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Fintech Innovations in Financial Inclusion: A Bibliometric and Systematic Review

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Abstract

Recent advancements in technology are opening doors for marginalized and low-income communities to access financial services through innovative solutions. This study utilized a combined approach of bibliometric analysis and systematic review. It provides a comprehensive outline of fintech in financial inclusion by analyzing the current publication trends. Reviewing 235 articles in the Scopus database from 2016 to 2024, we find a drastic rise in the number of articles in the research area. This research breaks new ground by specifically examining the influence of financial technology (fintech) on financial inclusion. While mobile money and financial inclusion have been a well-explored area, this study delves deeper. It presents a multifaceted view of how fintech contributes to financial inclusion. Here, the analysis focuses on three key aspects: (i) Recent Trends: The study identifies the latest developments in fintech research related to financial inclusion, (ii) Research Landscape: It pinpoints the most prolific authors and countries in this field, providing insights into the maturity of the research area, (iii) Fintech Channels: The analysis explores the various channels through which fintech fosters financial inclusion. The findings demonstrate that fintech holds significant potential to drive inclusive finance, potentially leading to a more robust financial industry. Conclusion and Discussion part depicts the overall developments and diversification in the area.

Keywords: Bibliometric Analysis, Financial Inclusion, Fintech, Mobile Money, Systematic Review.

Introduction

Fintech, or financial technology, is the term for the use of Internet-based technology in the financial services industry, which results in the creation of new services and business models (1). Unfortunately, access to basic financial services is denied to over 1.7 billion people living in underdeveloped countries worldwide, making it more difficult for them to escape the cycle of poverty. Fintech innovations have the potential to make financial services like insurance, credit, savings, and payments accessible to the underprivileged (2). In order to achieve financial stability, financial inclusion entails equitable participation and complete access to all available financial services and financial information. In the financial industry, the fintech-based inclusion approach has shown to be an effective policy (3). The following advantages of fintech have drawn attention(4): boosting operational effectiveness, reducing operating costs effectively, upending established industry structures, erasing industry boundaries, facilitating strategic disintermediation, creating new avenues for entrepreneurship, and democratizing access to financial services. Fintech has developed from peer-to-peer lending, money transfers, crowdsourcing, and mobile payments to blockchain, cryptocurrencies, and robo-investing (5). Fintech refers to the application of information technology by start-ups (the financial services industry outside of banks) and the domains of finance, financial innovation, and digital information (6). The six fintech business models include capital markets, wealth management, insurance services, crowdfunding, payment, and lending. The financial industry has benefited greatly from the spread of fintech. The impact of developmental technology and its use in the banking industry raised society's standard of living. Fintech is directly related to GDP per capita and financial inclusion (7). Fintech's extensive application opened up new avenues for investigation. In 2024, conducted a research was conducted to examine the relationship between fintech measures and bank profitability, the study's conclusions highlight two primary themes: fintech initiatives at the national and bank levels, as well as the factors that influence

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profitability and are unique to each nation and bank (8). Four primary areas of focus can be distinguished between fintech and banking, first one services related to capital raising, deposit and credit, second one clearing, settlement, and payment services, third one services for investment management; and, fourth one insurance (9). Fintech is viewed as a disruptive innovation that can significantly impact established banks, particularly in the payment sector. The following three themes were used in the thematic review of Fintech articles (10): Industrial, entrepreneurial, and legal are the first three. They found that, when it came to the financial market, fintech had the most influence because of the asymmetry of capital and information. Using the Scopus database, a bibliometric analysis of fintech research (11). The study came to the conclusion that technology is important to the financial services sector and set out to discover fundamental research trends in fintech. There aren't many in-depth studies on fintech and financial inclusion; the mapping papers the researchers analyzed were narrowly targeted and provide just a general overview of fintech research. Comprehensive investigations are also required in order to lay the groundwork for future research and to methodically assess the state of the field. Fintech is the prominent factor driven by the growth of digital transformation. It has been considered a significant advancement in the financial sector (12). The trans-disciplinary nature of fintech resulted in collaborative research that encapsulates the society, financial sector, internet, economic development, and inclusive finance. The multifaceted opportunities of fintech stimulate emerging economies towards the adoption of financial technology and its inculcation to rectify the drawbacks of traditional financial systems. To predict future trends it is necessary to examine the past and present development of fintech research. Fintech has the efficacy to serve the marginalized population by making innovations in alternative financing solutions (13). Amartya Sen's Capability Approach offers a strong theoretical framework for investigating the relationship between fintech and financial inclusion. This concept changes the emphasis away from simply having access to financial services and onto the actual capabilities that people may do with them. In terms of financial inclusion, competencies include the ability to save, borrow, pay, manage risk, and engage in economic activities. Fintech has the ability to greatly improve these capacities thanks to its cutting-edge business models and technologies. For example, mobile money services can decrease the requirement for physical branches by increasing access to financial services in rural places. Digital lending platforms have the potential to extend finance to marginalized groups, enabling people to make investments in their own enterprises or education. Fintech-enabled payment systems can also streamline transactions, cutting costs and improving effectiveness. Fintech technology adoption and usage can also be influenced by social and cultural issues. People's readiness to accept new financial tools can be influenced by a variety of factors, including cultural norms, financial literacy levels, and trust in financial institutions. Therefore, in addition to focusing on technology developments, successful financial inclusion projects also need to address these contextual variables. To sum up, the Capability Approach offers a useful paradigm for comprehending how fintech and financial inclusion interact. This methodology aids in the evaluation of the practical implications of fintech endeavors by centering on the capacities that people can attain via financial services. It is crucial to take institutional and sociocultural aspects into account in addition to technological developments in order to optimize the advantages of fintech for financial inclusion.

Methodology

This study incorporates both systematic review and bibliometric analysis. In academic literature, bibliometric analysis is a statistical and quantitative instrument. It has been extensively used in several study fields, including financial innovation, deep learning, business and economics, blockchain, bitcoin, and the poverty cycle (4). Systematic reviews can help us grasp what is known and what is not yet known about a subject, frequently to a greater extent than the findings of a single study. Systematic reviews aim to reduce bias and random error (14). The following is a summary of this study's contributions: (a) to use publishing metrics and descriptive data to show the fundamental fintech trends in financial inclusion articles. (b) examine the collaboration relationship network and citation network to impart the knowledge about influential authors, journals, most productive countries (c) to understand the evolution of themes and trending topics with the help of thematic analysis (d) systematic review of highly cited articles of fintech in financial inclusion to obtain deep insights about the research subject and crisp summary of already available literature.

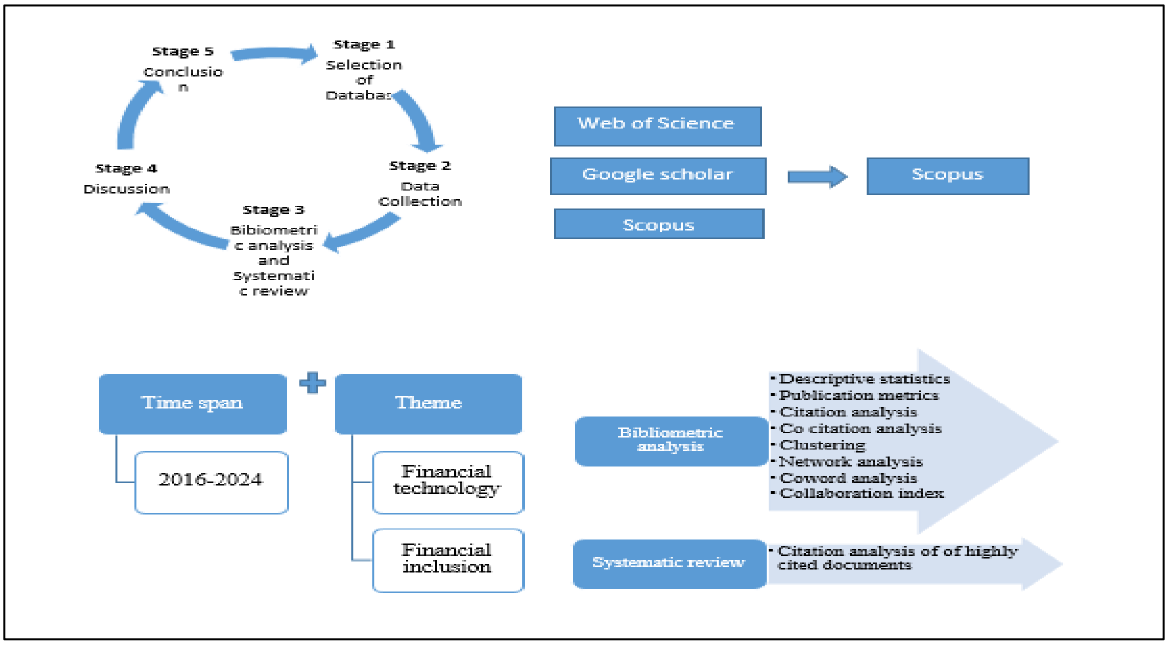

Figure 1: Overview of Methodology

The process of methodology is illustrated as different stages in Figure 1. The first stage involves the selection of a database. From the available databases, Scopus is being selected for the study purpose. Because of its extensive coverage of peer-reviewed literature in a variety of subjects, including technology, economics, and finance, the Scopus database was chosen for this review. Because of its strict indexing standards and wide range of superior journals it offers, Scopus is a highly recommended resource for bibliometric analysis. Furthermore, Scopus provides sophisticated search features and citation monitoring, which made it easier to find pertinent material and evaluate research trends over time. Stage 2 is the collection of data from the database. The first paper, which relates to "fintech in financial inclusion," was published in the year 2016. Hence, 2016 is being considered as the base year for the study, and 2016 to 2024 is the fixed period of the study. Only papers that explicitly addressed the relationship between fintech innovations and financial inclusion were included. Another inclusion criteria were the study should be published in English or have English abstract. In terms of geographical scope the study should focus on developing countries or regions with significant financial inclusion challenges. Studies published in non-peer-reviewed journals or outlets are excluded. Opinion pieces or commentaries that do not present original research are excluded. Case studies that do not provide generalizable findings are excluded. Highly cited 20 articles are selected for Systematic Review according to the citation count. Further details about selection criteria are mentioned in the Figure 2. As there are plenty of review studies relating to "fintech," the author has chosen the theme "fintech in financial inclusion" for the study. After finalizing the period and theme, the next stage is analysis, which consists of two types: bibliometric analysis" and "systematic literature review". A bibliometric review was conducted utilizing "R Studio" and "Bibiloshiny," while a systematic literature review was performed by collecting and analyzing highly cited papers from the Scopus database. Both analyses are incorporated to get the output that can produce input to the literature on fintech and financial inclusion.

Results

Descriptive Statistics

Table 1 summarizes the key characteristics of the data. All major information regarding collected papers in the selected area is given below. Overall 235 articles have been collected for the review starting from the year 2016 to 2024. The total number of authors and the count of collaboration are also mentioned in the table.

Most Relevant Authors

This section explores the most influential authors contributing to the field of Fintech and Financial Inclusion research. "Ozili PK" with 7 articles is relevant in this research area. "Banna H" with 5 articles in the same research area is the second relevant author in the research area. Figure 3 shows the most relevant authors in fintech and financial inclusion area.

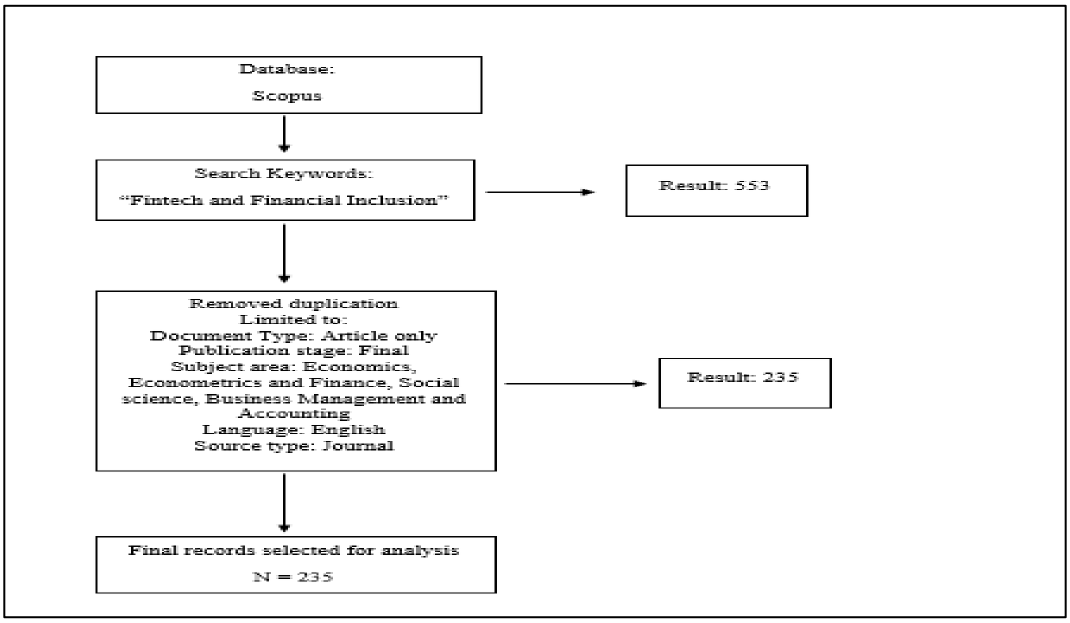

Figure 2: Data Screening Process

Table 1: Statistical Information

Main Information About Data	Results
Timespan	2016:2024
Sources (Journals, Books, etc)	154
Documents	235
Annual Growth Rate %	40.29
Document Average Age	2.3
Average citations per doc	23.22
References	12870
DOCUMENT CONTENTS	
Keywords Plus (ID)	370
Author's Keywords (DE)	669
AUTHORS	
Authors	568
Authors of single-authored docs	50
AUTHORS COLLABORATION	
Single-authored docs	58
Co-Authors per Doc	2.66
International co-authorships %	31.49
DOCUMENT TYPES	
Article	235

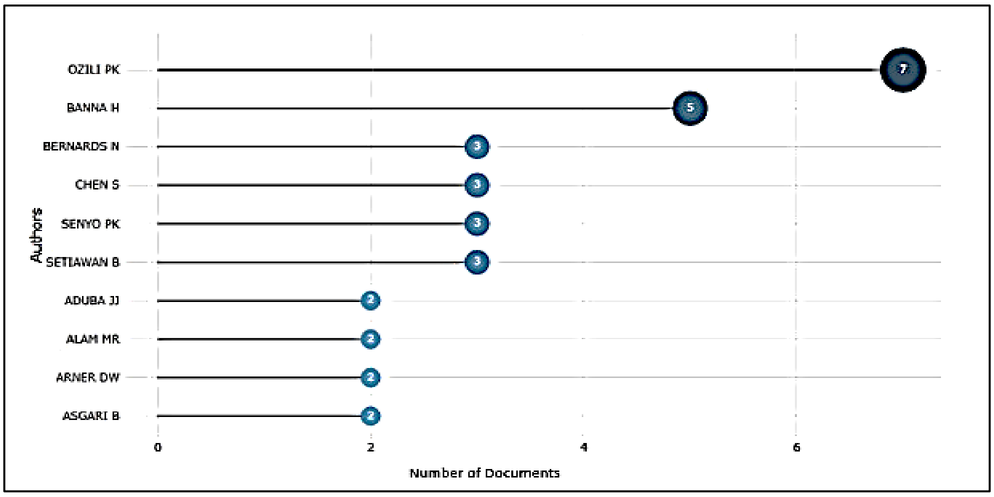

Figure 3: Most Relevant Authors

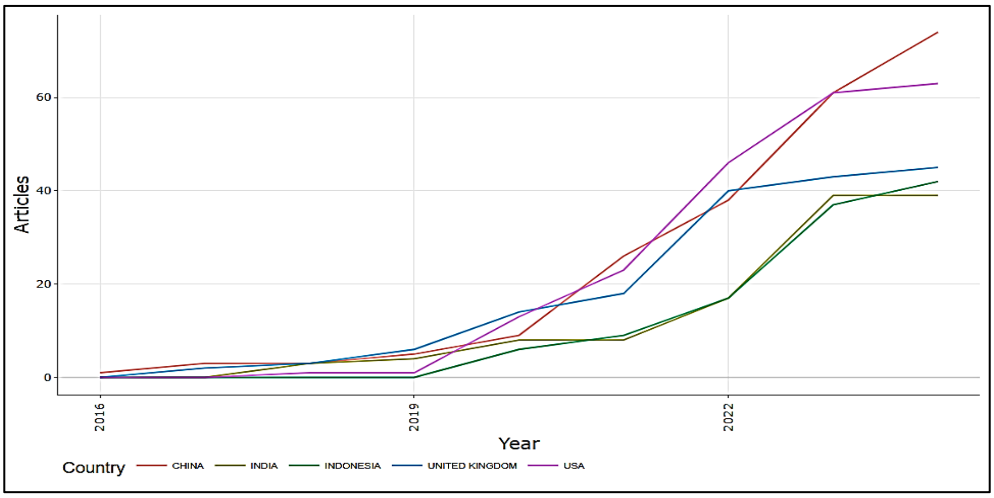

Figure 4: Countries Production over Time

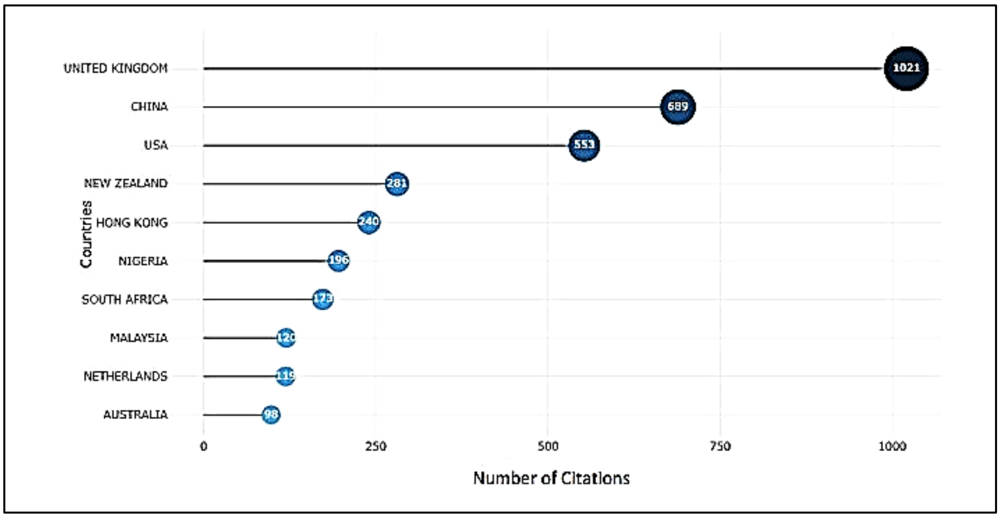

Figure 5: Most Cited Countries

Countries Production over Time

By assessing the production level of countries all over the world the study can give an outlook about the most contributed countries and countries with a large number of papers. Figure 4 shows that in the initial year of 2016, the productive level of papers in countries was very low. After the year 2019, there is a rise in several articles to 20 and above. Above 60 numbers of papers have been produced by the country China which is the top productive country in this research area.

Most Cited Countries

This analysis has been conducted to identify the top countries in terms of high citation. According to Figure 5 "United Kingdom" is the top country with 1021 citations in the area of "Fintech and Financial Inclusion" research. Secondly, China has achieved a citation count of 689. The USA, New Zealand, and Hong Kong are the remaining following countries. Australia is the country with the lowest citation count of 98. The given data is for the year 2016 to 2024.

Source Production over Time

Figure 6 shows the most productive journals from 2016 to 2024. The "Sustainability" journal which started its research in this area in 2020 is considered as the top journal based on productiveness. In the year 2024, this journal has reached its peak and is continuing a stable trend. "Journal of Risk and Financial Management" occupied the second position from the year 2018 to 2024.

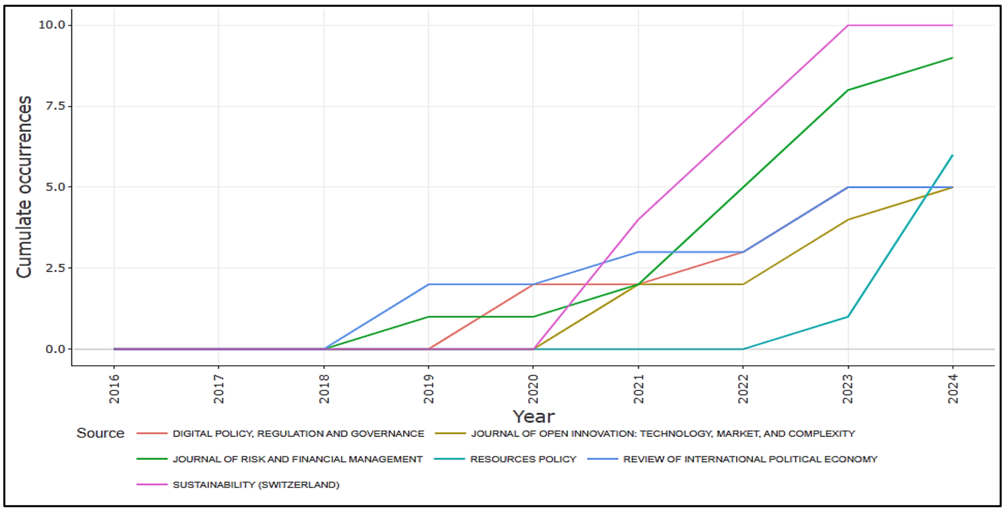

Figure 6: Source Production over Time

Table 2: Authors with Source Impact

Authors	h-index	g-index	m-index	TC
Ozili Pk	7	10	1.75	236
Banna H	5	8	0.833	79
Bernards N	4	5	0.8	93
Senyo Pk	4	4	1.333	148
Alam Mr	4	4	1.333	36
Arner Dw	4	5	0.667	161
Baber H	3	3	0.75	244
Buckley R P	3	3	1	26
Chen S	3	5	0.75	81
Coffie Cpk	3	4	1	27

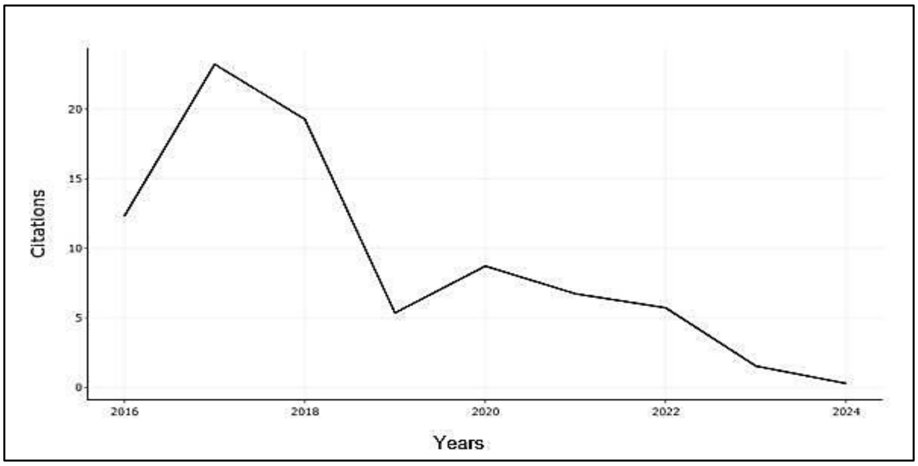

Figure 7: Average Citation per Year

Authors with Source Impact

Table 2 shows the number of citations based on "h-index", "g-index", "m-index", and "total citations". Top 10 authors and their citation details are given below.

Average Citation per Year

According to the "Scopus database", the first paper on "fintech and financial inclusion" is published in the year of 2016. Following a surge in citations in 2017, the average number of citations dipped in subsequent years. A dip in citations occurred, followed by a rise in 2020. After that, there is a negative slope in the trend of citations. The year 2024 shows the least average citations in comparison with the year 2016. From the below given Figure 7 we can see the level of average citation per year starting from 2016 to 2024.

Co-Citation Network

Co-citation analysis is the indicator of similarity between documents. When two papers appear together in the reference list of the third paper then they are called co-cited papers. The two papers are not directly cited but they have a strong relationship. In the below Figure 8 the paper of "gabor d.2017" is highly co-cited, followed by "demirguc-kunt a.2014" and "bernards n. 2019". In this study, the papers of "gabor d.2017" have the highest co-citation network in the area of fintech and financial inclusion. Co-citation analysis otherwise known as knowledge mapping and it classifies papers into small groups.

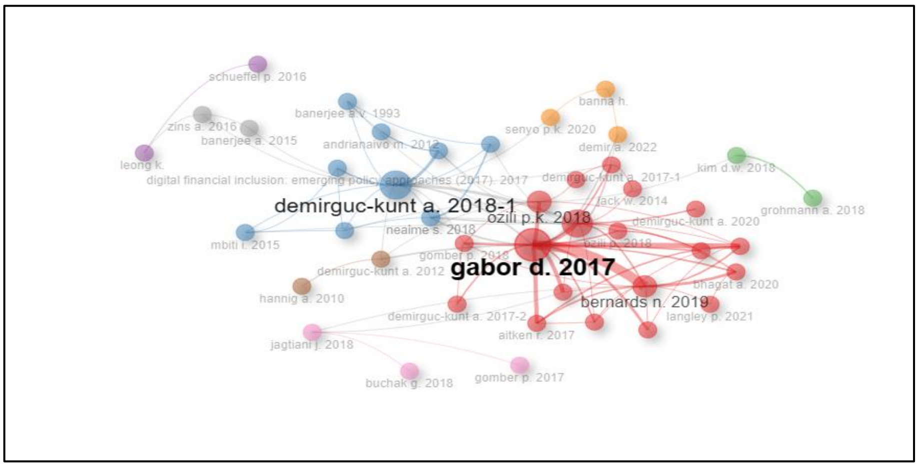

Figure 8: Co-citation Network

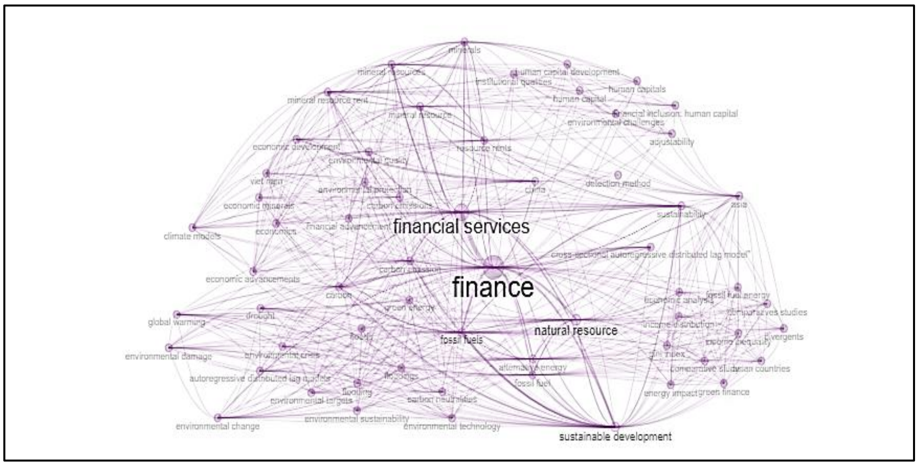

Figure 9: Cluster Network

Cluster Network

Clustering analysis is the statistical technique that helps to sort out the naturally occurring groups in a data set. The association between the elements of each group is being identified. Predetermined groups are called clusters. Figure 9 shows the specific subject areas for bibliometric cluster analysis. A major percentage of publications are focused on “Finance”. The second position is uncovered by the area of “Financial services”.

Thematic Map

Figure 10 shows the thematic map which provides a 2D view of the developments of themes relating to the area of study. Co-word analysis forms the cluster of keywords and that is considered as themes. The density of keywords used in the research area can be identified with the help of this map. There are four quadrants in the thematic map from which we can analyze the themes. The upper right quadrant represents well-established and core themes. The motor themes are finance, financial services in China, innovation governance approach in Africa, financial system financial market banking, and financial inclusion ecosystem fintech. The lower right quadrant is called quadrant two it consists of basic themes which are undeveloped in the research area. Here, there are no basic themes. The lower left quadrant is the third quadrant which consists of emerging themes. Here the important emerging themes are financial innovation technological development, economic growth technology adoption error correction. The fourth and last quadrant in the upper left is very special or niche themes which are nil here.

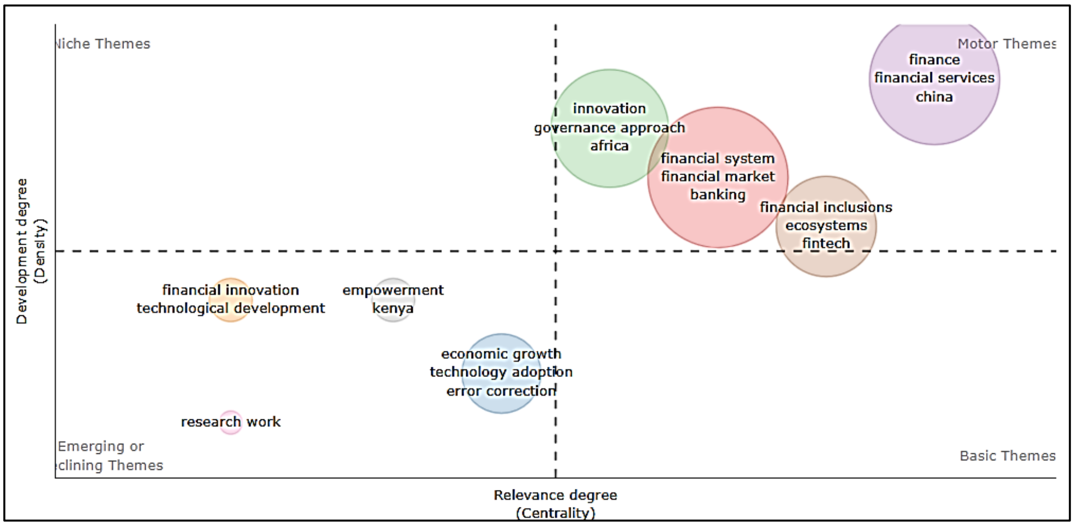

Figure 10: Thematic Map

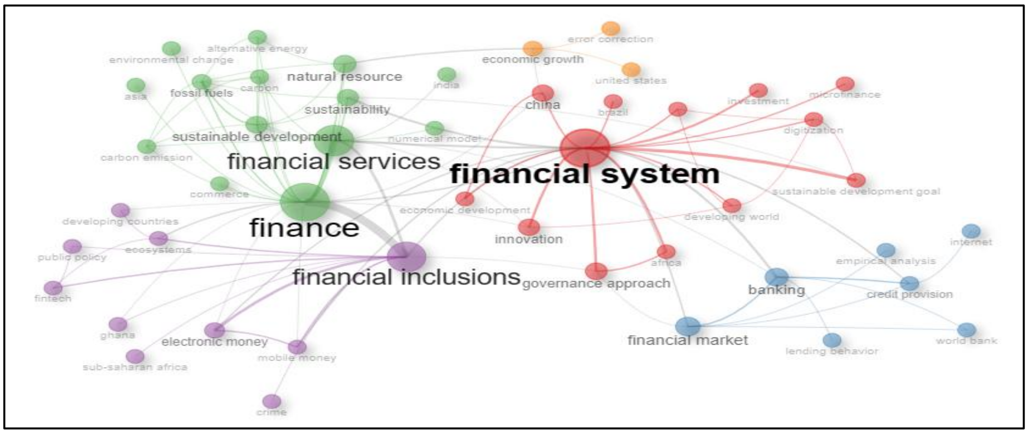

Figure 11: Co-occurrence Network

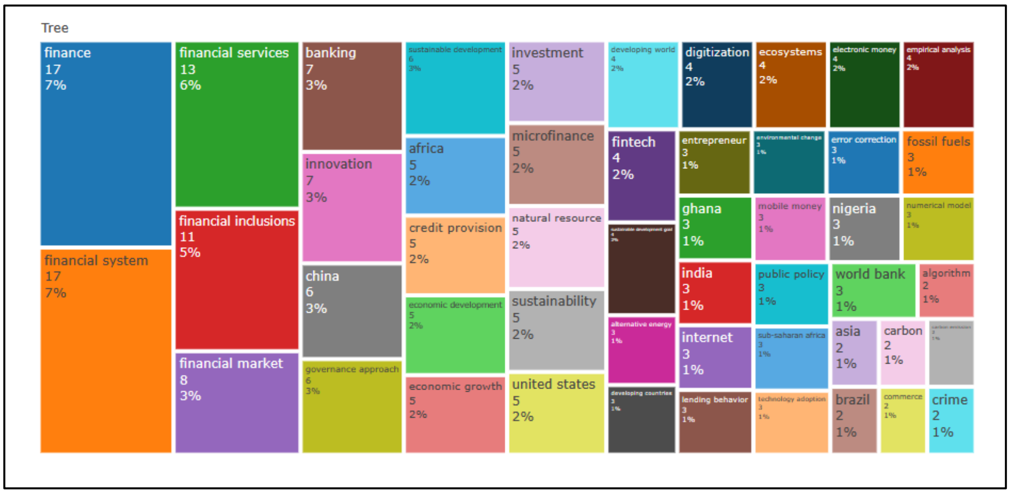

Figure 12: Tree Map

Co-occurrence Network

The co-occurrence network deals with frequency of words that appear together in articles. These words will have semantic relations or have some association. It helps to highlight the potential of different areas of research which are interconnected. According to Figure 11 the most frequently used words are "financial system", "finance", and "financial inclusion".

Tree Map

Tree Map is a graphical representation of widely used keywords in the research of "Fintech" and "Financial inclusion". "Finance" and "Financial system" are the most used words in the articles of the dataset with 17%. Financial services and financial inclusion hold the third and fourth position with 13% and 11%. Figure 12 clearly depicts the widely used words in this area.

Trending Topics

From the given Figure 13 we can understand the current trending topics in the area of fintech and financial inclusion. The trending topic in association with the research area during the initial year is "Economic development". Recently in 2024, the topic is "Sustainable development". Upcoming researchers can focus on this trend to update the literature area according to the trend. "Natural resources" is the other topic which has also attained focus during present times.

Author's Collaboration Network Analysis

Collaboration analysis is performed to interpret the collective contribution of authors in a particular research area. This will help us to identify and understand the collective contribution of authors. Figure 14 shows a total of 14 groups in the study area. The largest group consists of a total 3 authors and the remaining contains 2 authors: Banna H, Hassan MK, Alam MR and Ozili, PK .

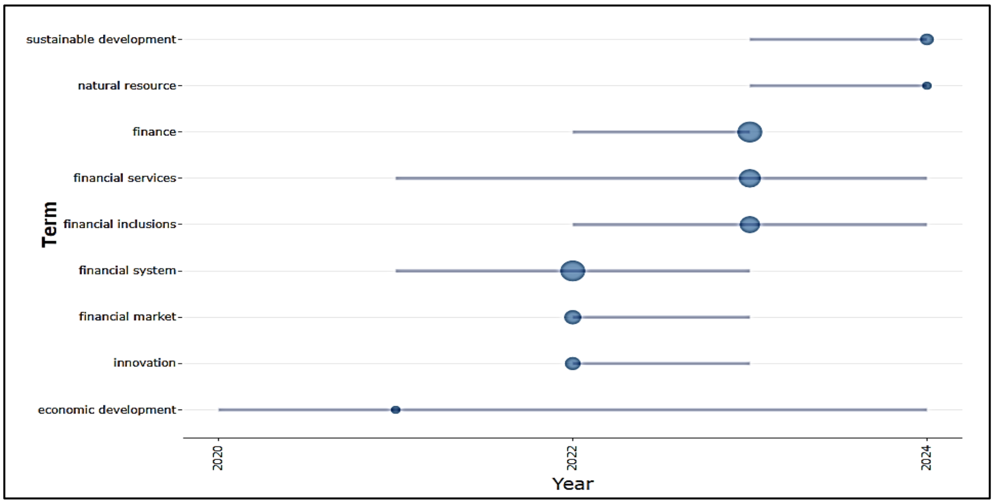

Figure 13: Trending Topics

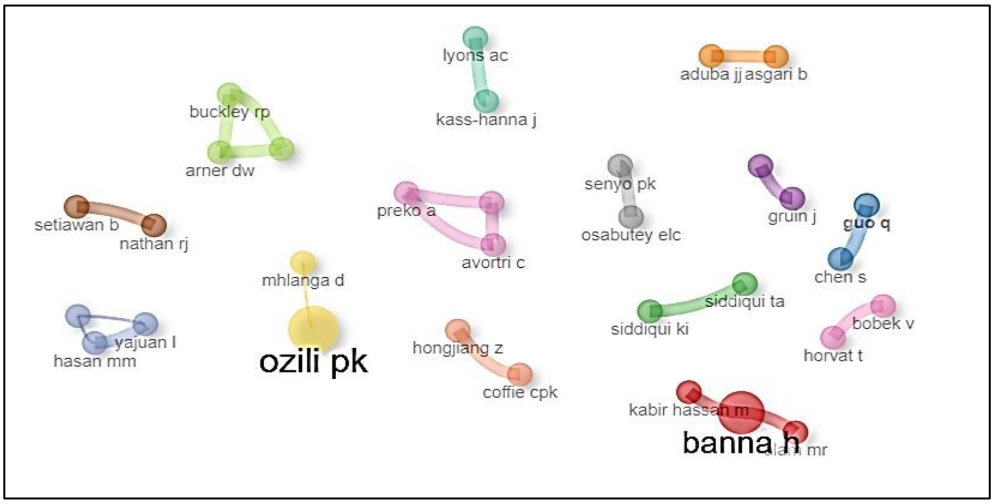

Figure 14: Author's Collaboration Network Analysis

Table 3: Systematic Review of Highly Cited Articles

Sl.No	Author	Citation	Title	Journal	Research Focus	Research Method	Major Research Finding (s)
1	Ozili, 2018 (15)	600	"Impact of digital finance on financial inclusion and stability"	"Borsa Istanbul Review"	This paper delves into the potential benefits and risks associated with this digital transformation, while also exploring the intricate relationship between digital finance and financial inclusion.	Conceptual analysis	Findings highlight the different benefits of digital finance. Examining the Risks and Crafting Policy Solutions for Tech-Driven Financial Inclusion.
2	Gabor and Brooks, 2016 (16)	358	"The Digital Revolution in Financial Inclusion: International Development in the Fintech Era"	"New Political Economy"	The study explores how digital financial inclusion can bridge the gap and empower low-income individuals to access essential financial products and services.	Discourse analysis	The study shows convergence of fintech companies and development institutions expands the digital footprints

							of the poor. Financial education initiatives can be a powerful tool in shaping positive financial behaviors among low-income individuals.
3	Arner *et al*., 2020 (17)	181	"Sustainability, FinTech, and Financial Inclusion"	"European Business Organization Law Review"	This research investigates the interplay between sustainable finance, financial technology (FinTech), and its potential to promote financial inclusion.	Text summarization	Financial technology offers a powerful avenue to expand financial inclusion, particularly for underserved populations. But there are challenges including digital skills and internet access.
4	Demir *et al*., 2020 (18)	167	"Fintech, financial inclusion, and income inequality: a quantile regression approach"	"The European Journal of Finance"	The research investigates the multifaceted impact of financial technology (FinTech) on financial inclusion and income inequality across countries with differing income levels.	Quantile Regression analysis	Financial inclusion, facilitated by Fintech, can act as a lever to indirectly reduce income inequality.
5	Mhlanga, 2020 (19	155	"Industry 4.0 in Finance: The Impact of Artificial Intelligence (AI) on Digital Financial Inclusion"	"International Journal of Financial Studies"	The study explores how digital financial services can bridge the gap and empower underserved populations to access formal financial products and services.	Conceptual analysis	Artificial intelligence (AI) is emerging as a powerful tool for promoting financial inclusion by enabling automated risk assessment and enhanced fraud detection. Contributes to increased access for underserved populations.
6	Senyo and Osabutey, 2020 (20)	135	"Unearthing Antecedents to Financial Inclusion through FinTech Innovations"	"Technovation"	This study examines the adoption of mobile money in Ghana's evolving financial ecosystem, investigating the role of fintech innovations in furthering	PLS-SEM	Findings shows that mobile money ecosystem in Ghana has significant growth.

					financial inclusion within the country.		
7	Demirgüç-Kunt *et al.*, 2020 (21)	94	"The Global Findex Database 2017: Measuring Financial Inclusion and Opportunities to Expand Access to and Use of Financial Services"	"The World Bank Economic Review"	This exploration delves into the current state of financial inclusion worldwide, examining effective strategies to bridge the gap and empower individuals with access to essential financial services.	National representative survey	Digital technology has increased financial inclusion. There is a reduction in the number of unbanked adults globally with the advent of technological innovations.
8	Yue *et al.*, 2022 (22)	75	"The rise of digital finance: Financial inclusion or debt trap?"	"Finance Research Letters"	The study focus on the mpact of digital finance on households along with the role of financial inclusion and debt level.	Regression model	The rise of digital finance has democratized access to loans for households, fostering financial inclusion. However, to ensure responsible financial decision-making, promoting digital financial literacy remains a critical necessity.
9	Ji *et al.*, 2021 (23)	72	"Has Digital Financial Inclusion Narrowed the Urban-Rural Income Gap: The Role of Entrepreneurship in China"	"Sustainability"	This study investigates the potential of digital financial inclusion to bridge the rural-urban income gap in China.	Regression analysis	China's rural-urban income gap exhibits regional variations. This study explores how digital financial inclusion can act as a positive force in reducing this disparity across different regions.
10	Banna *et al.*, 2021 b (24)	61	"Fintech-based financial inclusion and bank risk-taking: Evidence from OIC countries"	"Journal of International Financial Markets"	This study explores the relationship between fintech-driven financial inclusion and banks' risk tolerance.	Quantile Regression and Two-stage least squares method	There is a decrease in bank risk-taking behavior in association with fintech-based financial inclusion
11	Banna *et al.*, 2022 (3)	45	"Fintech-based Financial Inclusion and Risk-taking of	"Finance Research Letters"	Adoption of fintech by microfinance institutions and its effects on reduction risk-taking.	Panel data analysis and Two-stage least	Outcomes show that fintech-based financial inclusion has a

			Microfinance Institutions (MFIs): Evidence from Sub-Saharan Africa"		Fintech adoption in promoting financial stability.	squares model	positive effect on risk-taking behavior. It helps reduce the risk-taking.
12	Friedline *et al*., 2019 (25)	39	"Digital Redlining: Poor Rural Communities' Access to Fintech and Implications for Financial Inclusion"	"Journal of Poverty"	Investigating the access of rural communities towards digital financial services by considering the financial divide.	OLS-Regression	Findings shows the Racial disparities, poverty levels, and regional inequalities create significant barriers to accessing digital financial services.
13	Baber H. 2020 (26)	32	"Financial inclusion and FinTech A comparative study of countries following Islamic finance and conventional finance"	"Qualitative Research in Financial Markets"	This analysis delves into the performance of countries with dominant Islamic finance systems compared to those with conventional finance systems. The focus will be on two key aspects, which are financial inclusion and financial usage.	t-test	Islamic finance countries are having overall better performance, especially in the case of female financial inclusion. Conventional finance countries are best in the adoption of fintech services.
14	Bongomin and Ntayi, 2020 (27)	31	"Mobile money adoption and usage and financial inclusion: the mediating effect of digital consumer protection"	"Digital Policy, Regulation and Governance"	Effect of digital consumer protection in the relation between fintech usage and financial inclusion.	PLS-SEM	The presence of robust digital consumer protection measures has demonstrably strengthened the link between mobile money adoption and financial inclusion.
15	Burns, 2018 (28)	30	"M-pesa and the 'market-led' approach to financial inclusion"	"Economic Affairs"	Analyzing the factors allowed mobile money services to enlarge financial inclusion.	Case study analysis	Factors like urban density, remittance markets, and dominant telecoms have influenced financial inclusion.
16	Senyo *et al*., 2021 (29)	30	FinTech ecosystem practices shaping financial inclusion: the case of mobile money in Ghana	European Journal of Economic Affairs	Examining the role of financial innovations and traditional banking in promoting financial inclusion.	Grounded theory method	The rise of fintech ecosystems in developing countries like Ghana is proving to be a powerful

							driver of financial inclusion.
17	Kim, 2021 (30)	29	"Assessing the impact of mobile money on improving the financial inclusion of Nairobi women"	"Journal of Gender Studies"	This study investigates the impact of mobile money on achieving financial inclusion for women in Nairobi, Kenya.	Mc-Nemar's test	The proliferation of mobile money services is demonstrably lowering the percentage of financially excluded populations.Women are using mobile money for temporary money storage purposes.
18	Siddiqui and Siddiqui, 2020 (31)	27	"FinTech in India: An analysis of impact of telecommunication on financial inclusion"	"Strategic Change"	To understand the relationship between telecommunication and financial inclusion.	PLS-SEM	Transcending regional variations, the widespread use of telecommunication services fosters awareness of banking products, demonstrably contributing to a positive impact on financial inclusion globally.
19	Kanga *et al.*, 2021 b (32)	27	"The diffusion of fintech, financial inclusion, and income per capita"	"The European Journal of Finance"	The study deals with the transformative power of technological change within the financial sector, with a particular focus on financial technology and its positive effects on financial inclusion. By examining various Fintech factors, we can gain valuable insights into how technology is revolutionizing access to financial services.	Cointegration analysis	The result shows fintech diffusion has increased financial inclusion. There is a positive impact on human capital and GDP per capita.
20	Jóia and Cordeiro, 2021 (33)	23	"Unlocking the Potential of Fintech for Financial Inclusion: A Delphi-Based Approach"	"Sustainability"	The study investigates the key factors within the financial technology (FinTech) ecosystem that contribute to expanding financial inclusion.	Kendall's W statistical test and Tau coefficient test	Findings highlight that serving unbanked populations, minimizing charges, and

providing services to remote locations can increase financial inclusion.

Critical Evaluation of Fintech in Financial Inclusion

Table 3 shows the top 20 cited publications from 2016 to 2024. Reviewed articles shows a result that Financial Inclusion is greatly influenced by digital finance. At the same time negative consequences of fintech on financial inclusion are also evident. Fintech is also correlated with the financial stability of a country (15). Direct effect can be seen in financial inclusion with the emergence of fintech (16). There are challenges in connection with the adoption of fintech. Some of the obstacles preventing the full-fledged development of fintech in poor nations are limited internet access and a lack of internet-related skills (17). Reducing economic disparity in developing nations is also greatly aided by fintech and financial inclusion. By availing financial services with minimal documentation and reducing other procedures the attainment of equality in access to financial products can be equalized (18). Financial inclusion is being further enhanced by mobile money, one of the conveniently available services (20). Even though this systematic review offers a thorough summary of the body of knowledge about fintech and financial inclusion, it is crucial to evaluate the shortcomings and gaps that continue to exist in the field of current research. Finding these understudied areas improves the study's uniqueness and provides insightful information for upcoming research projects. Even though the literature on fintech's role in advancing financial inclusion is expanding, less is known about how these technologies directly affect vulnerable groups like low-income households, women, and rural communities. Future resaerch can focus on interventions that can enhance the their financial well-being. A large portion of the research that is currently available is cross-sectional, offering a momentary view of fintech's influence. Longitudinal research is required to monitor the enduring impacts of fintech advancements on financial inclusion. Although several studies include regulations, there isn't enough in-depth research done on the difficulties that fintech startups have with various regulatory frameworks. The importance of technology literacy in the uptake of fintech solutions is frequently ignored in the literature. It is essential to comprehend how disparities in digital literacy impact the adoption and efficient utilization of fintech services. Another topic that needs more research is the impact of social and cultural aspects on the adoption and usage of fintech solutions. It's critical to recognize contradictions in the body of current literature in addition to understudied fields. For example, while some research reports that the adoption of fintech has produced positive results, other studies draw attention to problems including data privacy issues, a lack of trust in digital platforms, and the possibility of increased financial exclusion as a result of technological impediments. To build a comprehensive understanding of fintech's role in financial inclusion, it is imperative to reconcile these divergent viewpoints.Future research should use a multidisciplinary method that integrates ideas from technology studies, sociology, and economics to overcome these gaps and disparities. Researcher, practitioner, and policymaker collaboration can help discover novel solutions to the particular problems underprivileged people experience. Furthermore, developing alliances with fintech businesses can yield insightful real-world data that helps shape policy frameworks and research agendas.

Discussion

The study's essential component is the review of prior literature, which comes after the introduction. Figure 1 shows the study's organizational framework. The image provides details on many processes, such as database selection, data collecting, and analysis kinds. Figure 2 depicts the entire screening procedure, which includes the final selection of articles for analysis based on keywords.The initial step following the collecting of articles is to provide the statistical data from the papers in order to understand the fundamentals, as shown in table 1. One of the study's goals is to identify the most pertinent writers in the field of study that is indicated in Figure 3, and "Ozili PK" is at the top of the list of relevant authors in that category. The next and most crucial goal is to identify the most productive nations in this field of study. As Figure 4 makes evident, China leads all other nations in productivity. Figure 5 presents the list of the most cited countries. The output of countries alone is insufficient to determine the authenticity of the data. The nation with the most citations (1021) is the UK. Figure 6 depicts the Source Production over Time, containing information on the journals that published articles pertaining to financial inclusion and fintech between 2016 and 2024.To determine the significance of the study field, the impact factors of prominent authors, including the "h index," "g index," "m index," and total citations, were also examined. Table 2 lists the authors along with their source impact. The average citation for fintech and financial inclusion research per year is provided in Figure 7. The quantity of citations in 2020 has decreased. Figure 8 displays the Co-citation Network, which illustrates how similar the articles are to one another. We are able to organize the articles based on reference similarity thanks to this research. The naturally occurring groupings in the data are shown in Figure 9's Cluster Network. and the most of the publications deal with the theme of "finance," with "financial services" coming in second. The most anticipated themes in this field of study can be found in Figure 10. As per the Co-occurrence Network's Figure 11, "financial system" is the most often used word. "Financial Inclusion" and "Finance". We can observe the findings from Figure 12 Tree Map, which shows the percentage and position of frequently used words mapped. The majority of the most popular subjects in this field are displayed in Figure 13, under the heading Trending Topics. From that, the future scope can be determined. The Author's Collaboration Network Analysis, shown in Figure 14, provides information regarding the authors' collaboration. The top 20 highly referenced publications have been chosen for the systematic review, which is titled Systematic Review of Highly referenced publications in Table 3. Financial inclusion might be greatly advanced by the incorporation of fintech technology into the financial sector, especially for marginalized people. According to (21), fintech advancements like peer-to-peer lending, mobile payments and blockchain technology can lower barriers to entry, improve the effectiveness of financial services, and encourage underrepresented populations to participate in the economy. It has been demonstrated that mobile payment systems, for example, make it possible for users to engage in previously unattainable economic activity in areas with weak banking infrastructure (22). This is consistent with the Capability Approach, which emphasizes the value of giving people the tools they need to accomplish their intended functionalities (23). Blockchain technology also improves transaction security and transparency, which has revolutionary potential for financial inclusion. Blockchain, according to Catalini and Gans (24), can lower the expenses related to conventional banking systems, making financial services more accessible to those with modest incomes. By granting consumers more control over their financial data, blockchain's decentralized structure also empowers users, which can promote confidence and encourage involvement in the financial system (25). This is especially important in developing nations, where financial institutions are frequently seen with distrust because of past problems with corruption and inefficiency (26). Fintech innovations must be safe, secure, and available to all users, as stated by Bongomin *et al.* (27) and suitable regulatory measures are necessary to guarantee this.

Conclusion

We used 235 articles on Fintech, particularly Financial Inclusion, from the Scopus database for this analysis. Since the first work in this field was published in 2016, it is regarded as the beginning year, and all papers published up until 2024 have been covered here. This is a contribution and update in the existing literature because we have included the most recent articles too. There are plenty of review papers in the field of “Fintech” but here the novelty of the study is it focuses on “Fintech in Financial Inclusion”. Articles that focus on how fintech affects financial inclusion in particular are gathered for the dataset. Visual representation of recent trends and an overall outline of the study area are presented by the authors. In addition to Bibliometric analysis, a systematic review of the top cited 20 papers was also inculcated. As this analysis has made clear, technological advancements like blockchain and mobile payments can improve financial services accessibility, lower transaction costs, and enable people to take a more active role in the economy. But achieving these advantages depends on a regulatory framework that is supportive and takes into account the potential and problems that fintech presents. Governments and international organizations need to understand that regulations have twofold purposes: they protect consumers and promote innovation. Developing frameworks that can keep up with the fintech industry's rapid evolution is one of the main regulatory obstacles. Due to possible oversight gaps that could jeopardize customer safety and confidence, traditional regulatory approaches may not fully meet the distinctive qualities of fintech solutions. For this reason, legislators ought to think about creating flexible legal frameworks that promote creativity while protecting users especially the most disadvantaged groups who might be more susceptible to abuse. Additionally, regulatory sandboxes present a chance for fintech startups to test their products in a monitored setting under regulatory authorities' supervision. Through promoting cooperation between fintech companies and regulatory bodies, these sandboxes have the potential to identify optimal methodologies and establish a more favorable atmosphere for the expansion of financial services that are inclusive. International collaboration is also essential for resolving cross-border regulatory issues, especially as fintech products frequently have an international reach. Governments, regulatory agencies, and international organizations can work together to promote best practices and unify legislation, which will ultimately increase the effectiveness of fintech in reaching financial inclusion objectives.

Abbreviation

Nil.

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Dhaya M: Conceptualization, Methodology, Data Collection, Analysis, Writing, Original Draft Preparation; Sundaram N: Review, Editing, Supervision, Writing.

Conflict of Interest

The authors declare no conflict of interest.

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References

1. Dwivedi P, Alabdooli JI, Dwivedi R. Role of FinTech adoption for competitiveness and performance of the bank: A study of banking industry in UAE. International Journal of Global Business and Competitiveness. 2021;16(2):130–8.
2. Lagna A, Ravishankar MN. Making the world a better place with fintech research. Information Systems Journal. 2021 Mar 15;32(1):61–102.
3. Banna H, Hassan MK, Rashid M. Fintech-based financial inclusion and bank risk-taking: Evidence from OIC countries. Journal of International Financial Markets Institutions and Money. 2021 Oct 13;75:101447.
4. Li B, Xu Z. Insights into financial technology (FinTech): a bibliometric and visual study. Financial Innovation. 2021 Oct 6;7(1). https://doi.org/10.1186/s40854-021-00285-7
5. Goldstein I, Jiang W, Karolyi GA. To FinTech and beyond. Review of Financial Studies. 2019 Feb 18;32(5):1647–61.
6. Suryono RR, Budi I, Purwandari B. Challenges and Trends of Financial Technology (Fintech): A Systematic Literature review. Information. 2020 Dec 21;11(12):590.
7. Kanga D, Oughton C, Harris L, Murinde V. The diffusion of fintech, financial inclusion and income per capita. European Journal of Finance. 2021 Jul 8;28(1):108–36.
8. Tarawneh A, Abdul-Rahman A, Amin SIM, Ghazali MF. A Systematic Review of Fintech and Banking Profitability. International Journal of Financial Studies. 2024 Jan 11;12(1):3.
9. Thakor AV. Fintech and banking: What do we know? Journal of Financial Intermediation. 2020 Jan 1;41:100833.
10. Sangwan V, Harshita H, Prakash P, Singh S. Financial technology: a review of extant literature. Studies in Economics and Finance. 2019 Nov 1;37(1):71–88.
11. Ahmi A, Tapa A, Hamzah AH. Mapping of financial technology (FinTech) Research: A bibliometric analysis. Globalization. 2020;2:2008.
12. Goswami S, Sharma RB, Chouhan V. Impact of Financial Technology (Fintech) on Financial Inclusion(FI) in rural India. Universal Journal of Accounting and Finance. 2022 Mar 1;10(2):483–97.
13. Afjal M. 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. 2023 Oct 5;10(1). https://doi.org/10.1057/s41599-023-02086-y
14. Owens JK. Systematic reviews: Brief overview of methods, limitations, and resources. Nurse Author & Editor. 2021 Dec 1;31(3–4):69–72.
15. Ozili PK. Impact of digital finance on financial inclusion and stability. Borsa Istanbul Review. 2018 Dec 1;18(4):329–40.
16. Gabor D, Brooks S. The digital revolution in financial inclusion: international development in the fintech era. New Political Economy. 2016 Nov 28;22(4):423–36.
17. Arner DW, Buckley RP, Zetzsche DA, Veidt R. Sustainability, FinTech and Financial Inclusion. European Business Organization Law Review. 2020 Mar 1;21(1):7–35.
18. Demir A, Pesqué-Cela V, Altunbas Y, Murinde V. Fintech, financial inclusion and income inequality: a quantile regression approach. European Journal of Finance. 2020 Jun 1;28(1):86–107.
19. Mhlanga D. Industry 4.0 in Finance: The impact of Artificial intelligence (AI) on digital financial inclusion. International Journal of Financial Studies. 2020 Jul 28;8(3):45.
20. Senyo PK, Osabutey ELC. Unearthing antecedents to financial inclusion through FinTech innovations. Technovation. 2020;98(102155):102155.
21. Demirgüç-Kunt A, Klapper L, Singer D, Ansar S, Hess J. The Global FINDEX Database 2017: Measuring Financial Inclusion and Opportunities to Expand Access to and use of Financial Services. The World Bank Economic Review. 2019 Nov 29;34(Supplement_1):S2–8.
22. Yue P, Korkmaz AG, Yin Z, Zhou H. The rise of digital finance: Financial inclusion or debt trap? Finance Research Letters. 2021 Dec 30;47:102604.
23. Ji X, Wang K, Xu H, Li M. Has digital financial inclusion narrowed the urban-rural income gap: The role of entrepreneurship in China. Sustainability. 2021;13(15):8292.
24. Banna H, Mia MA, Nourani M, Yarovaya L. Fintech-based Financial Inclusion and Risk-taking of Microfinance Institutions (MFIs): Evidence from Sub-Saharan Africa. Finance Research Letters. 2021 May 24;45:102149.
25. Friedline T, Naraharisetti S, Weaver A. Digital redlining: Poor rural communities' access to fintech and implications for financial inclusion. Journal of Poverty. 2020 Sep 18;24(5-6):517-41.
26. Baber H. Financial inclusion and FinTech: A comparative study of countries following Islamic finance and conventional finance. Qualitative Research in Financial Markets. 2020 Jan 21;12(1):24-42.
27. Okello Candiya Bongomin G, Ntayi JM. Mobile money adoption and usage and financial inclusion: mediating effect of digital consumer protection. Digital Policy, Regulation and Governance. 2020 Sep 19;22(3):157-76.
28. Burns S. M-Pesa and the 'market-led'approach to financial inclusion. Economic Affairs. 2018 Oct;38(3):406-21.
29. Senyo PK, Karanasios S, Gozman D, Baba M. FinTech ecosystem practices shaping financial inclusion: The case of mobile money in Ghana. European Journal of Information Systems. 2022 Jan 2;31(1):112-27.
30. Kim K. Assessing the impact of mobile money on improving the financial inclusion of Nairobi women. Journal of Gender Studies. 2022 Apr 3;31(3):306-22.
31. Siddiqui TA, Siddiqui KI. FinTech in India: An analysis on impact of telecommunication on financial inclusion. Strategic Change. 2020 May;29(3):321-30.
32. Kanga D, Oughton C, Harris L, Murinde V. The diffusion of fintech, financial inclusion and income per capita. The European Journal of Finance. 2022 Jan 2;28(1):108-36.
33. Joia LA, Cordeiro JP. Unlocking the potential of fintechs for financial inclusion: A Delphi-based approach. Sustainability. 2021 Oct 22;13(21):11675.