crucial impact on the Sustainability Performance of MSMEs. Low literacy is often the main cause of the collapse of MSME financial statements, which ultimately hinders access to capital and long-term growth (Zahari *et al.*, 2025). In addition, financial inclusion is easy and affordable access to formal financial services. Fintech plays a key role as a major enabler of financial inclusion by providing P2P lending and digital payment platforms that are able to reach MSMEs in remote areas. Heliani & Salwa Aulia Novitasari (2024) found that fintech and financial inclusion have a significant positive synergy in encouraging MSME performance. Furthermore, there have been previous studies, such as Rusanda *et al.* (2024) in Poso Regency, that financial inclusion does not have a direct effect on financial performance,

inclusion still plays a role through intervening variables such as financial self efficacy. This means that ease of access alone is not enough, MSME actors must feel the efficacy of being able to use these services. In addition, on a macro level, financial inclusion, especially through P2P lending and transaction digitization, provides MSMEs with easy access to capital and helps them overcome liquidity issues, which are critical for growth and sustainability (Putri & Christiana, 2021). Therefore, it is highly recommended for MSMEs to understand the importance of financial technology. By leveraging these advancements, they can position themselves for success in a rapidly evolving market and open new opportunities for collaboration and expansion (Nugraha *et al.*, 2022). As the business landscape continues to evolve, MSMEs that leverage fintech innovations will be better prepared to face challenges and take advantage of emerging market trends (Utami, 2023). This proactive approach will not only enhance their competitiveness but also foster resilience in an increasingly digital economy, ensuring sustainable growth and long-term sustainability (Purnamasari *et al.*, 2020).

The challenge for MSMEs today is the low level of digital financial literacy (Sari & Arifin, 2023). The causes include lack of access to reliable internet services, lack of understanding of digital devices, and fear of adopting new technologies that may seem difficult or complicated (Utami, 2023). To overcome these hurdles, structured human resource (HR) training and development programs should be created to enhance entrepreneurs' understanding in terms of increasing the skills and knowledge required to utilize fintech effectively (Teja, 2017). Investing in education and training systems can reduce the digital divide for MSMEs, thereby enabling them to leverage technology for better financial management, more efficient operations, and better relationships with consumers (Purwanto *et al.*, 2022). It would be nice if there were also collaborative efforts between governments, financial institutions, and technology providers to create an ecosystem that fosters innovation and encourages the digital transformation of MSMEs (Ragimun & Yosepha, 2018).

Technology adoption refers to the process by which an individual or organization decides to use a technological innovation. In the context of MSME fintech, two main models are used to predict adoption intentions and behaviors, namely the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The TAM model focuses on two main cognitive variables: Perceived Usefulness (PU) which is the belief that fintech improves performance and Perceived Ease of Use (PEOU) which is the ease of use of fintech (Davis, 1989). The study shows that PU and PEOU significantly affect the intention of MSMEs in using fintech applications (Arestha *et al.*, 2025). Interestingly, in addition to the pure adoption factor, previous studies have also integrated trust and risk in the TAM model. Primadasa *et al.* (2021) found that trusts significantly influenced the intention of MSMEs to adopt online lending and underlined the importance of a sense of security in the digital financial services environment.

In addition, UTAUT was developed by Venkatesh *et al.* (2003) that a more comprehensive model by adding the factors of Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. This study proves that factors such as Social Influence (the influence of MSME colleagues) and Effort Expectancy are strong predictors of intention to adopt fintech (Ojiaku *et al.*, 2024). Through bibliometric analysis as a problem-solving approach, this study aims to provide insight into the ever-evolving dynamics of fintech adoption among MSMEs, by highlighting the key factors influencing their decisions and the impact of these technologies on their growth trajectory. By mapping the existing literature, researchers can identify gaps and propose directions for future research that addresses the specific needs and challenges faced by Indonesian MSMEs in leveraging fintech (Sanga & Aziakpono, 2023). Recent studies show a significant increase in scientific publications on the topic of financial technology, especially since 2016, which generally reveals a growing interest in financial technology services and their role in enhancing financial inclusion and economic development

(Afjal, 2023; Sahabuddin *et al.*, 2023). China and the United States are leading the way in fintech research and implementation, and there is increasing interest in regional regions such as ASEAN, where fintech is seen as a tool to improve financial literacy and inclusion, especially in remote areas (Sanga & Aziakpono, 2023). In addition, studies on fintech adoption in MSMEs are also starting to develop in Indonesia, including in Greater Jakarta (Sari & Arifin, 2023), Probolinggo (Hartanti *et al.*, 2023), Bandung (Rahmawati *et al.*, 2023), Demak (Astohar *et al.*, 2022) and Bali (Era Sugiartini & Wiagustini, 2020). The studies reveal that while fintech adoption is on the rise, challenges such as varying levels of digital literacy and access to technology still exist in some regions (Kurnia Rahayu *et al.*, 2023; Rizki & Hendarman, 2024). Unfortunately, there is still very little research that specifically discusses the adoption of fintech in MSMEs in Indonesia, resulting in a lack of complete information about the unique challenges and opportunities faced by MSMEs (Modina *et al.*, 2025). The gaps in this study emphasize the need for a comprehensive bibliometric analysis to identify trends, influential authors, and key topics within this field, which ultimately guides future research and policymaking efforts in Indonesia's fintech landscape (Offiong *et al.*, 2024). Thus, the novelty of this research lies in its ability to synthesize existing knowledge while providing a big picture in a helicopter view with interesting visualizations to understand the interaction between fintech adoption and MSME development in Indonesia. It can also serve as a foundation for policymakers and practitioners to formulate effective strategies that increase financial inclusion and stimulate economic growth in the future (Setiawan *et al.*, 2021).

Research Methodology

The design of this study is based on bibliometric analysis to explore the existing literature on fintech adoption among MSMEs in Indonesia. This approach will systematically assess publication trends, identify influential works, and highlight research gaps in this area. The bibliometric analysis will utilize various

databases to collect relevant publications, ensuring a comprehensive picture of the current state of research on fintech adoption among MSMEs in Indonesia. This methodology will facilitate a deeper understanding of the interactions between fintech adoption and MSME performance, ultimately guiding future research and policy initiatives in Indonesia's financial landscape. This research was carried out from July to August 2025. Utilizing bibliometric techniques, researchers will examine publication trends, citation patterns, and collaborative networks among researchers in this field, thereby providing a comprehensive overview of the current state of knowledge and identifying key areas for further exploration. The analysis will be focused on publications from reputable journals, ensuring that the data reflects high-quality research results. This bibliometric analysis will involve collecting data from academic databases available on the internet, focusing on relevant articles published from the earliest year the data is available to 2024. This timeframe allows for an assessment of the latest trends and developments in fintech adoption, especially those concerning MSMEs in Indonesia (Gupta & Gupta, 2024). The data collection process will involve sourcing articles from leading academic databases, namely Dimension.ai, to ensure a robust and representative literature sample.

In addition, the researcher used the keywords "financial technology" AND "SMEs" AND "Indonesia" in a time span of no initial year until 2024 to refine the researcher's search and collect relevant studies that are in line with the research objectives. The data will be analyzed using bibliometric software such as VOSviewer to visualize the citation network and co-authoring patterns. This analytical framework will allow us to identify the most influential works and authors in this field, as well as thematic groups that characterize the current research landscape regarding fintech adoption among MSMEs in Indonesia (Rollnik-Sadowska & Grabińska, 2024). The results of the bibliometric analysis will be presented through a visualization that illustrates the relationship between the various studies, highlighting the lead author and his contribution in this field. In addition, the findings will provide insight into

the evolution of research topics over time, showing how the discourse around fintech adoption among MSMEs has evolved in Indonesia.

Results and Discussion

Results

Citation Analysis Results (Most Journal & Publication Citations)

In Figure 1, the network visualization from the citation analysis results illustrates that Heliyon, Sustainability, and the International Journal of Islamic Economics and Finance (IJIEF) are the journals that are most often used as references in research, marked by large nodes at the center of the network. In addition, KNE Social Sciences, Human Systems Management, and Al-Mashrafiyah Journal of Financial Economics and Sharia Banking are also quite often cited. Meanwhile, journals such as Commit Journal, Journal of Islamic Economics Lariba, and An-Nisbah Journal of Sharia Economics look more separate, indicating a lower intensity of citations. These findings indicate that research in the field of sharia economics and fintech still relies on reputable international journals, although the contribution of national sharia-themed journals is also beginning to be seen.

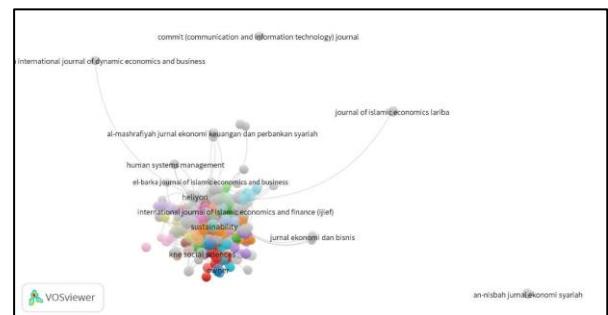


Figure 1. Network visualization of citation analysis results

Meanwhile, Table 1 reinforces information in the form of journal positions in the previous network visualization. Heliyon, Sustainability, and the International Journal of Islamic Economics and Finance (IJIEF) tend to be in the central and dense cluster. In addition, KNE Social Sciences, Human Systems Management, and Al-Mashrafiyah Journal of Financial Economics and Sharia Banking tend to be in the middle and main clusters. In addition, the Commit Journal, the Journal of Islamic Economics Lariba, and the An-Nisbah Journal of Sharia Economics tend to be isolated away from the central point in different outward directions. This shows that most of the research on the topic of fintech and Islamic economics has a close relationship and is quite significant in reputable national and international level publications.

Table 1. Source position in citation analysis results

No	Name of Journal / Source	Description (Position on Map)
1.	Heliyon	Large nodes, citation cluster centers
2.	Sustainability	Large, central, often referred to nodes
3.	International Journal of Islamic Economics and Finance (IJIEF)	The nodes are quite large, playing an important role in the central cluster
4.	KNE Social Sciences	Medium node, dense cluster
5.	Human Systems Management	Connected with sharia journals, middle position
6.	Al-Mashrafiyah Jurnal Ekonomi Keuangan dan Perbankan Syariah	National journals, connections to the main cluster
7.	El-Barka Journal of Islamic Economics and Business	Medium node, connected to Heliyon
8.	Commit (Communication and Information Technology) Journal	Small, separate nodes far above
9.	Journal of Islamic Economics Lariba	Small, separate nodes on the right
10.	An-Nisbah Jurnal Ekonomi Syariah	Small nodes, far below, not many connections

Table 2 shows the ten publications that had the highest number of citations in the research period. The metadata of the publications used is the number of citations in each article. Furthermore, the data on the number of citations is sorted from the highest to the lowest number of citations. Of all the articles researched in the dataset, the article that has the highest number of citations is entitled "Factors Affecting Fintech Adoption: A Systematic Literature Review" with a total of 98 citations from Brunei in 2022 and the article entitled "Blockchain, Enterprise Resource Planning (ERP) and Accounting Information Systems (AIS): Research on e-Procurement and System Integration" with a total of 98 citations from the United Kingdom in 2021.

Furthermore, an article entitled "Fintech Adoption Drivers for Innovation for SMEs in Indonesia" with a total of 97 citations written by several researchers from Czechia; Hungary; Indonesia; Malaysia in 2022. Furthermore, fintech research conducted by Poland, Qatar, Nigeria, South Africa and Indonesia has a total of citations ranging from 90 to 97 and in the range of 2016 to 2022. This provides information that research in the field of fintech is starting to become an important concern in various parts of the world, not only in Europe but also in Asia and Africa, so that the development of science in the field of fintech tends to be more massive.

Table 2. Top ten most cited publications

No	Publication Title	Year of Publication	Country	Total Citation
1.	Factors Affecting Fintech Adoption: A Systematic Literature Review	2022	Brunei	98
2.	Blockchain, Enterprise Resource Planning (ERP) and Accounting Information Systems (AIS): Research on e-Procurement and System Integration	2021	United Kingdom	98
3.	Fintech Adoption Drivers for Innovation for SMEs in Indonesia	2022	Czechia; Hungary; Indonesia; Malaysia	97
4.	The role of Islamic social finance during Covid-19 pandemic in Indonesia's economic recovery	2021	Indonesia	97
5.	The contribution of business experience and knowledge to successful entrepreneurship	2016	Poland	97
6.	FinTech in the Small Food Business and Its Relation with Open Innovation	2021	Indonesia	95
7.	Adoption of digital technologies for micro and small business in Indonesia	2022	Indonesia	93
8.	Online peer-to-peer lending: A review of the literature	2021	Qatar	93
9.	Social capital and its effect on business performance in the Nigeria informal sector	2019	Nigeria; South Africa	91
10.	Entrepreneurial resilience during the Covid-19 pandemic: navigating survival, continuity and growth	2021	Indonesia	90

Results of Co-authorship Analysis (Author & Affiliate Collaboration)

Author Collaboration Network

The results of the co-authorship analysis show the formation of several main clusters in

fintech research starting from the 2022–2024 period in Indonesia. Some of these clusters meet the minimum number of two documents written by each author with normal threshold achievements. In Figure 2, Raditya Sukmana is

the center of collaboration in the left cluster with Masrizal, Azhar Alam, and Puji Sucia Sukmaningrum. In addition, Mustafa Raza Rabbani dominated the central cluster with international collaborations with Habeeb your Rahiman and Imdadullah Hidayat-your-Rehman. Furthermore, Florentina Kurniasari and Egi Arvian Firmansyah led the right cluster with close connections to Mahir Pradana and Ardi Gunardi. In addition, Mohammad Hamsal formed a small cluster with Firdaus Alamsjah and Rofikoh Rokhim. These findings confirm that key authors such as Raditya Sukmana, Mustafa Raza Rabbani, Florentina Kurniasari, and Egi Arvian Firmansyah play an important role as a link to research collaboration networks, both at the national and international levels. Even until 2024, publications in the fintech sector will continue to emerge in some clusters. Florentina Kurniasari, Hidayat-your-Rehman and Mahir Pradana are examples of writers who have recently published publications even though they are still related to previous articles. Thus, the collaborative network on research topics on fintech adoption is quite strong, including at the individual and institutional levels.

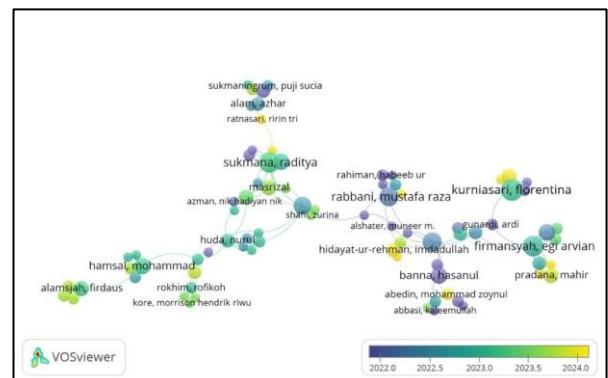


Figure 2. Results of the co-authorship analysis

Meanwhile, the level of intensity of collaboration between one author and another can be seen in Table 3. Raditya Sukmana and Mustafa Raza Rabbani have a high number of networks in terms of cooperation in writing published articles, followed by Florentina Kurniasari and Egi Arvian Firmansyah included in the medium-high category. Meanwhile, several authors are in the medium category in terms of the intensity of collaboration with other researchers on research in the field of fintech. This information shows that the potential for research cooperation in the field of fintech is projected to jump drastically because the enthusiasm for collaboration can be clearly seen in the relationship between authors.

Table 3. Author collaboration intensity level

No	Author Name	Collaboration (Number of Links)
1.	Sukmana, Raditya	High
2.	Rabbani, Mustafa Raza	High
3.	Kurniasari, Florentina	Medium-High
4.	Firmansyah, Egi Arvian	Medium-High
5.	Hamsal, Mohammad	Medium
6.	Banna, Hasanul	Medium
7.	Pradana, Mahir	Medium
8.	Huda, Nurul	Medium
9.	Masrizal	Medium
10.	Alam, Azhar	Medium

Affiliate/Institution Collaboration Network
On the other hand, in Figure 3 and Table 4, the results of the analysis of co-authorship based on affiliation show that several universities in Indonesia and abroad play a major role in fintech-related publications. Density visualization shows that Airlangga University, University of Indonesia, and BINUS University dominate the research network with bright

yellow nodes, indicating high productivity and wide connectivity. Overall, these results show that fintech-related publications in the context of MSMEs are still dominated by large universities in Indonesia (Airlangga, UI, BINUS), as well as showing collaboration with foreign universities, although the intensity is not even.



Figure 3. Density visualization of universities' co-authorship

Table 4. Productivity level in affiliates

No	Universities / Institutions	Description (Position on Map)
1	Airlangga University	The most productive, collaboration center (bright yellow node)
2	University of Indonesia	Highly productive, connected to many institutions
3	BINUS University	Productive, large yellow nodes
4	Universitas Ciputra	Medium productivity, near central clusters
5	Universitas Jenderal Soedirman	Medium productivity, cluster near UI
6	Universitas Indo Global Mandiri	Medium productivity, right cluster
7	Multimedia University (Malaysia)	Medium nodes, playing a role in international collaboration
8	Abu Dhabi University	Green nodes, connected to Asian universities
9	Middle East University	Medium nodes, related to UI & Bahrain
10	COMSATS University Islamabad	Medium node, left-center position

Results of Text data mapping (Keyword Mapping)

The text data mapping seen in Figure 4 aims to map keywords that are often used in publications related to financial technology and SMEs in Indonesia. Based on the results of mapping with a certain threshold, keywords are divided into three main clusters, including red clusters, green clusters and blue clusters. Each cluster has different focus characteristics and highlights its uniqueness. First, the red cluster is related to macroeconomic and regulatory issues, marked by keywords such as economic growth, economy, development, industry, and Islamic fintech. In addition, the green cluster focuses on MSMEs with the keywords SMEs, MSMEs, financial inclusion, and financial literacy. Meanwhile, the blue cluster emphasizes aspects of user behavior with the keywords adoption, trust, intention, use, and customer. Referring to the results of the mapping, it shows that fintech research in Indonesia is

divided into three major streams, namely macroeconomics and regulation, strengthening MSMEs through financial literacy and inclusion, and behavioral factors of technology adoption. Thus, the research is not only oriented to macroeconomic aspects, but also to the empowerment of MSMEs and the acceptance of technology from the consumer side. This opens up opportunities for future researchers by adapting their research topics to the results of the mapping in order to obtain newer and more comprehensive insights. Therefore, research trends regarding the adoption of fintech in MSMEs in Indonesia focus on macroeconomics and regulation, financial literacy and inclusion, and user behavior. Furthermore, major economic issues such as economic growth, industrial development and sharia fintech are the main discussions in the macroeconomic and regulatory review. In addition, research oriented towards empowering MSMEs through increasing

financial literacy and inclusion is starting to be carried out. Meanwhile, attention to the analysis of factors that affect user behavior in the form of adoption, trust and intention to use technology is also an important agenda. These findings show that fintech adoption research not only focuses on macroeconomic aspects, but also on MSME empowerment and technology acceptance from the consumer side.

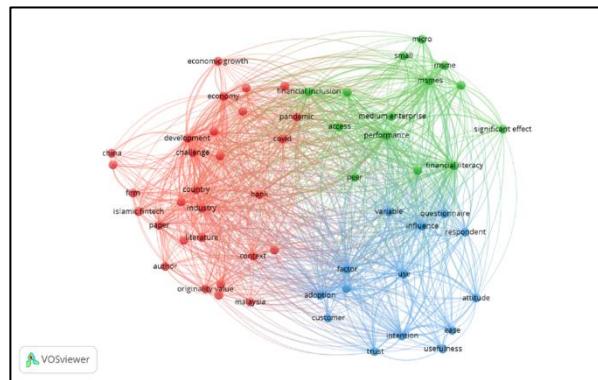


Figure 4. Text data mapping of keywords

Discussion

This study provides information on the visualization and mapping of metadata from published articles with fintech topics on MSMEs in Indonesia without an initial year until 2024. To ensure a relevant literature sample, metadata collection was sourced from leading academic databases, i.e. Dimension.ai using the keywords "financial technology" AND "SMEs" AND "Indonesia" to align with the research objectives. There are several findings that clearly describe the current condition of the topic being studied. The results of this study show that there is a fairly strong pattern of collaboration, both at the level of authors, journals, and university affiliations. The keyword mapping analysis revealed three main thematic clusters that are the focus of fintech adoption research by MSMEs in Indonesia, namely: (1) Sharia Fintech and P2P Lending, (2) Technology Adoption and Digital Economy, and (3) MSME Performance and Risk Management. These three clusters reflect the trends of the digital economy in Indonesia and support the literature argument that digitalization in developing countries is not homogeneous, but rather driven by contextual specific factors (Red Clusters) and operational challenges (Green and Blue Clusters).

First, the dominance of the Red Cluster (Islamic fintech) confirms previous bibliometric findings about the increasing focus on Islamic sharia-compliant finance in Indonesia, the country with the largest Muslim population in the world. Previous literature as submitted by Takidah & Kassim (2021) has highlighted the role of Islamic Fintech in realizing the Sustainable Development Goals through inclusive funding for MSMEs, as seen in the surge in Sharia P2P Lending financing in Indonesia. This development is not only a trend but also offers a theoretical contribution in enriching the UTAUT (Unified Theory of Acceptance and Use of Technology) Model by adding the Shariah Compliance dimension as a key variable that influences the Behavioral Intention of Muslim MSMEs in emerging markets (Isa & Suryomurti, 2023). Second, the Green Cluster shows that research is still very rooted in classic technology adoption models, such as TAM (Technology Acceptance Model), with a focus on the variables Perceived Usefulness and Perceived Ease of Use as the main drivers of fintech adoption and performance improvement of MSMEs.

These findings are consistent with empirical research conducted by Diana & Sartika (2024) that confirms that the factors of convenience, trust, and government support significantly affect the adoption intention of Indonesian MSMEs. The main contribution of this cluster is the affirmation of the importance of the role of digital financial literacy as a prerequisite for adoption. The study shows that literacy indirectly influences adoption, mediated by user innovativeness (Mulyana *et al.*, 2024), which provides a theoretical implication that the adoption model should be refined with digital readiness variables as a key antecedent, especially in the context of overcoming the digital divide between urban and rural MSMEs (Alfie Faj'ri *et al.*, 2024). Third, the Blue Cluster which focuses on MSME Risk Management and Performance underlines the risk gap arising from the surge in P2P lending adoption. This gap creates future research opportunities in the realm of risk governance and regulation. The dominance of domestic campuses (UI, Unair) in collaborative networks indicates that the research agenda in Indonesia is still heavily

influenced by local contexts and policies, but the reliance on international journals (such as *Heliyon* and *Sustainability*) shows that researchers are seeking global validation and visibility. This prompted a theoretical contribution in the form of a shift in the focus of Financial Management studies from a simple adoption model to an ecosystem approach, which analyzes the simultaneous impact of policies (regulatory environment), infrastructure, and MSME readiness on financial performance (Antoni *et al.*, 2024). In summary, these bibliometric results not only map trends, but theoretically confirm that the study of fintech adoption in Indonesian MSMEs has moved beyond the basic TAM, incorporating a religious contextual dimension (Shariah) and addressing structural problems (Digital Divide and Risk Management).

Conclusion

This section provides a brief explanation of the study and the impact of the study. Based on the findings of this study, there are several facts revealed in the form of a comprehensive overview of the research landscape of financial technology adoption (fintech) on MSMEs in Indonesia through bibliometric analysis. Research trends show that this topic has grown rapidly, characterized by a major thematic focus that is divided into three clusters: the Red Cluster (Islamic fintech, P2P lending), the Green Cluster (digital economy, technology adoption), and the Blue Cluster (MSME performance and risk management). In terms of collaboration networks, there are key authors who act as the center of networking, dominated by affiliates from major universities in Indonesia. Nevertheless, reputable international journals (*Heliyon*, *Sustainability*) remain the main reference in this field, which shows the gap between national research productivity and citation rates, and urges the need to improve the quality of domestic journal publications to be more competitive at the global level. Based on these conclusions, some areas that can be explored further for future research are improving the quality of national publications where this study notes that research still relies heavily on reputable

international journals, although contributions from national journals are beginning to be seen. Therefore, there is a need to make efforts to improve the quality of national publications to be more competitive at the global level. Then, strengthening international collaboration even though it already exists but its intensity is still limited. Furthermore, future researchers can combine findings from three main clusters (macroeconomics, MSMEs, and user behavior) to gain newer and more comprehensive insights.

References

Afjal, M. (2023). Bridging the financial divide: A bibliometric analysis on the role of digital financial services within FinTech in enhancing financial inclusion and economic development. *Humanities and Social Sciences Communications*, 10(1), 645. <https://doi.org/10.1057/s41599-023-02086-y>.

Alfie Faj'ri, F., Amsal Sahban, M., Saragih, H., & Cyntia Kojongian, P. J. (2024). Digital economy and business transformation in Indonesia: An exploration of opportunities and challenges. *Nomico*, 1(6), 108–117. <https://doi.org/10.62872/xer5f812>.

Antoni, A., Judijanto, L., & Supriadi, A. (2024). Impact of Fintech adoption, MSME digital readiness, and regulatory environment on financial performance in Indonesia. *West Science Accounting and Finance*, 2(02), 275–286. <https://doi.org/10.58812/wsaf.v2i02.1046>.

Arestha, R., Afifah, N., & Mustaruddin, M. (2025). Mendorong transformasi digital UMKM: Analisis faktor-faktor yang memengaruhi niat adopsi Fintech di Indonesia. *Jurnal Manajemen Terapan Dan Keuangan (Mankeu)*, 14(2), 948–961.

Astohar, A., Praptitorini, M. D., & Shobandiyah, S. (2022). Pengaruh literasi keuangan dan layanan keuangan berbasis teknologi

terhadap inklusi keuangan (Studi kasus pada UMKM di Kabupaten Demak). *The Academy of Management and Business*, 1(2), 69–79.
<https://doi.org/10.55824/tamb.v1i2.147>.

Atkinson, A., & Messy, F.-A. (2012). Measuring financial literacy: Results of the OECD / International Network on Financial Education (INFE) pilot study.
<https://doi.org/10.1787/5k9csfs90fr4-en>.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319.
<https://doi.org/10.2307/249008>.

Diana, I., & Sartika, D. (2024). The economic effects of financial technology (FinTech) adoption on small and medium-sized enterprises: Insights from Palembang, Indonesia. *Equity: Jurnal Ekonomi*, 11(2), 94–102.
<https://doi.org/10.33019/equity.v11i2.28>.

DJPb, K. K. R. (2023, June 27). Kontribusi UMKM dalam perekonomian Indonesia.

Era Sugiartini, N. N., & Wiagustini, N. L. P. (2020). The effect of financial technology, company characteristics and owner characteristics on MSME financial decisions in Bali Province. *International Journal of Scientific and Research Publications (IJSRP)*, 10(11), 559–566.
<https://doi.org/10.29322/IJSRP.10.11.2020.p10773>.

Gupta, P. K., & Gupta, M. (2024). Exploring the horizons of Fintech: A systematic review of the existing literature and prospects for future research. *Proceedings of Forum Manajemen Indonesia's International Conferences*, 1, 382–402.
<https://doi.org/10.47747/fmiic.v1i1.2179>.

Hartanti, M. F. P., Mardita, C. N., Tirta, M., Putra, A. R. A., & Setyaningrum, I. (2023). Literasi pemasaran digital dan teknologi keuangan sebagai sarana peningkatan omset UMKM di Probolinggo. *J-MAS (Jurnal Manajemen Dan Sains)*, 8(1), 113.
<https://doi.org/10.33087/jmas.v8i1.922>.

Heliani, & Salwa Aulia Novitasari. (2024). Pengaruh literasi keuangan, inklusi keuangan, dan finansial teknologi terhadap kinerja UMKM di Kota Sukabumi. *Jurnal Aktiva: Riset Akuntansi Dan Keuangan*, 6(3), 291–308.
<https://doi.org/10.52005/aktiva.v6i3.256>.

Isa, M., & Suryomurti, W. (2023). Sentiment analysis on the perception of Sharia Fintech in Indonesia. *Proceedings of the 4th International Conference on Islamic Economics, Business, Philanthropy, and PhD Colloquium (ICIEBP 2022)*, 146–169.
https://doi.org/10.2991/978-94-6463-176-0_11.

Kurnia Rahayu, S., Budiarti, I., Waluya Firdaus, D., & Oneginia, V. (2023). Digitalization and informal MSME: Digital financial inclusion for MSME development in the formal economy. *Journal of Eastern European and Central Asian Research (JEECAR)*, 10(1), 9–19.
<https://doi.org/10.15549/jecar.v10i1.1056>.

Lestari, D., Darma, D. C., & Muliadi, M. (2020). FinTech and Micro, Small and Medium Enterprises development: Special reference to Indonesia. *Entrepreneurship Review*, 1(1), 1–9.

Modina, M., Fedele, M., & Formisano, A. V. (2025). Digital finance for SMEs and startups: A bibliometric analysis and future research direction. *Journal of Small Business and Enterprise Development*, 32(3), 524–571.
<https://doi.org/10.1108/JSBED-01-2024-0021>.

Muhammad Astri Yulidar Abbas, Hutaeruk, M. R., Sri Wahyuti, Siti Maulina, & Putri Indardaini. (2025). Systematic Literature

Review (SLR): Dampak financial technology dan literasi keuangan pada kinerja keuangan usaha mikro kecil menengah di Kalimantan Timur. *MAMEN: Jurnal Manajemen*, 4(3), 372–386. <https://doi.org/10.55123/mamen.v4i3.5859>.

Mulyana, D., Soeaidy, M. S., & Taufiq, A. R. (2024). Fintech adoption: Peer-to-peer lending for Indonesian MSMEs. *International Journal of Management and Economics Invention*, 10(10). <https://doi.org/10.47191/ijmei/v10i10.05>.

Naufal, M. I., & Purwanto, E. (2022). Dampak literasi keuangan terhadap kinerja dan keberlanjutan UMKM (Studi kasus industri F&B Kecamatan Sumbersari Jember). *Profit: Jurnal Administrasi Bisnis*, 16(02), 209–215.

Nugraha, D. P., Setiawan, B., Nathan, R. J., & Fekete-Farkas, M. (2022). Fintech adoption drivers for innovation for SMEs in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(4), 208. <https://doi.org/10.3390/joitmc8040208>.

Nurkholik, A. (2023). Trends in digital financial literacy research on the Indonesian millennial generation: A systematic literature review. *RSF Conference Series: Business, Management and Social Sciences*, 3(3), 253–263. <https://doi.org/10.31098/bmss.v3i3.670>.

Offiong, U. P., Szopik-Depczyńska, K., Cheba, K., & Ioppolo, G. (2024). FinTech as a digital innovation in microfinance companies – systematic literature review. *European Journal of Innovation Management*, 27(9), 562–581. <https://doi.org/10.1108/EJIM-04-2024-0462>.

Ojiaku, O. C., Ezenwafor, E. C., & Osarenkhoe, A. (2024). Integrating TTF and UTAUT models to illuminate factors that influence consumers' intentions to adopt financial technologies in an emerging country context. *International Journal of Technology Marketing*, 18(1), 113–135. <https://doi.org/10.1504/IJTMKT.2024.135674>.

Oktaviani, W., & Yulhendri, Y. (2025). Pengaruh adopsi teknologi finansial (Fintech) terhadap pertumbuhan UMKM. *Socius: Jurnal Penelitian Ilmu-Ilmu Sosial*, 3(2), 119–123.

Primadasa, Y., Saputra, A. Y., & Juliansa, H. (2021). Penerapan metode technology acceptance model terhadap faktor kepercayaan dan risiko dalam penggunaan aplikasi Fintech. *CogITO Smart Journal*, 7(2), 290–304. <https://doi.org/10.31154/cogito.v7i2.327.290-304>.

Purnamasari, P., Pramono, I. P., Haryatiningsih, R., Ismail, S. A., & Shafie, R. (2020). Technology acceptance model of financial technology in micro, small, and medium enterprises (MSME) in Indonesia. *The Journal of Asian Finance, Economics and Business*, 7(10), 981–988. <https://doi.org/10.13106/jafeb.2020.vol7.no10.981>.

Purwanto, H., Yandri, D., & Yoga, M. P. (2022). Perkembangan dan dampak financial technology (Fintech) terhadap perilaku manajemen keuangan di masyarakat. *Kompleksitas: Jurnal Ilmiah Manajemen, Organisasi dan Bisnis*, 11(1), 80–91. <https://doi.org/10.56486/kompleksitas.v011no1.220>.

Puspitasari, R., & Astrini, D. (2021). Dampak literasi dan inklusi keuangan terhadap kinerja pelaku UMKM di Kota Bogor. *Jurnal Ilmiah Manajemen Kesatuan*, 9(2), 181–190. <https://doi.org/10.37641/jimkes.v9i2.771>.

Putri, L. P., & Christiana, I. (2021). Peran financial technology dalam membantu

UMKM di tengah pandemi Covid-19. *EKONOMIKAWAN: Jurnal Ilmu Ekonomi dan Studi Pembangunan*, 21(1), 57–63.

Ragimun, R., & Yosepha, S. Y. (2018). The role of Fintech encourages the export of small medium enterprises in Indonesia. *Journal of Social and Development Sciences*, 9(3), 66–77. <https://doi.org/10.22610/jsds.v9i3.2478>.

Rahmawati, D., Thaha, A. R., & Priyanto, A. (2023). Financial literacy, digital transformation adoption, and their significance to the MSMEs performance in Bandung city. *Jurnal Manajemen Bisnis Dan Kewirausahaan*, 7(1), 213–223. <https://doi.org/10.24912/jmbk.v7i1.20702>.

Rizki, A., & Hendarman, A. F. (2024). Empowering financial and digital literacy to build resilience of MSMEs: Proposed implementation in Bandung city. *International Journal of Current Science Research and Review*, 07(10). <https://doi.org/10.47191/ijcsrr/V7-i10-14>.

Rollnik-Sadowska, E., & Grabińska, V. (2024). Managing neurodiversity in workplaces: A review and future research agenda for sustainable human resource management. *Sustainability*, 16(15), 6594. <https://doi.org/10.3390/su16156594>.

Rusanda, A. D., Usuli, S., & Setiawan, A. (2024). Pengaruh literasi dan inklusi keuangan terhadap kinerja keuangan dengan financial self-efficacy sebagai variabel intervening. *Jurnal Ilmiah Ekomon*, 24(1), 45–72.

Sahabuddin, M., Sakib, Md. N., Rahman, Md. M., Jibir, A., Fahlevi, M., Aljuaid, M., & Grabowska, S. (2023). The evolution of FinTech in scientific research: A bibliometric analysis. *Sustainability*, 15(9), 7176. <https://doi.org/10.3390/su15097176>.

Sanga, B., & Aziakpono, M. (2023). FinTech and SMEs financing: A systematic literature review and bibliometric analysis. *Digital Business*, 3(2), 100067. <https://doi.org/10.1016/j.digbus.2023.100067>.

Santosa, B., Budiman, E., Simarmata, Y., Kurniawan, D., Indriani, Y., & Suryono, R. R. (2025). Systematic literature review: Fintech dan program pemerintah dalam permodalan UMKM: Inklusi atau ilusi. *Jurnal Ekonomika Dan Bisnis (JEBS)*, 5(1), 140–150. <https://doi.org/10.47233/jebs.v5i1.2579>.

Sari, O. I. P., & Arifin, A. Z. (2023). Pengaruh financial technology adoption capability dan financial literacy terhadap business sustainability. *Jurnal Manajemen Bisnis Dan Kewirausahaan*, 7(3), 571–581. <https://doi.org/10.24912/jmbk.v7i3.23870>.

Setiawan, B., Nugraha, D. P., Irawan, A., Nathan, R. J., & Zoltan, Z. (2021). User innovativeness and fintech adoption in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(3), 188. <https://doi.org/10.3390/joitmc7030188>.

Sulaiman, H. J., & Depayanti, L. (2024). Emerging trends of funding sources for SMEs with bibliometric analysis. *Motivasi*, 9(2), 127. <https://doi.org/10.32502/mti.v9i2.8946>.

Sumani, S., & Prasetya, I. B. (2022). The effect of financial technology on the performance of micro, small, and medium businesses. *Review of Management and Entrepreneurship*, 6(1), 51–72.

Suryanto, S., Rusdin, R., & Dai, R. M. (2020). Fintech as a catalyst for growth of micro, small and medium enterprises in Indonesia. *Academy of Strategic Management Journal*, 19(5), 1–12.

Takidah, E., & Kassim, S. (2021). Indonesia's Islamic Fintech for sustainable development: A barrier analysis. *TIJARI*

International Journal of Islamic Economics, Business and Entrepreneurship, 1(3), 38–62.

Teja, A. (2017). Indonesian fintech business: New innovations or foster and collaborate in business ecosystems? *The Asian Journal of Technology Management (AJTM)*, 10(1), 10–18. <https://doi.org/10.12695/ajtm.2017.10.1.2>.

Utami, N. (2023). Analysis of the use of financial technology and financial literacy among MSMEs. *MBIA*, 22(1), 11–21. <https://doi.org/10.33557/mbia.v22i1.2217>.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.

Wardani, A. P. Y. K., & Darmawan, N. A. S. (2020). Peran financial technology pada UMKM: Peningkatan literasi keuangan berbasis payment gateway. *Jurnal Ilmiah Akuntansi Dan Humanika*, 10(2), 170. <https://doi.org/10.23887/jiah.v10i2.25947>.

Zahari, Y. K., Hidayah, K., Juansa, A., Aisa, N. N., Hafni, D. A., Nurkholik, A., Sigit, H., Sabilla, O., Minarsi, A., & Rintasari, N. (2025). Manajemen keuangan UMKM: Konsep dan penerapannya pada UMKM era digital. PT. Star Digital Publishing.