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### UNVEILING THE DYNAMICS OF FINTECH AND FINANCIAL INCLUSION: TRENDS, COLLABORATIONS, AND FUTURE DIRECTIONS IN ACADEMIC RESEARCH

**Nidhi Srivastava\***  
**Shuchita Singh\***  
**Savita Singh\*\***

**\*GL Bajaj Institute of Management and  
Research, Greater Noida**

**\*\*Department of Economics,  
Deshbandhu College, University of Delhi**

#### *Abstract*

*Recent studies emphasize the increasing importance of Fintech in advancing Financial Inclusion (FI) and highlight digital currency as a significant catalyst in this context. This article aims to provide a comprehensive overview of Financial Inclusion and Fintech research, identifying influential journals, prolific authors, and critical themes shaping this intellectual landscape. It also aims to uncover research gaps and propose upcoming research frontiers. The study examines, using bibliometric analysis, the collaborative, citation, co-reference, and co-occurrence patterns in the domain of FI and Fintech. A dataset of 3,099 academic publications from 1980 to 2023 reveals that the Sustainability journal leads in publications, with authors Ozili P and Allen F being highly cited. Makerere University leads the research, and China collaborates significantly with Pakistan, the USA, and the UK. Access, Acceptance, and Trust in Fintech are the potential themes for upcoming research.*

**Keywords** – *Financial inclusion, Fintech, Digital finance, Biblioshiny, Financial Education*

## INTRODUCTION

Mounting evidence substantiates financial inclusion's considerable advantages on marginalized demographics, particularly women and impoverished adults across numerous nations. Policymakers in various countries have espoused financial inclusion as the linchpin for engendering economic empowerment and as a panacea for the escalating levels of impoverishment (Ozili, 2020). This study examines the literature in the field of financial inclusion with fintech intervention to identify potential research frontiers through bibliometric analysis. Presently, financial inclusion assumes a pivotal mantle within the purview of several principal international economic institutions. Within developing nations, alleviating poverty is a paramount aspiration, a feat that can be effectively realized through the augmentation of financial inclusion (Van *et al.*, 2021; Hannig and Jansen, 2010). According to them, the central tenet of financial inclusion is facilitating access to financial services and products, rendered reasonably cheaply, to a vulnerable stratum of the population that has hitherto been systematically excluded from their utilization (Van *et al.*, 2021). Towards the end of the 1980s, a novel paradigm surfaced toward evaluating financial establishments' efficacy in dispensing their services to demographic segments characterized by limited or no financial accessibility. The transformation was profound: this fresh perspective steered the discourse away from singular enterprises and households, reorienting it towards institutions and their capacity to furnish services in an enduring and far-reaching manner (Hannig and Jansen, 2010). Today, this transition from financial development to financial inclusion has become the policy agenda for all developing countries (Hannig and Jansen, 2010). The dividends of financial inclusion are manifold, encompassing the curtailment of poverty, a mitigation of the chasm in income distribution, the cultivation of judicious financial choices, the accrual of augmented savings, the stimulation of more prolific investments, and the fostering of heightened gender parity. Consequently, financial inclusion emerges as a catalyst for fomenting economic growth within the precincts of developing economies (Tinta *et al.*, 2022).

As time has progressed, the financial system has experienced a heightened degree of competition,

thereby instigating the emergence of novel strategic paradigms to achieve heightened efficiency (Gálvez-Sánchez *et al.*, 2021). FinTech, an abbreviation of "financial technology," is propelled by an array of nascent frontier technologies. This phenomenon encompasses a succession of innovative business models, novel technological applications, and fresh products and services that exert a noteworthy influence on the financial market and the provisioning of financial services. It has garnered substantial attention due to its many advantages, enhancing operational efficiency, proficiently curbing operational expenditures, introducing disruptions to established industry frameworks, and democratizing the accessibility to financial services (Garg *et al.*, 2023). The expeditious proliferation of fintech endeavors is widely perceived as harboring the inherent capacity to alleviate financial impediments and enhance the scope of financial inclusion. Such an outcome could conceivably be realized through the diminution of cost impediments that often obstruct the attainment of financial services, a circumstance particularly pronounced in geographically isolated rural domains and among socioeconomically marginalized cohorts, such as the urban underprivileged. Moreover, these fintech initiatives can potentially mitigate the information asymmetries entrenched between purveyors of financial services and their clientele. This predicament disproportionately affects those bereft of banking or financial services (Gershenson *et al.*, 2021).

Fintech's pivotal significance in achieving Financial Inclusion (FI) has engendered the emergence of a nascent research avenue, which is progressively gaining momentum. Recent bibliometric investigations pertinent to Financial Inclusion, as conducted by Gálvez-Sánchez *et al.*, (2021) and Chhatoi *et al.* (2021), elucidate the role of digital currency as a catalyst for advancing this cause. Concurrently, a selection of scholarly works has undertaken an examination of the literature relevant to microfinance, a domain intrinsically intertwined with Financial Inclusion, as evidenced by the studies by Gutiérrez-Nieto and Serrano-Cinca (2019), Maia *et al.*, (2019), and Nogueira *et al.*, (2020). A study conducted by Gallego-Losada *et al.*, (2023) recently explored the role of Information, Communication, and Technology (ICT) in accelerating the pace of financial

inclusion. From a technological vantage point, the landscape of bibliometric inquiries, such as those by Nugroho and Hamsal (2021) and Li and Xu (2021), has delved into the intricate role played by digital innovation or Fintech within the banking sphere (refer Table 1).

Furthermore, Aziz and Naima (2021) presented a succinct analysis of the literature surrounding digital banking and its synergistic relationship with financial inclusion with specific references to Bangladesh.

**Table 1:** Theoretical Premise for the Role of Fintech in Financial Inclusion

Research Preposition	Theoretical Premise	Relevant Studies	Method
Fintech can reduce financial exclusion	TAM	Gershenson <i>et al.</i> , 2021, Ali and Ghildiyal, 2023	Literature Review Experiment Survey Discussion
Inclusion is linked to the use of digital financial services	TAM	Aziz and Naima, 2021, Biekpe <i>et al.</i> , 2020,	Literature Review Experiment Survey Discussion
Summary of scientific research on FinTech, FinTech's functions, and research constraints in digital finance	Theory of Financial Inclusion and Credit risk Analysis, Moral Hazard Theory,	Garg <i>et al.</i> , 2023, Gallego-Losada <i>et al.</i> , 2023, Gálvez-Sánchez <i>et al.</i> , 2021, Mhlanga, 2020	Bibliometric Analysis and SLR
Determine the impact of fintech and digital financial services on financial inclusion	Diffusion of innovation theory, Public good theory, Resource Based Theory, and Sustainable growth theory	Asif <i>et al.</i> , 2023, Al-Smadi, 2023, Hasan <i>et al.</i> , 2022, Yang and Zhang, 2020, Senyo and Osabutey, 2020, Okello Candiya Bongomin <i>et al.</i> , 2018, Ghosh, 2016	Literature Review Experiment Survey Discussion
Digital Financial Index to measure access and usage	Agency Theory, Finance Theory, TAM	Khera <i>et al.</i> , 2021, Shen <i>et al.</i> , 2021, Demir <i>et al.</i> , 2022, L. Wang <i>et al.</i> , 2022	Literature Review Experiment Survey Discussion
Addressing the gaps in financial inclusion research and Policy Recommendations for Fintech and Financial Inclusion	Power parity, Theory of Economic Development theory of ICT4D organization theory	Lagna and Ravishankar, 2022; Arner <i>et al.</i> , 2020; Ozili, 2018, Gabor and Brooks, 2017	Literature Review Experiment Survey Discussion

**Source:** Authors work based on Literature Survey

Even with these contributions, a noticeable void persists in the form of a comprehensive investigation that rigorously scrutinizes the corpus of literature relevant to the influence exerted by Fintech in propelling the agenda of Financial Inclusion. The present article undertakes the endeavor of addressing this scholarly gap by addressing the following research questions:

*RQ1. What is the current state of research in Fintech and Financial Inclusion?*

*RQ2. Which are the most impactful journals, authors, and countries in Fintech and Financial Inclusion?*

*RQ3. What are the themes that affect the intellectual structure in the field of Fintech and Financial Inclusion?*

*RQ4. To contribute to advancing Fintech research and uncovering new findings by identifying current gaps and potential research topics that need to be addressed.*

Section 1 of the article dealt with contextualization, gaps in literature, and framing of research questions. Section 2 dealt with the sources of data and methodology used. Section 3 presented the results generated with the bibliometric analysis. Section 4 charted the Research gaps and future scope of study.

## METHOD

The objective of this study is to undertake a detailed review of the scholarly research about the domain of Fintech and Financial Inclusion. The review was done by applying bibliometric analysis, utilizing the Scopus and Web of Science (WoS) database. The analytical exploration encompassed scrutiny of 2537 (Scopus) and 1823 (WoS) publications with the software Biblioshiny through R studio extracted from WOS and Scopus databases from 1980 to 2023. The requisite dataset was acquired from the Web of Science and Scopus databases. The process encompassed the utilization of bibliometric software tools, specifically Biblioshiny, for both qualitative and quantitative descriptive analysis and network extraction. This tool enabled various file export alternatives such as BibTeX, CSV, Plain Text, and RIS formats, accessible via the Web of Science and Scopus platforms.

Moreover, it is noteworthy that Web of Science and Scopus represent the most expansive abstract and citation databases spanning disciplines, including science, technology, health, social sciences, and arts and humanities. Encompassing a vast range of peer reviewed publications, including contributions from publishers like Elsevier, Emerald, Informs, and Taylor and Francis, the combined repository amounts to around 20,000 publications. In the specific context of the present study, Scopus facilitated the extraction of roughly 2,000 documents based on the defined query. In contrast, Web of Science (WoS) yielded approximately 500 documents in one go. The extracted data was formatted into BibTeX and subsequently subjected to a consolidation process via an R Studio script, eliminating 69 duplicate documents. This resultant integrated dataset was then employed for comprehensive analysis through the combined utilization of Biblioshiny (Aria and Cuccurullo, 2017). The ultimate phase of the research encompasses articulating findings through thorough description and interpretation.

### Research Protocol

In order to carry out the bibliometric analysis, the primary collection of the Web of Science (WoS) database was consulted, and the following search equation was used: Topic: ("Fintech\* OR FinTech\* OR Digital Finance\*") AND ("Financial Inclusion\*"). The asterisk (\*) was selected to encompass any cluster

of characters relevant to financial inclusion and Fintech. The asterisk encompasses all synonymous terms within the title, abstract, and keywords. The search was further refined for Article or Review document types and restricted to English. The time frame was from 1980 to 2023. The indices used were SCI-EXPANDED, SSCI, and A&HCI. A bibliometric analysis is done on the merged file (3099 records).

The acronym "PRISMA" stands for "Preferred Reporting Items for Systematic Reviews and Meta-Analyses," as exemplified within the network depicted (figure 1). This framework aids us in establishing the parameters that confine the articles under consideration, enumerates the inclusive screening factors, and elucidates the methodology employed for identifying pertinent research materials. The evaluation of documents for their inclusion in the research is conducted at the final phase of the process. The Scopus and Web of Sciences' databases identified 4360 research papers adhering to specific criteria such as year of publication, publication stage, document type, keywords, topic area, and language. These initially identified records have undergone a refinement process employing the defining characteristics.

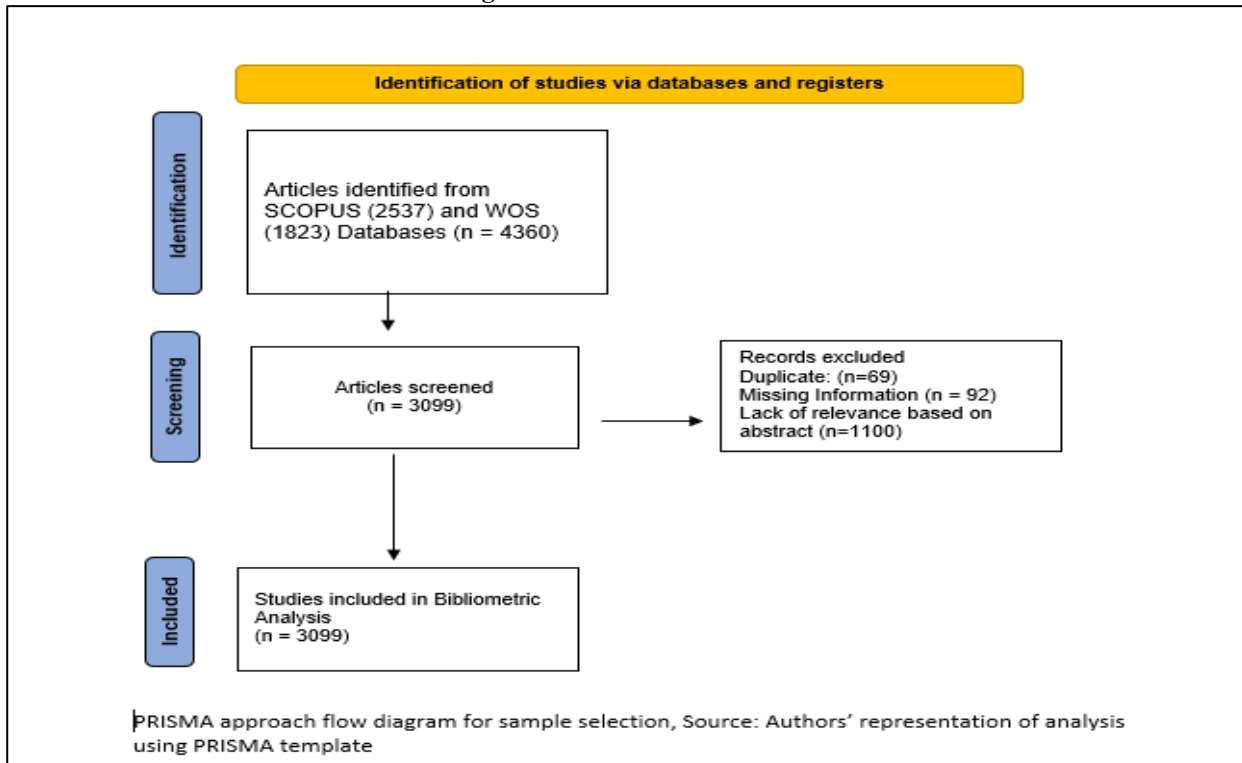
## Discussion

### *Bibliometric Overview*

In this study, 3099 documents were included and analyzed using Biblioshiny software. Though the data was retrieved from 1980 to 2023, significant work started only after 2010. Table 2 summarizes the bibliometric overview of the analysis.

The provided dataset spans 1980 to 2023 and draws from 1058 distinct sources. Comprising a compilation of 3099 documents, it exhibits an annual growth rate of 16.15 percent. On average, each document within the dataset receives 12.23 citations. Furthermore, the dataset encompasses 2648 unique "Keywords Plus" identifiers and 6027 author-provided keywords. Five thousand eight hundred thirty-nine authors have contributed to the dataset, with an average of 2.69 co-authors per document. Notably, approximately 24.69 percent of co-authorships within the dataset are established internationally. Despite having a growth rate of 16 percent, the topic attracts much attention when it comes to policymaking and draws many authors to this research area.

**Figure 1: PRISMA Flow Chart**



Source: Authors' Compilation

**Table 2: Bibliometric Overview**

INFORMATION ABOUT DATA	
Timespan	1980:2023
Sources	1058
Documents	3099
Annual Growth Rate (percent)	16.15 percent
Average citations per doc	12.23
Keywords Plus (ID)	2648
Author's Keywords (DE)	6027
Authors	5839
Co-Authors per Doc	2.69
International co-authorships percent	24.69

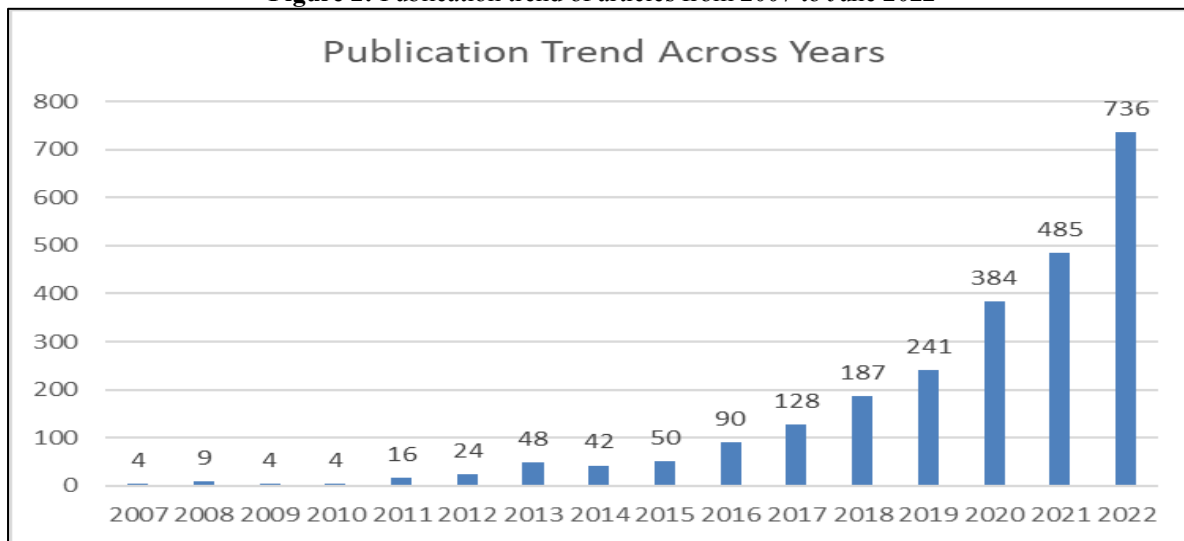
Source: Authors' Contribution

**Descriptive Analysis**

The current state of research to answer RQ1 shows a healthy trend for publication activity, quantified by the number of papers published by a chosen entity (such as journals, institutions, or countries) within a defined timeframe. The publication trend in the case of Fintech and Financial Inclusion is observed to increase over a period, especially from 2013 onwards, and is sustained till 2022 (refer to figure 2). The debate about the 17

sustainable development goals brings forth the target of financial inclusion in at least 8 of them, which helped the topic to gain momentum across the world and, therefore, is significant to explore further. Furthermore, as illustrated in Figure 2, there is a discernible upward trajectory in fintech research about financial inclusion, with the number of publications escalating from 485 in 2021 to 736 in 2022, indicating a substantial growth rate of 51 percent.

**Figure 2:** Publication trend of articles from 2007 to June 2022

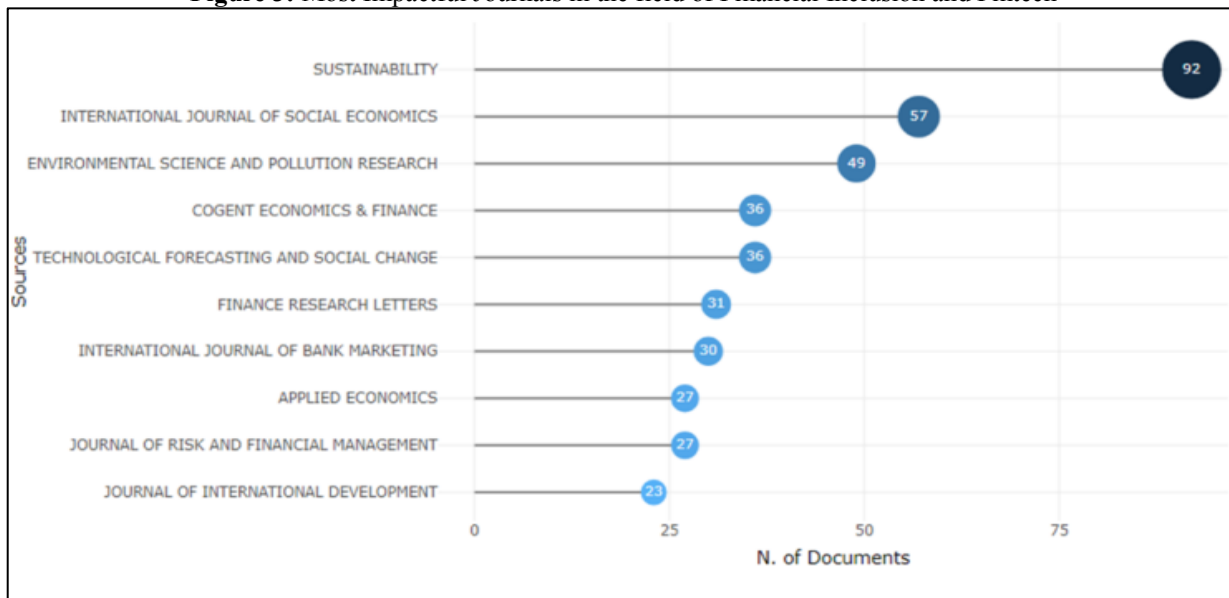


Source Authors' Calculation and Representation

To answer RQ2, the study analyzed 3,099 papers, all published in reputable journals. Sustainability stands out with the highest number of publications, at 92, followed

closely by the International Journal of Social Economics, with 57 publications (refer Figure 3).

**Figure 3:** Most Impactful Journals in the field of Financial Inclusion and Fintech



Source: Own elaboration based on the Scopus and WoS Database

Notably, these influential journals have recognized the importance of financial inclusion through Fintech interventions. One striking finding is the concentration of research papers on these topics within just a few journals. Two journals account for a substantial 149 papers within

the specified timeframe. This phenomenon may be linked to the increasing emphasis on diversity and inclusion in the sustainable development goals of various countries. It underscores the ongoing process of

maturation and consolidation in research related to these crucial themes. Based on our dataset, 5839 authors, affiliated with 3000 different institutions spanning 107 nations, have contributed to the publication of papers concerning Financial Inclusion and Fintech. The leading contributors, including authors, institutions, and countries, are detailed in Tables 3 and 4 and Figures 4 and 5, categorized by their publication count. The foremost authors are presented based on citations in financial inclusion and Fintech. Ozili P (with 15 publications) with 458 citations leads the pack, followed by Allen F (with four publications) with 450 citations. Notably, some authors who have published in this field in the last five years have attained citations above 300 for their work, such as Ozili P, Chen Y, Taghizadeh-Hesary F, and Kou G, who started publishing in 2018 onwards only.

Out of these impactful authors, the title which was cited most as per the data analysis (refer to Table 3 and 4) is "Impact of Digital Finance on Financial Inclusion and Stability" by Ozili P. with a maximum of 341 citations and published by Borsa Istanbul Review followed by the

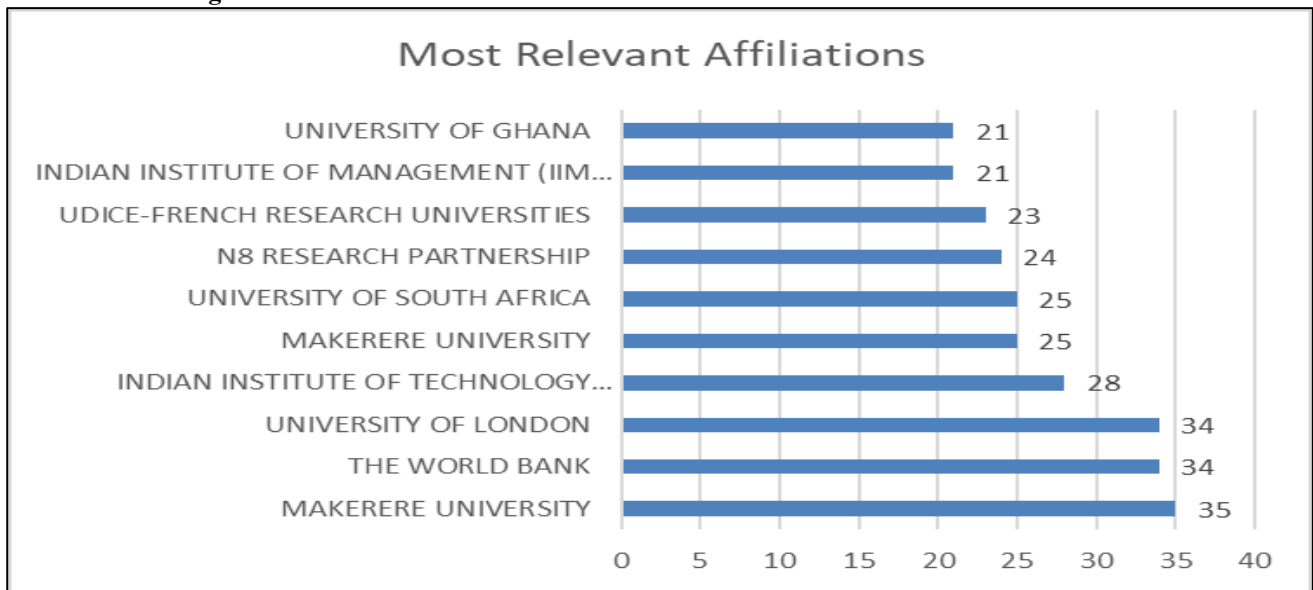
author Koomson with his work titled "Financial Inclusion and Energy Poverty Empirical Evidence from Ghana" with 121 citations. The unaddressed issues about financial inclusion and Fintech or Digital Finance were raised in these papers. The impact on the lives of people who access financial services or bank branch financial services is being measured, and how that affects the lives of people in certain countries (Koomson & Danquah, 2021). In "Impact of Digital Finance on Financial Inclusion and Stability" by Ozili P., the study examines digital finance's influence on financial inclusion and stability. The research provides insights into the transformative effects of digital financial services on expanding access to financial resources while also considering their implications for overall financial system stability (Ozili, 2018). Financial Inclusion and Energy Poverty: Empirical Evidence from Ghana" presents empirical findings on the relationship between financial inclusion and energy poverty in Ghana. The study explores how access to financial services can impact energy poverty levels, shedding light on the interconnectedness of financial inclusion and improved access to energy resources in the Ghanaian context.

**Table 3:** Most Impactful Authors in the field of Financial Inclusion and Fintech

Authors	Number of Publications	Total Citation	H_index	PY_Start
OZILI P	15	458	5	2018
ALLEN F	4	450	4	2014
DEMIRGUC-KUNT A	5	445	4	2013
SARMA M	3	418	3	2011
BLUMENSTOCK J	3	407	3	2015
CHEN Y	12	400	6	2019
HASSAN M	12	397	6	2018
PERIA M	3	379	3	2014
TAGHIZADEH-HESARY F	6	375	5	2019
WEILL L	6	369	4	2015
WANG X	12	365	8	2017
WANG Y	20	346	9	2018
KOOMSON I	14	343	8	2020
PAIS J	1	333	1	2011
ZHANG H	22	329	5	2020
KOU G	2	313	2	2021
CADAMURO G	1	311	1	2015
ON R	1	311	1	2015
AU Y	1	304	1	2008
KAUFFMAN R	1	304	1	2008

**Source:** Authors Elaboration on Scopus and WoS Database

**Figure 4:** Most Relevant affiliations in the field of Financial Inclusion and Fintech



Source: Own elaboration based on the Scopus and WoS Database

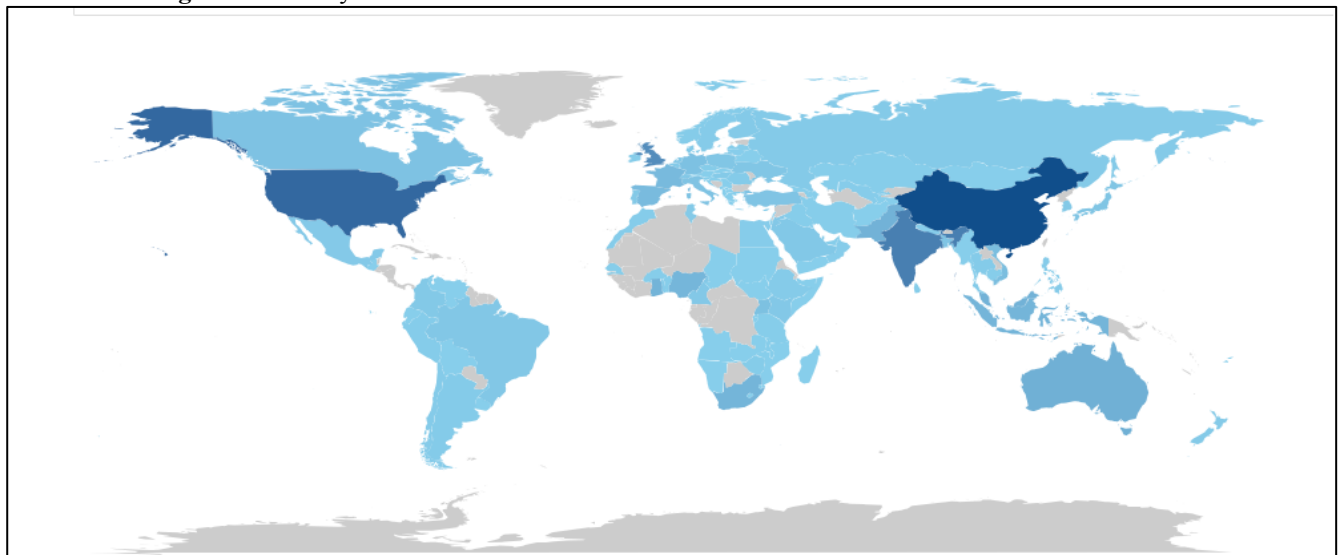
**Table 4:** Most Impactful Authors-Titles-Journals based on Total Citation

Author	Year	Title	Journal Name	Total Citation
OZILI P	2018	Impact of Digital Finance on Financial Inclusion and Stability	Borsa Istanbul Review	341
KOOMSON I	2021	Financial Inclusion and Energy Poverty Empirical Evidence from Ghana	Energy Economics	121
KOOMSON I	2020	Effect of Financial Inclusion on Poverty and Vulnerability to Poverty Evidence Using a Multidimensional Measure of Financial Inclusion	Social Indicators Research	108
WANG Y	2022	Financial Inclusion and the Environmental Deterioration in Eurozone the Moderating Role of Innovation Activity	Technology in Society	96
Bongomin, G.,	2018	Mobile Money and Financial Inclusion in Subsaharan Africa the Moderating Role of Social Networks	Journal of African Business	92
GHOSH S	2017	What Constrains Financial Inclusion for Women Evidence from Indian Micro Data	World Development	91
WANG Y	2021	Can Fintech Improve the Efficiency of Commercial Banks an Analysis Based on Big Data	Research in International Business and Finance	87
OZILI P	2021	Financial Inclusion Research around the World: A Review	Forum for Social Economics	78
WANG Y	2018	Developing Entrepreneurship in Africa Investigating Critical Resource Challenges	Journal of Small Business And Enterprise Development	55
GHOSH S	2016	Does Mobile Telephony Spur Growth Evidence From Indian States	Telecommunications Policy	42
ASONGU S	2020	How Enhancing Gender Inclusion Affects Inequality Thresholds of Complementary Policies for Sustainable Development	Sustainable Development	39
ZHANG Y	2020	Financial Inclusion and Urbanrural Income Inequality Longrun and Shortrun Relationships	Emerging Markets Finance and Trade	38

ASONGU S	2020	Inequality and Gender Inclusion Minimum ICT Policy Thresholds for Promoting Female Employment in Sub-Saharan Africa	Telecommunications Policy	37
ZHANG Y	2020	Digital Financial Inclusion and Sustainable Growth of Small and Micro Enterprises Evidence Based on Chinas New Third Board Market Listed Companies	Sustainability	36
WANG Y	2022	Financial Inclusion and Green Economic Efficiency Evidence from China	Journal of Environmental Planning and Management	36
ASONGU S	2020	Understanding the Greater Diffusion of Mobile Money Innovations in Africa	Telecommunications Policy	30
KOOMSON I	2020	Intensifying Financial Inclusion through the Provision of Financial Literacy Training: A Gendered Perspective	Applied Economics	30
ZHANG Y	2022	Financial Inclusion and its Influence on Economic Environmental Performance Demand and Supply Perspectives	Environmental Science and Pollution Research	29

**Source:** Authors Elaboration on Scopus and WoS Data

**Figure 5:** Country’s research contribution in the field of Financial Inclusion and Fintech



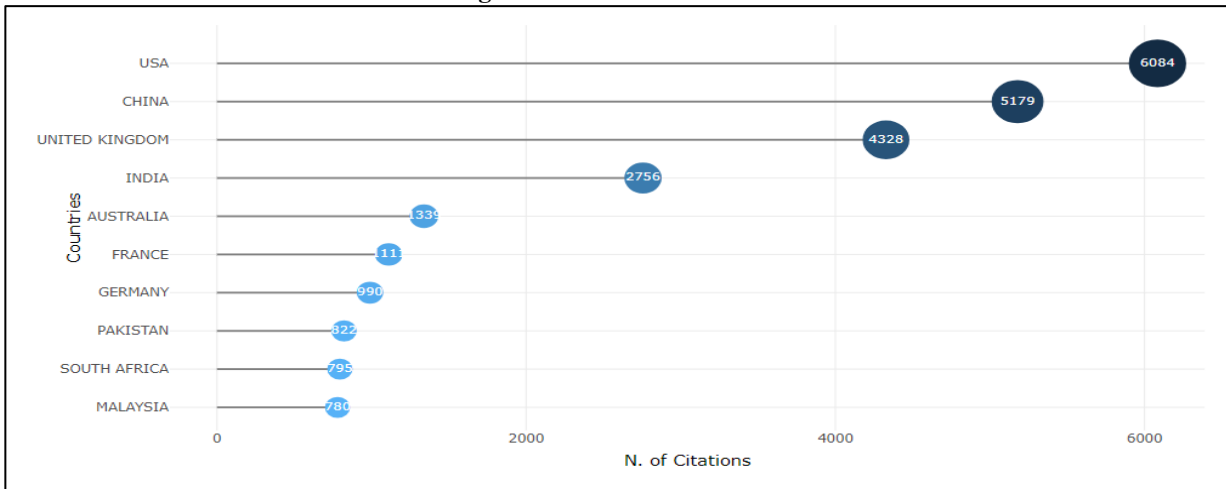
*Geographical distribution of publication trend across countries. Darkest blue colour = Highest number of publications, Brightest blue colour = Lowest number of publications.*

**Source:** Authors’ representation of analysis using Biblioshiny package from R studio

Makerere University is the most prominent affiliation, bringing out research in Fintech and Financial Inclusion (refer to Figure 4). The country collaboration network (refer to Figures 5 & 6) presents information on the frequency of collaborations between various countries. Notable collaborations include a substantial number of collaborations between China and Pakistan (54

collaborations), China and the USA (34 collaborations), and China and the United Kingdom (28 collaborations). Additionally, there are noteworthy collaborations between the USA and India (21 collaborations) and Malaysia and Pakistan (19 collaborations). These frequencies highlight the significant international collaboration and partnerships among these countries in Financial Inclusion and Fintech.

**Figure 6: Most cited countries**



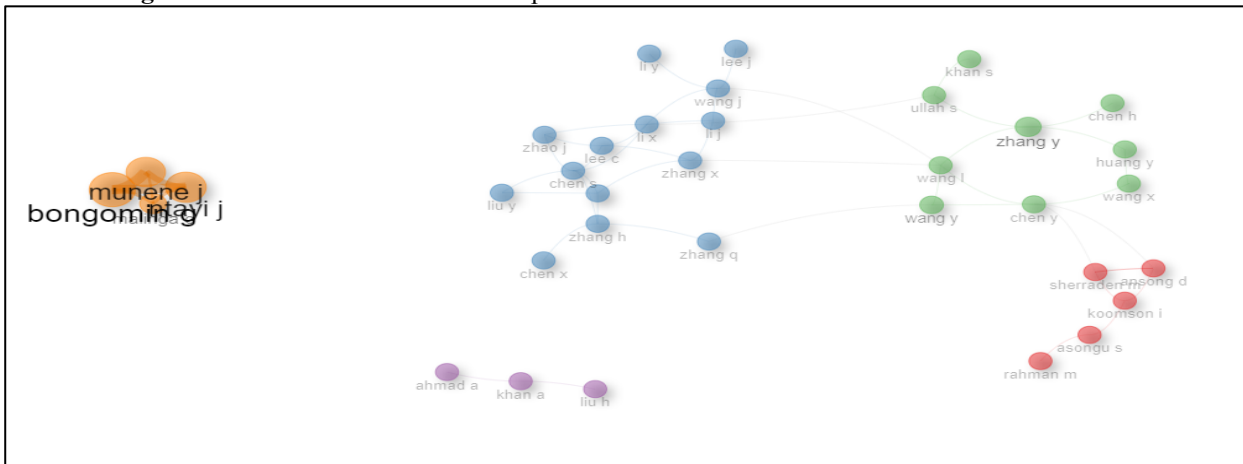
**Source:** Own elaboration based on the Scopus and WoS Database

To answer RQ3, the intellectual structure, represented by a thematic map, keyword co-occurrence network, and trending topics, is drawn. The collaboration network (figure 7) provides information on various nodes, their respective clusters, betweenness centrality, closeness centrality, and PageRank scores.

It reveals the structural characteristics of a network where nodes represent individuals or entities, and their connections signify collaborations. Key observations

include the presence of multiple clusters (1 to 5) with varying centrality metrics, highlighting the importance of specific nodes (e.g., Wang l in Cluster 3 and Khan a in Cluster 4) in facilitating collaborations within their respective clusters. In contrast, some nodes have minimal or no connections, indicating their isolated positions in the network (e.g., Rahman m, Liu y, and Chen x).

**Figure 7: Collaboration Network of top Authors in the field of Financial Inclusion and Fintech**



**Source:** Collaboration Network (authors) created by Biblioshiny

The thematic map (refer to Figure 8) provides information on the occurrences, words, cluster assignments, cluster labels, betweenness centrality, closeness centrality, and PageRank centrality for different themes or clusters within a dataset.

Cluster 1—**Adoption**: This cluster centers around topics related to adopting technologies or practices. Noteworthy terms include "adoption," "information technology," and "acceptance." A moderate score suggests a decent level of interconnectedness within the cluster.

Cluster 2—**Finance** revolves around financial topics such as "finance," "fintech," and "financial services." Its slightly higher PageRank centrality indicates a relatively greater importance within the broader network compared to cluster 1.

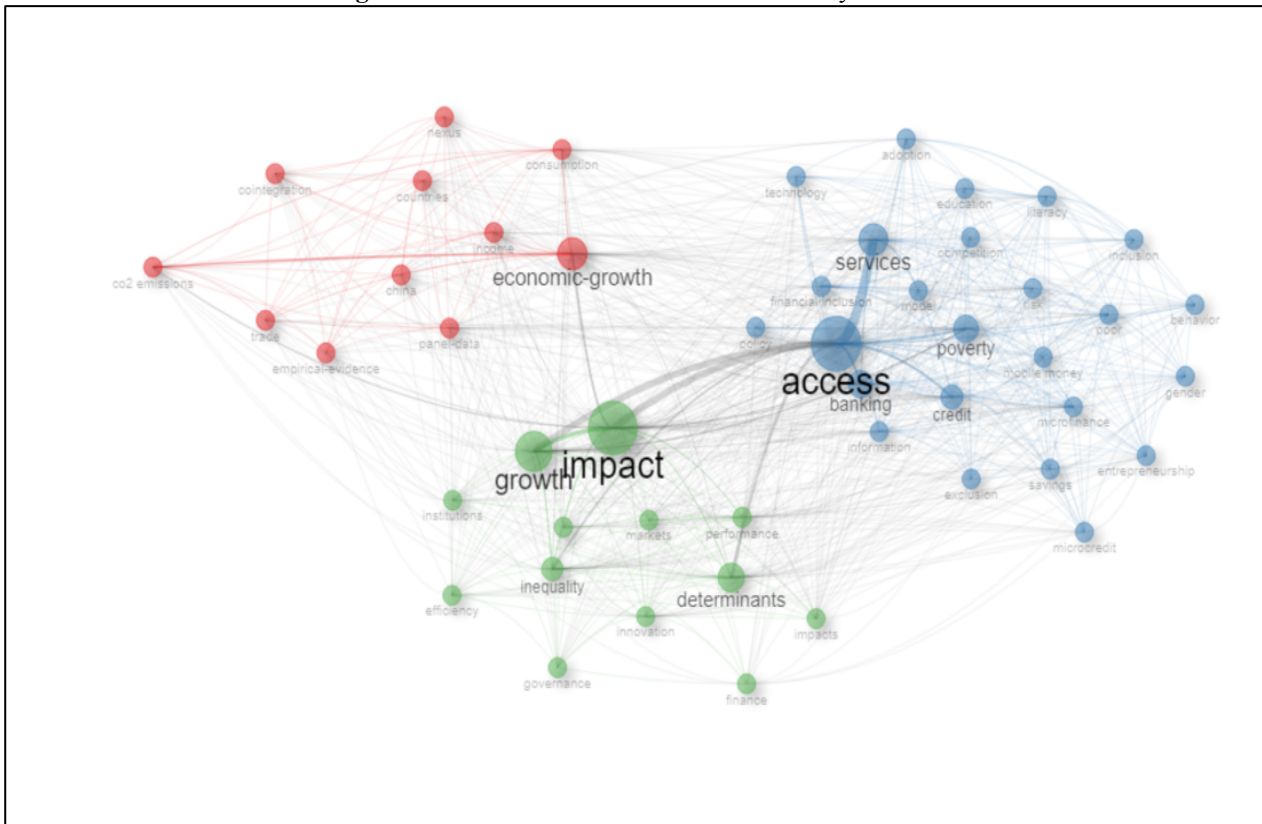
Cluster 3 - **Access**: Encompassing diverse topics related to access, including "impact," "growth," "services," and "poverty," Cluster 3 stands out with high betweenness, closeness, and PageRank centrality, indicating its significant influence within the dataset.

Cluster 4—**Economic Growth**: This cluster focuses on themes related to terms like "economic growth," "consumption," and "panel data." Cluster 4 exhibits moderate betweenness and closeness centrality, with lower PageRank centrality than other clusters.

**Figure 8:** Thematic Map for Financial Inclusion and Fintech



Source: Biblioshiny Output

**Figure 9: Co-occurrence Network Author's Keywords**

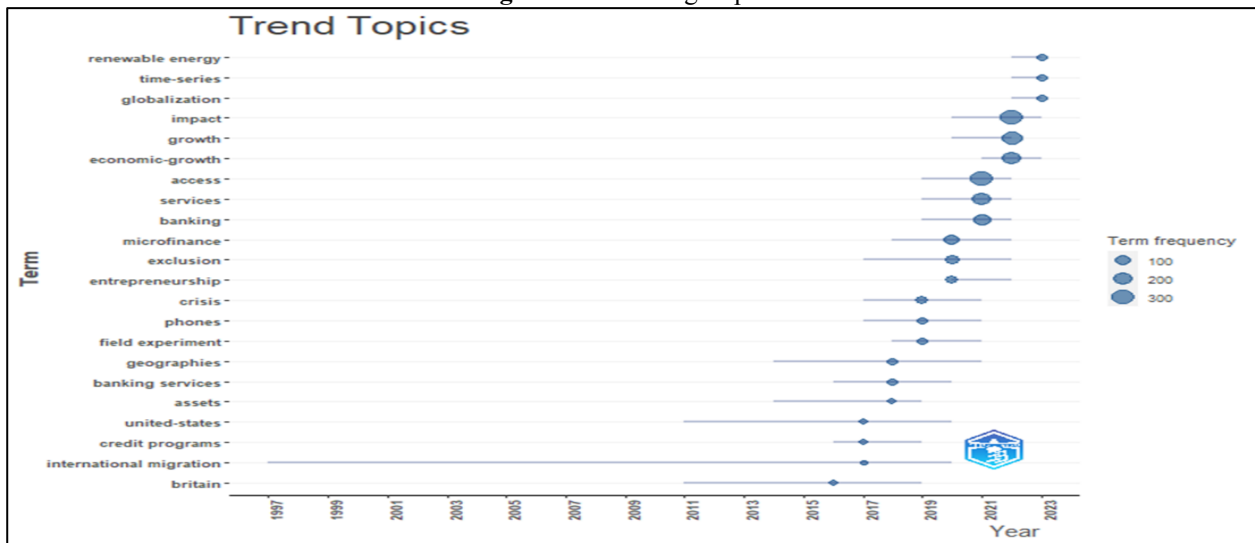
Source: Biblioshiny Output

We employed a keyword co-occurrence analysis to explore the prevailing themes within the Fintech and financial inclusion. Our focus in this analysis was solely on the author's keywords, as these keywords adequately encapsulate the essence of an article, as Christofi et al. (2021) suggested. Consequently, in our case, keyword co-occurrence is evident when two authors' keywords appear together in an article, signifying an inherent relationship between the corresponding concepts. The network of top keywords is depicted in Fig. 9, where the node's size reflects the prevalence of specific keywords in the literature. A threshold of at least three occurrences was applied. Notably, in Fig. 9, "access" to financial services emerges as the most prominent node, underscoring its relative significance within the discussed topic, followed by economic growth and impact.

The trending topic (refer to Figure 10) reveals the evolution of various subjects over time, reflecting shifts

in research focus and interests. "Banking Services" garnered steady attention from 2016 to 2020, highlighting its enduring importance. "Access" emerged as a significant topic in 2019, maintaining its relevance through 2021 and 2022, underscoring its sustained significance. "Microfinance" experienced a substantial rise in mentions, peaking in 2018 and remaining a prominent subject through 2020 and 2022. "Exclusion" gained attention from 2017 to 2020, suggesting ongoing concern. "Entrepreneurship" became a trending topic in 2020 and continued to be relevant through 2022. "Impact" started gaining traction in 2020 and maintained prominence through 2022 and 2023. "Economic Growth" emerged as a trending topic from 2021 onwards, and "Renewable Energy" and "Globalization" became significant subjects in 2022, with expectations of continued relevance in 2023. These trends offer insights into the changing landscape of research interests and priorities.

**Figure 10: Trending Topics**



**Source:** Biblioshiny Output

**Avenues for future research**

The bibliometric analysis reveals a noteworthy evolution in the focus of research on Fintech driving financial inclusion, shifting over time towards increased attention on access and adoption of technology-driven financial services to answer RQ4. Ben Khelifa *et al* (2022) focused on constructing a multidimensional financial inclusion index using principal component analysis and highlighted the importance of digital financial inclusion. Tinta *et al* (2022) examined factors influencing financial inclusion in Africa, emphasizing the need to improve the banking sector and to reduce gender gaps. Gershenson *et al* (2021) analyzed financial inclusion trends in Latin America, highlighting the role of Fintech in improving financial inclusion. Ali and Ghildiyal (2023) explored the determinants of digital financial inclusion in India, stressing the importance of socio-economic factors and banking behavior. Aziz and Naima (2021) discussed the challenges of digital financial inclusion in Bangladesh, suggesting further research on its impact during economic crises. Gallego-Losada *et al* (2023) used bibliometric analysis to reveal the growing academic interest in digital financial inclusion. These studies collectively contribute valuable insights into the complex landscape of financial inclusion and the evolving role of digital finance in different regions. Within the field of Fintech and financial inclusion, our findings suggest that financial inclusion forms four distinct clusters with progressively narrower themes: Cluster 1 delves into the adoption of technology to get financial services, Cluster

2 explores finance in various forms available to the target population, and Cluster 3 and 4 focuses on access and its impact on the economic growth of the target population.

The systematic literature review and bibliometric analysis within financial technology (Fintech) and digital financial inclusion employ diverse constructs and variables, reflecting the multidimensional nature of this research domain. These variables span various factors, including economic indicators such as income per capita and income inequality (Demir *et al.*, 2022), educational factors, characteristics of the financial sector, and the cost of financial services (Wang *et al.*, 2022; Garg *et al.*, 2023). Furthermore, critical dimensions encompass the availability and accessibility of financial services, along with internet and cellular network coverage (Gershenson *et al.*, 2021; Shen *et al.*, 2021; Gallego-Losada *et al.*, 2023; Al-Smadi, 2023; Aziz and Naima, 2021). Legal frameworks, regulatory environments, and the trade-offs between financial inclusion and profitability are also prominently featured (Al-Smadi, 2023; Gershenson *et al.*, 2021; Gallego-Losada *et al.*, 2023; Wang *et al.*, 2022; Ozili, 2018). This study helps to scrutinize formal account ownership, savings, and borrowing, particularly in the context of government-to-person (G2P) and business-to-person (B2P) electronic transfers (Niankara and Islam, 2023). Variables related to infrastructure access, including bank and digital infrastructure, are considered in specific investigations (Arner *et al.*, 2020; Khera *et al.*, 2021). Behavioral

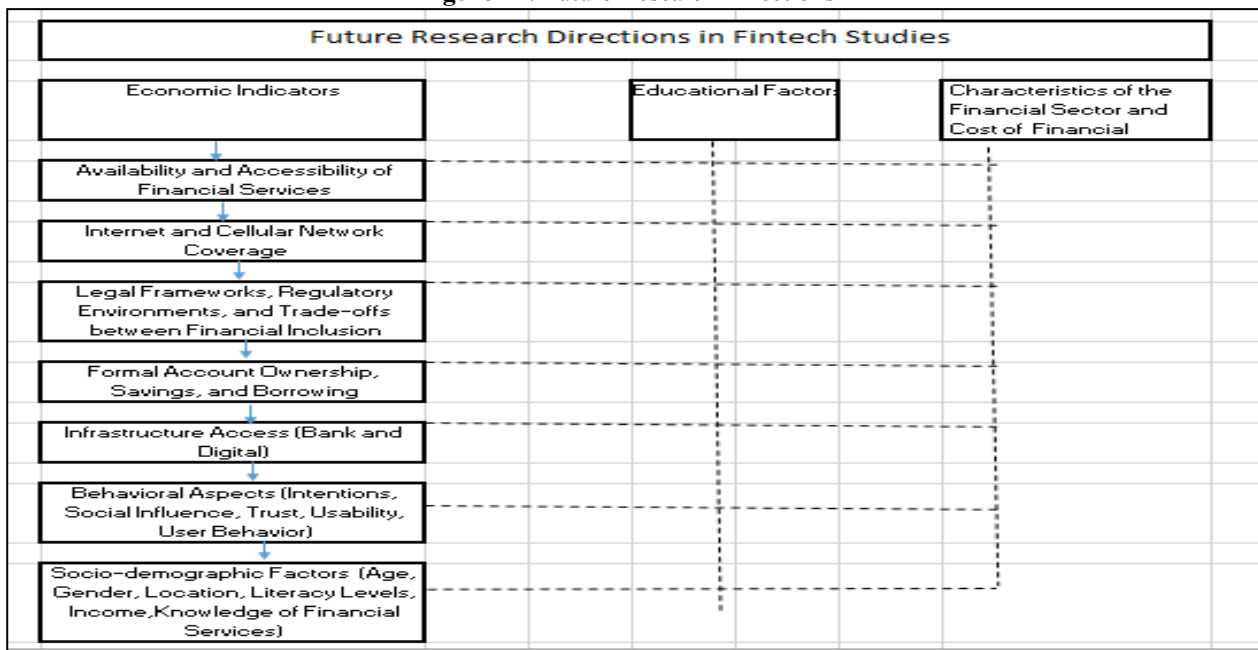
aspects, such as intentions, social influence, trust, usability, and user behavior in Fintech for financial inclusion, hold centrality in several examinations (Asif *et al.*, 2023) (Senyo and Osabutey, 2020). Additionally, socio-demographic factors, including age, gender, location, literacy levels, income, and knowledge of financial services, are encompassed in the research (Lagna and Ravishankar, 2022; Mhlanga, 2020; Hasan *et al.*, 2022; Gabor and Brooks, 2017; Okello *et al.*, 2018; Biekpe *et al.*, 2020; Ali and Ghildiyal, 2023).

Secondly, following a rigorous systematic literature review grounded in bibliometric analysis and structured content analysis, our study identifies Fintech as a rapidly emerging theme within financial inclusion. This effort results in an integrated framework (see Figure 11) that

comprehensively maps the determinants of financial inclusion along with its moderators. This framework not only aids in identifying unexplored topics for future research but also provides managers and policymakers with insights into the factors that can influence financial inclusion with fintech interventions.

Lastly, our approach incorporates a structural literature review coupled with bibliometric analysis, enhancing the transparency and replicability of our analysis and aligning with recommendations for improved research practices. This comprehensive array of variables identified with the systematic literature review in this study enables researchers to thoroughly explore the intricate dynamics of fintech adoption and its impact on financial inclusion across diverse contexts and dimensions.

**Figure 11: Future Research Directions**



**Source:** Authors' Compilation

The results of our study indicate a need for future research in financial inclusion to concentrate on consolidating variables of interest affecting adoption and access to Fintech-based financial services. This recommendation stems from the heightened academic interest in this area over the past decade.

In order to delineate potential directions for research, we put forth in Table 5 emerging research frontiers and highlight potential research questions Lages *et al* (2023).

**Table 5:** Emerging Research Frontiers and Potential Research Questions

Further Research Frontiers	Potential Research Questions
Exploring Microfinance in the Fintech Era	How are fintech innovations shaping the operations and impact of microfinance institutions, and what are the critical dynamics at the intersection of microfinance and Fintech?
Gender and Financial Inclusion through FinTech	What is the role of fintech solutions in addressing gender gaps in financial access and services, and how can these innovations promote financial inclusion with a focus on gender dynamics?
Rural Financial Inclusion and Fintech	What are the unique challenges and opportunities associated with fintech adoption in rural settings, and how can Fintech be leveraged to bridge financial inclusion gaps in rural areas?
Regulatory Frameworks for Fintech and Financial Inclusion	How effective are regulatory frameworks in promoting financial inclusion through Fintech, and what are the impacts of different regulatory approaches on fostering inclusive financial ecosystems?
Financial Literacy and Fintech Adoption	What role does financial literacy play in adopting Fintech, and how can fintech tools be designed to enhance financial literacy, thereby contributing to greater financial inclusion?
Cybersecurity and Trust in Fintech for Financial Inclusion	What are the best practices and strategies to ensure cybersecurity and build trust in fintech platforms, especially in the context of financial inclusion, and how can these aspects be strengthened for secure fintech adoption?
Fintech for Sustainable Financial Inclusion	How can Fintech contribute to achieving Sustainable Development Goals (SDGs) related to financial inclusion, poverty reduction, and economic growth, and what are the potential sustainable dimensions of financial inclusion through Fintech?

**Source:** Author’s Compilation

These research questions aim to explore diverse aspects of the evolving relationship between Fintech and financial inclusion, addressing specific areas such as microfinance, gender dynamics, rural inclusion, regulatory effectiveness, financial literacy, cybersecurity, and Sustainability.

Exploring the historical developments and trends in Fintech's influence on financial inclusion offers valuable insights into its evolution. Additionally, delving into the intersection of microfinance and Fintech presents a promising avenue for further investigation. Despite the prominence of microfinance and Fintech, a research gap exists in understanding how fintech innovations shape microfinance institutions and operations. Another emerging area is the gender dimension of financial inclusion through Fintech, which has the potential to bridge gender gaps in financial access and services. Similarly, while there is existing research on urban financial inclusion through Fintech, studies focused on rural areas still need to be more robust. Investigating fintech adoption's unique challenges and opportunities in rural settings becomes an essential research direction. Examining regulatory frameworks in the rapidly

changing fintech landscape is critical for promoting financial inclusion. Assessing the effectiveness of regulatory approaches and their impacts can inform policymakers. Financial literacy's role in fintech adoption and its impact on financial inclusion warrant further exploration, offering insights into enhancing financial literacy through fintech tools. Addressing cybersecurity and trust in fintech platforms, especially in the context of financial inclusion, is essential, calling for research on best practices and strategies for secure fintech adoption. Lastly, an emerging and critical research area is exploring how Fintech can contribute to achieving Sustainable Development Goals related to financial inclusion, poverty reduction, and economic growth. While the study acknowledges a significant limitation in finding substantial work on the sustainability dimension of financial inclusion through Fintech, it highlights these gaps for future investigation. Researchers and policymakers are encouraged to consider these gaps when shaping research agendas and policy initiatives to foster inclusive and sustainable financial ecosystems.

## CONCLUSION

This article provides enhanced clarity on Fintech and Financial Inclusion dynamics. The bibliometric analysis between 1980 and 2023 illuminated the evolution of research about the financial inclusion and impact of Fintech or digital finance. Examining the number of published articles over time, along with the performance of authors, institutions, journals, and countries, uncovered the notable engagement of researchers in the United States, the United Kingdom, Pakistan, and China. Co-citation networks revealed the structural organization of this field, with Sustainability emerging as a pivotal publication. The review identified vital theoretical contributions, emphasizing the Adoption and Access to Financial Services as a focal topic that should replace overlapping concepts. Four focus clusters were delineated: Adoption, Finance, Economic Growth, and Access. Despite growing interest, research avenues need further development to elucidate the processes, moderators, and impediments for driving financial inclusion through Fintech. The limitation of the study is that it employed a title-based search, potentially missing relevant articles due to the inherent challenge of capturing an article's scope with a limited keyword search while exploring the database.

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