

Bibliometric Analysis of Fintech in Regulation using Scopus Database

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Abstract

Through the present study a bibliometric analysis is presented for Fintech regulation research using the scopus database with the primary objective of evaluating the publication trends, collaboration networks and thematic developments in the field. Performance analysis and science mapping techniques are used in the present study for the identification of key contributors, influential themes and the emerging research direction in this area. From the study it is understood that after 2017 there was a increase in the number of research papers published in this theme. Using the Biblioshiny software and R studio analysis has been done for the 332 research papers drawn from scopus database. The thematic analysis shows core areas such as blockchain regulation, RegTech, and financial inclusion, were the core areas while other emerging topics included artificial intelligence and cyber security. This study contributes to the understanding of the intellectual structure of Fintech regulation and provides directions for future research.

Keywords: Fintech, Regulation, Bibliometric analysis, Scopus, RegTech, Financial Innovation.

Introduction

FinTech or Financial Technology has revolutionized the financial services industry due to the integration of various digital technologies in the traditional financial services systems. There are several benefits of inclusion of Fintech like enhancing the efficiency and accessibility of services, however there are certain challenges related to risk management, consumer protection, and financial stability.

With the advancement of technology the fintech ecosystem is increasing in its complexity and therefore led to a surge in the academic research focusing on the regulatory framework of fintech. Bibliometric analysis or systematic method of evaluation of research on the publication patterns, collaboration structures and the thematic evolution in the area. Financial Stability and consumer protection are two important and challenging objectives of the regulatory framework. The present growing complexity of interdisciplinary nature of FinTech ecosystems spanning finance, information technology, law, public policy and education have increased the need to inquire about the mechanisms of regulation of Fintech. Bibliometric analysis provides a robust and a quantitative approach to evaluate systematically the intellectual structure in this demanding domain, by employing various techniques such as citation analysis, co-authorship networks, keyword co-occurrence, and thematic modelling various bibliometric methods help identify and understand the most contributing authors/countries, collaborations and emerging research trends. Visualisation tools such as biblioshiny and VOSviewer have facilitated advanced science mapping of the scholarly output.

In this context the present research bridges the gap by presenting a comprehensive bibliometric analysis of Fintech regulation literature using scopus indexed publications. The aim of the study is to examine the publication trends, identify key contributors and institution, analyse the collaboration networks, and uncover the evolution of themes in this domain. Therefore the present research contributes to a deeper understanding of the regulatory discourse in Fintech and provides crucial insights for researchers and policymakers.

Literature Review

FinTech research has seen a significant growth over the past few decades, importantly after the global financial crisis. Several studies have indicated the technological advancements and regulatory challenges as the most important reasons for this growth (Alfawareh & Al-Kofani, 2024). The disruptive nature of FinTech has further fuelled the expansion leading to the emergence of novel banking services and substantial regulatory implications (Asif et al., 2023). Studies have shown that fintech innovations necessitate new regulatory frameworks concerning consumer protection, data privacy and cybersecurity as they have examined the role of regulatory sandboxes in facilitating development (Wang et al., 2024).

While regulation is a very important component for ensuring the sustainable development of FinTech (Nnaomah et al., 2024). The regulators are facing challenges in fostering innovation and safeguarding the financial stability and consumer interests. Hence here emerges a necessity for the adoption of dynamic and adaptive regulatory landscape which is capable of addressing the rapidly changing evolution of the FinTech business models and the technological innovations (Lyelolu et al., 2024; Oyewole et al., 2024). Within the financial sector the compliance mechanisms are critical and the literature has been found to highlight about the emergence of the regulatory technology in the financial sector (Gupta et al., 2024).

Hudaefi (2025) emphasized on the importance of the balance between innovation and risk mitigation through research. He concluded that the policymakers across the world are interested in having a balance between supervision of FinTech activities and supervision and mitigation of vulnerabilities to systematic risks (Lu et al., 2020). Lakhe and Kulkarni (2020) emphasized on the importance of effective regulation to effectively address systematic risks and have financial stability in the financial markets across world. Therefore in this endeavor offering technologically driven solutions for the development of the regulatory technology has become crucial. It cannot be ignored with oversight. (Vijayagopal et al., 2024).

In the present increasingly digitalized financial systems the most important element to maintain trust and ensure data security can be achieved through the regulatory processes and the integration of technology (Amnas et al., 2023).

In the present evolutionary financial system inclusion of the application of artificial intelligence is very important and enhances the credit scoring and fraud detection mechanisms. It also helps in the development of digital (KYC) Know Your Customer procedures and tools for anti-money laundering (Jede & Teuteberg, 2025).

Various advanced technical instruments have been developed for streamlining compliance operations, to mitigate the operational inefficiencies and for the overall integrity of the financial ecosystem.

Various bibliometric studies have sourced Scopus data to analyze FinTech research trends. For example: Bajwa et al. (2022) in his research identified various clusters of blockchain and digital banking. The broader FinTech ecosystem had more focus on business models, investment strategies and their challenges. This study also emphasized on the important role of regulatory frameworks in establishing financial stability, security and customer confidence (Jafri et al., 2025).

Dissanayake et al. (2023) in his research used database from Scopus, upto May, 2023 used Biblioshiny for producing the thematic maps to cover the prevailing topics and emerging trends in Fintech domain. Raval & Desai (2024) used bibliometric content analysis of 574 research articles extracted from scopus database between 2011 to 2022. They in their study identified six research clusters which included, economic development, banking performance, islamic finance, P2P lending, and financial inclusion.

Jafri et al. (2025) study the importance of regulatory framework which played a pivotal role in strong innovation in the financial sector. Their bibliometric studies reflect the scholarly interest in explaining how technological progress, regulatory developments, and their combined impact on the financial industry are interconnected (Bouriche et al., 2025). It also reflects that the state of RegTech scholarship requires a holistic approach to synthesize the existing knowledge and uncovering emerging research directions (Grassi & Lanfranchi, 2022). These studies confirm that FinTech regulation is an emerging research area with significant growth potential.

The image below is presented to map the scope of this domain, a systematic literature review has been conducted in accordance with the PRISMA guidelines. The study selection process for journal articles is presented in the PRISMA flow diagram, this methodology ensures a robust and replicable approach to article selection and analysis, it takes care of bias in the findings (Adeyelu et al., 2024). The quality assessment procedures employed rigorous criteria to evaluate the methodological rigor and validity of the included studies, focusing on factors such as sample size, research methodology, and data analysis techniques (Olawale et al., 2024).

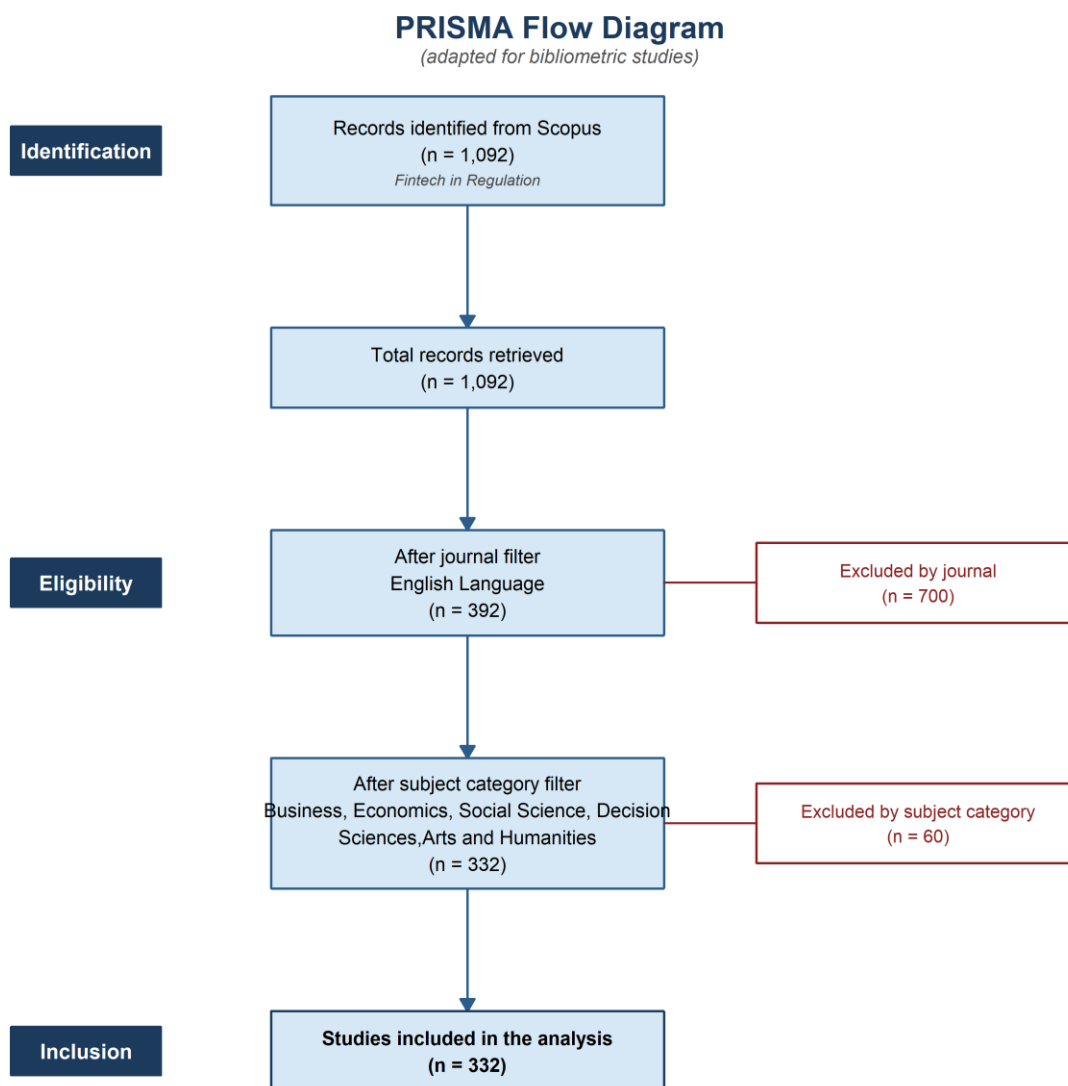


Figure 1: Prisma Flow Diagram using Biblioshiny

Methodology

In the present study the database is collected from Scopus database on Regulatory Technology and Financial Technology using the keywords as follows TITLE-ABS-KEY (("FinTech" OR "Financial Technology" OR "Regulatory Technology" OR "RegTech") AND ("bibliometric" OR "systematic review" OR "literature review" OR "science mapping")). This aligns with few of the prior bibliometric analysis that leverage Scopus for its

comprehensive coverage of peer-reviewed articles across diverse disciplines (Salem and Shahimi, 2025). The Prisma model above also gives detailed information on the selection criteria for of the studies for deriving at the =332. This dataset has been meticulously analysed using the biblioshiny software and R Studio, complementing the quantitative evaluation of the publication trends and the thematic clusters in the study. This approach enables for a robust identification of the prevalent research themes and the author collaborations, providing for a strong foundation for understanding the intellectual structure in the present field (Grassi & Landfranchi, 2022). The inclusion of the studies are based subject areas related to the Business, Economics, Social Science, Decision Science, Arts and Humanities is justified given the interdisciplinary nature of Fintech and RegTech. It also helps in drawing insights from various fields and helps in addressing various complex challenges in financial innovation and regulation. The present interdisciplinary perspective is also helpful in understanding how the technological advancements, economic principles, and societal impacts coverage within the regulatory framework impacts the financial sector.

Analysis and Discussion

Using Biblioshiny for the bibliometric analysis has further facilitated the extraction and transformation of the bibliometric data into a meaningful visualization, enabling the identification of the key authors, influential journals, and prominent research themes with the FinTech and RegTech landscape. This comprehensive approach ensures a rigorous and reproducible analysis of the research trends, providing a robust foundation for understanding the intellectual structure and thematic evolution of the field, including the significant growth in FinTech research observed post-2008 (Geidam et al., 2025). For instance, the observed increase in research output between 2020 and 2022 underscores the escalating importance of FinTech across diverse academic domains, highlighting its intricate relationship with technology, society, and financial systems (Afjal, 2023).

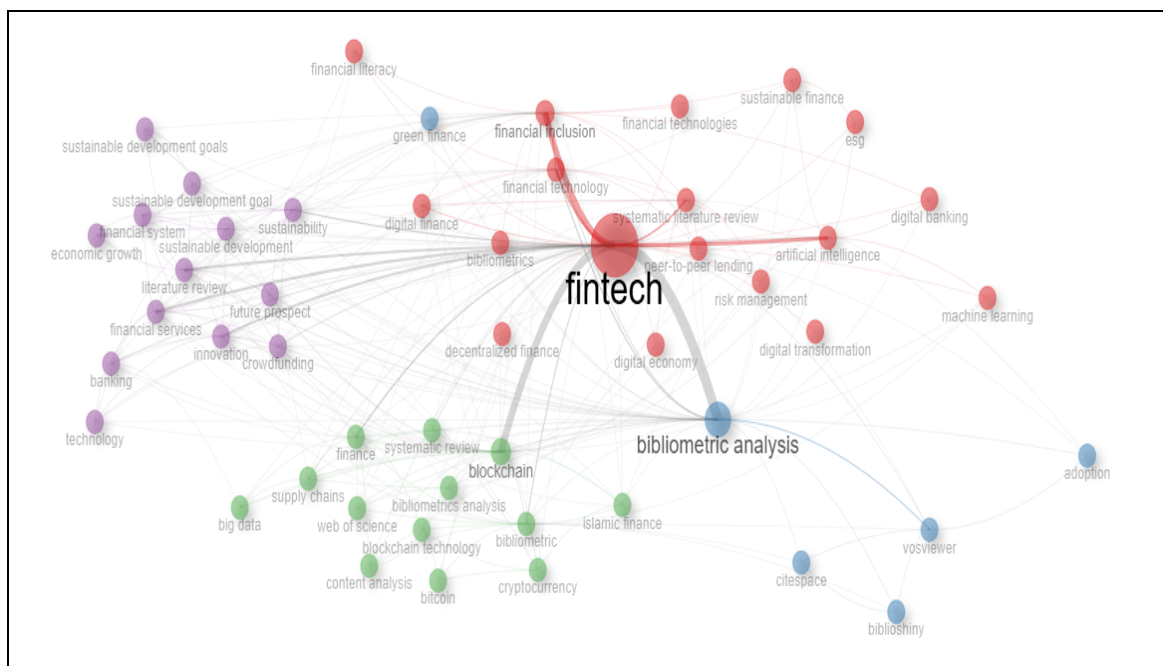


Figure 2: Co-word analysis from Biblioshiny

The co-word analysis network presented above in Figure 2 presents the conceptual landscape by mapping the co-occurrence of the keywords; it highlights the interconnections and the thematic clusters within the area of the study in literature (Liu et al., 2024). It can be noted from the above figure that there are a few clusters formed based on research topics, like FinTech, Blockchain, and Financial Regulation, indicating that the distinct area interconnections (Saputra et al., 2023; Tanchangya et al., 2025). The network analysis with a high-level overview

of the conceptual structure reveals that the predominant research foci and interrelationships (Silva et al., 2025) in this case are around FinTech and Bibliometric analysis as prominent keywords.

Further examination of these clusters through exhibits four primary clusters differentiated by colors red, blue, green, and purple. Each color theme represents a cohesive research theme. Red Cluster represents the core FinTech Regulation and Innovation Hub; this is the most dominant cluster with the most influential keywords. This cluster primarily encompasses terms such as "FinTech," "banking," "risk," "competition," and "innovation," reflecting foundational discussions on how financial innovation challenges traditional banking paradigms and necessitates new regulatory frameworks(Salem & Shahimi, 2025).

Dense internal connectivity in this cluster is found with a representation of the regulatory backbone of Fintech, including research around topics such as Regulatory frameworks, Innovative governance, digital financial ecosystems, and institutional responses to technological disruptions. The prevalence of "FinTech" and "banking" as central keywords within this cluster underscores the profound impact of technological advancements on traditional financial services(Pandey et al., 2023).

The second largest cluster represented in green color is moderately dense and closely positioned to the core cluster, indicating a strong conceptual overlap with keywords such as Risk, Compliance, and RegTech Domain. This cluster highlights the critical need for robust regulatory frameworks and technological solutions to manage the inherent risks associated with rapid financial innovation(Biju et al., 2024).

The nodes in this cluster are tightly grouped, representing a dependency on regulatory discourse. The thematic focus is around topics related to operationalization of regulation, Risk Management, Regulatory compliance, anti-money laundering (AML), Know Your Customer (KYC) frameworks, the emergence of RegTech, SuperTech, and technological compliance solutions. It may therefore be concluded that compliance is not a peripheral issue but a central pillar for FinTech governance. The blue cluster, with keywords such as "financial inclusion," "digitalization," and "sustainable development," signifies the socioeconomic dimensions of FinTech and RegTech, emphasizing their role in broadening access to financial services and fostering environmental, social, and governance objectives(Kesavan & Polisetty, 2025; Valdez & Fajardo-Piñan, 2026).

The Third cluster in blue represents technological infrastructure and digital systems, it is more dispersed and located towards the periphery, which indicates that a specialised yet evolving research area. It has fewer nodes but strong linkages with selective connections to the central cluster. The thematic focus is around blockchain, distributed ledger technologies, cybersecurity frameworks, Digital payment systems, AI in financial services. Finally, the purple cluster, though smaller, delves into the ethical implications and governance challenges of these emerging technologies, integrating discussions on data privacy, algorithmic bias, and the future of financial regulation.

It is understood here that the technology is foundational; its integration into regulatory discourse is still evolving, indicating scope for an interdisciplinary expansion. This evolution suggests a growing recognition of the necessity for a holistic approach that integrates technological advancements with ethical considerations and robust governance structures(Nefla & Jellouli, 2025; Sharma & Jain, 2025).

Cluster four in Purple represents socio-economic impact and policy orientation. This cluster is also relatively fragmented and positioned on the opposite side, which indicates emerging or less integrated themes. The key themes are financial inclusion, public policy implications, economic development, customer behavior, and trust. It captures the macro-level implications of the FinTech regulation, mostly its societal and developmental impact. It may be suggested that the policy and social dimensions remain unexplored relative to the technical and regulatory aspects. Further analysis through specific keywords within these clusters reveals that performance-oriented studies often investigate how FinTech adoption influences financial and operational outcomes, such as return on assets and service delivery efficiency, frequently employing quantitative models(Salem & Shahimi, 2025).

The co-word network identifies a very high impact of research clusters and a few underexplored areas; it also provides insights to policymakers for a much-needed integrated regulatory framework that is able to balance innovation and risk. This necessitates a deeper exploration into the impact of FinTech on financial inclusion and the practical implementation of regulatory technology solutions to address emerging challenges(Dao et al., 2025).

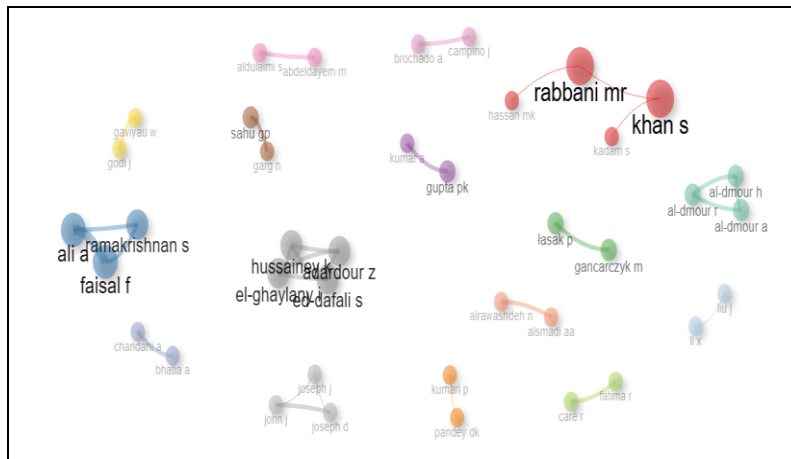


Figure 3: Collaboration Network using Biblioshiny

The collaboration network for this study has been generated using Biblioshiny through R Studio, it reveals the structural dynamics of scholarly cooperation between the domains identified through research papers in the area of FinTech and RegTech. The network analysis delineates prevalent collaboration patterns, such as co-authorship within institutions and cross-institutional partnerships, providing insights into the disciplinary convergence and divergence characterizing this evolving field.

The figure is characterized by several small, fragmented clusters that represent a group of authors collaborating. This structural pattern is derived from 332 documents and a few c

ollaborating authors, indicating that the consolidation in this research domain is in a developmental stage. The isolated small clusters comprise 2-4 authors and therefore suggest that the collaboration is largely confined to micro-level research groups. This observation aligns with the Scopus author productivity data, where leading contributors such as *Asif, M.*, *Gancarczyk, M.*, *Rabbani, M.R.*, and *Sahu, G.P.* have only **2–4 publications each**, indicating the absence of highly prolific authors dominating the field. Consequently, the network lacks a **central hub author**, which is a hallmark of mature and well-integrated research domains.

This limited inter-cluster connectivity in the network also indicates that there is very little collaboration between authors, pointing toward opportunities for strengthening academic partnerships. This situation underscores the nascent state of collaboration within the RegTech and FinTech research landscape, suggesting that individual research efforts often remain siloed despite the interdisciplinary nature of the field(Duan, 2024). This fragmentation poses a challenge to developing a cohesive body of knowledge, particularly concerning the consistent implementation of regulatory frameworks and technological standards across different jurisdictions(Nwafor & Ayodele, 2024). This highlights a critical need for enhanced regulatory coordination and international collaborative initiatives to foster a more integrated research environment and facilitate cross-border FinTech activities(Iyelolu et al., 2024).

It may therefore be concluded that the author collaboration network indicates a lack of collaboration and confinement to small author groups. For the advancement of the research in this field, strengthened collaboration is imperative to lead towards greater maturity and scholarly cohesion. This is further corroborated by studies in similar emergent fields, which also identify fragmented co-authorship networks with low density and zero centrality, signaling an opportunity for greater international and inter-institutional collaboration(Irwanto, 2025; Zhang et al., 2025).

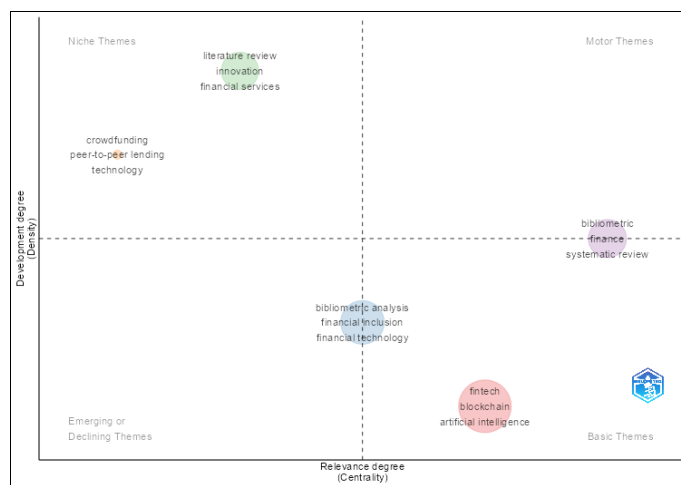


Figure 4: Thematic Map using Biblioshiny and R Studio

Thematic Structure above represents a map which is used to classify the research themes based on centrality (relevance) and density (development), and reveals the conceptual structure and evolution of FinTech and RegTech literature. It is divided into four quadrants representing Motor Themes, Basic themes, Niche Themes and Emerging themes.

Motor themes representing limited conceptual maturity in the upper right corner. The proximity of the keywords here are bibliometric, finance, and systematic review therefore suggesting that methodological rigor and evidence synthesis are emerging key drivers of this field. This observation aligns with the scopus dataset which shows that after 2021 there is a rapid increase in the research publications. This indicates a transition from exploratory studies to more structured and analytical research approaches.

The second quadrant on Basic themes or core foundations of the field is dominated by keywords such as fintech, blockchain and artificial intelligence, exhibiting a high centrality but low density. The low density suggest that these themes are presently fundamental to the research domain and widely connected across multiple studies, it may also me suggested that the low density representation implies underdevelopment in terms of internal cohesion and theoretical depth. Although these are central themes, they lack integrated frameworks that combine technological innovation with regulatory mechanisms.

The third quadrant in upper left part, includes terms such as innovation, financial services, literature review, crowdfunding and peer to peer lending. These themes are well developed within their specific domains with peripheral to the overall research structure, which implies that these themes have high density but low centrality. Crowdfunding and peer to peer lending is a mature subfield within fintech but its not sufficiently integrated into the broader regulatory or bibliometric discourse. Which means there is a fragmentation of knowledge, and may be understood that specialised areas have evolved independently without significantly contributing to the core FinTech -RegTech research.

The fourth quadrant on emerging themes (lower left) representing developing research frontiers, contains themes such as financial inclusion, bibliometric analysis and financial technology. These themes are emerging areas gaining scholarly attention and are less developed or weekly connected topics.

Overall, the thematic map helps with several important insights about the evolution and intellectual structure of Fintech and Regtech research, from the developing stage of the field, which is still in a formative stage of foundational topics. The identified research clusters, while robust, also reveal lacunae, particularly concerning the ethical deployment of AI in finance and the socio-economic implications for diverse global regions(Arowona & Ganiyu, 2026). Specifically, research on financial inclusion often highlights the transformative potential of digital finance and electronic money in expanding access to financial services, particularly in developing economies, yet

substantial gaps remain in understanding its tangible impact and the behavioral changes induced by these technologies(Afjal, 2023; Badra et al., 2025; Dao et al., 2025).

It also suggests the dominance of fintech, blockchain, and AI-related research topics. The increasing sophistication of these technologies, particularly the integration of Big Data, AI, ML, and blockchain in regulatory systems, necessitates comprehensive frameworks to manage compliance, mitigate risks, and foster innovation within the financial sector(Khoury et al., 2024). This evolution highlights a critical need for adaptive regulatory sandboxes and international cooperation to harmonize standards across diverse jurisdictions(Arowona & Ganiyu, 2026).

The presence of well-developed but isolated niche themes highlights that there is a lack of conceptual integration, particularly between the application-specific studies and regulatory research. This fragmentation suggests an opportunity for future research to bridge the gap between technological applications and their corresponding regulatory implications, fostering a more cohesive understanding of the FinTech and RegTech landscape(Kanojia et al., 2024). Furthermore, the dynamic interplay between AI and FinTech mandates continuous examination, particularly regarding its capacity to enhance decision-making processes, optimize resource allocation, and enable personalized financial services(Jede & Teuteberg, 2025). The transformative impact of artificial intelligence on financial services necessitates ongoing research and development to fully harness its capabilities(Mukthar et al., 2025).

There is a rise in the research around financial inclusion and bibliometric analysis which reflects a shift towards policy relevance and research synthesis, signally an increasing academic maturity.

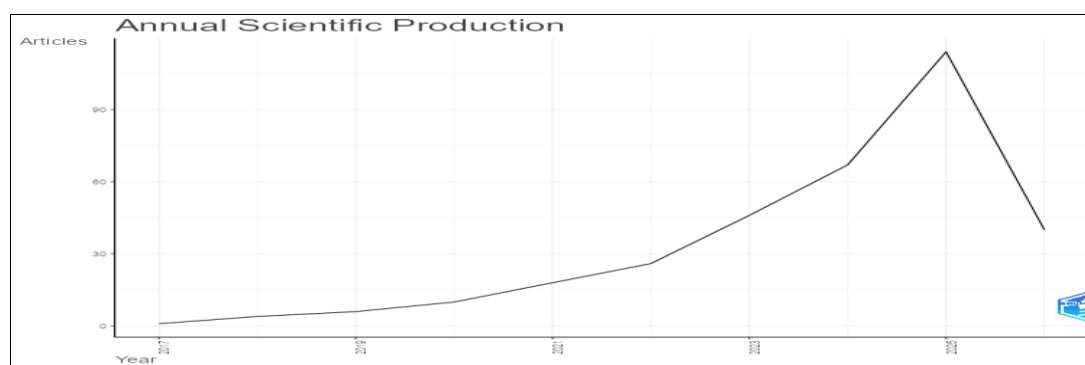


Figure 5: Annual Scientific Production using Scopus search report

Figure 5, illustrates the annual scientific production of publications in the area of FinTech and RegTech based on the scopus indexed data of 332 articles used in the present research. There is a gradual increase in the number of publications , the initial years starting 2017-2019 the number of publications are found to be relatively low, indicating a nascent stage of research. The primary focus of the academic research was centered on exploratory and conceptual studies in the emerging topics related to Fintech and Regtech. Development Phase (2020–2022) with a steady rise in publications is observed, suggesting increasing academic interest and recognition of the importance of digital financial technologies. This period coincides with global digital transformation trends and increased adoption of online financial services.

Phase 2023-2025 a steady increase in the number of publications is observed suggesting this is a expansion phase with increasing academic interest and recognition of the importance of digital financial technologies. This period also coincides with the global digital transformation trends and increased adoption of the online financial services. Recent decline in the year 2026 can be contributed to the incomplete indexing of recent publications and temporary stabilization.

Conclusion

This research study is based on a comprehensive analysis of FinTech and RegTech based research through research articles in scopus indexed journals, a database of 332 research papers are used for conducting performance analysis and scientific mapping techniques using Biblioshiny and R Studio software. Through this methodology

This methodology enabled the identification of prominent publication trends, key authors, influential works, and emerging research domains within this rapidly evolving field(Dicholkar et al., 2025).

Research systematically explores the publication trends, thematic evolution, author collaborations, and thematic evolution structures.

The findings of the study indicate that research on FinTech regulation has seen significant growth since 2017, underscoring the increasing importance of digital financial technologies. The annual scientific production also shows a transition from the early exploratory phase to a more structured, mature research domain in recent years. This maturation is further evidenced by a burgeoning interest in regulatory frameworks that balance innovation with risk management, alongside critical examinations of ethical considerations and cybersecurity implications(Bouriche et al., 2025).

The same can be confirmed with the corresponding growth observed through the acceleration of digital transformation, the expansion of financial services, and the increasing adoption of blockchain technology and artificial intelligence. The heightened interest in these areas also reflects a growing recognition among academics and practitioners of the profound implications these technologies have for financial stability, market integrity, and consumer protection(Nefla & Jellouli, 2025). This surge in research is also attributable to the transformative impact of AI and machine learning in finance, driving innovations in credit scoring, fraud detection, and automated advisory services, which in turn necessitate new regulatory paradigms(Kanaparthi, 2024; Vuković et al., 2025).

From the co-word network analysis, insights into the structural dynamics of the research field are understood with small, fragmented author clusters, with a lack of a central network. This indicates that the FinTech and Regtech research is still in the development stage when we check on collaboration, therefore seen as a hindrance to the development of a cohesive and integrated research framework. This fragmentation suggests an imperative for fostering inter-institutional and interdisciplinary collaborations to consolidate expertise and accelerate the progression of this nascent field.

This study contributes to the literature by mapping the intellectual structure and providing a clear understanding of the evolution of fintech and regulation research. It also highlights that there is an increasing academic attention drawn to the regulation challenges in the fintech and innovation sector, and underscores the need for an integrated, interdisciplinary approach to address the complexities of the digital financial system.

Limitations and Future Research Directions:

This study has a few limitations first being the restriction to the scopus database, which, although comprehensive may not include all the relevant academic publications. Inclusion of studies from other databases such as Web of Science and IEEE Explore may have been helpful to provide complete insights. Second, the study relies on few predefined set of keywords for the data retrieval from scopus database. Although these keywords have been carefully been selected based on the scope of the research paper, it is possible that some relevant studies using alternative terminology have been excluded.

Third, the nature of the bibliometric analysis methodology itself is inherently a quantitative study and may not involve in-depth qualitative evaluation of the content, theoretical frameworks,or methodological rigor of individual studies.

Finally, future studies should focus on emerging areas such as artificial intelligence in regulatory processes, cybersecurity, data privacy, and ethical considerations in algorithmic decision-making which may be more useful.

Comparative and longitudinal studies across different regions and regulatory environments can also provide valuable insights into how policy frameworks influence the development and adoption of FinTech.

In conclusion, FinTech and RegTech research is a rapidly evolving field with significant academic and practical relevance. This study provides a foundational understanding of its intellectual structure while highlighting critical gaps and opportunities for future exploration.

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