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Mapping the Landscape: A Bibliometric Examination of Recent Advances in Financial Inclusion

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ABSTRACT

There has been a significant increase in research on financial inclusion worldwide, driven by its potential to alleviate poverty, foster economic development, and enhance social equity. To delve deeper into this area, this bibliometric study offers a detailed analysis of the research landscape in financial inclusion from 2015 to 2024, using advanced bibliometric tools like Biblioshiny and VOS viewer. The dataset comprises 1,503 articles from 488 sources, demonstrating a robust annual growth rate of 25.91% in scholarly output. Key findings include identifying prolific authors and influential institutions, such as Asongu SA and the World Bank, and mapping collaborative networks among researchers globally. Thematic evolution reveals a shift from foundational topics like economic growth to emerging themes such as digital finance and sustainable development. This study provides essential insights for researchers and policymakers aiming to enhance financial access and equity worldwide.

1. INTRODUCTION

Financial inclusion (FI) refers to the ease of access to and availability of financial products and services for individuals and businesses, particularly those in underserved or marginalized communities, at affordable prices (Minz et al., 2024; Ong et al., 2023; Saha & Qin, 2023). Its goal is to ensure that people have the opportunity to utilize basic financial tools such as savings accounts, loans, insurance, and payment services for effective financial management, making investments, and safeguarding against risks (Ozili, 2021). The United Nations recognizes FI as a crucial driver for sustainable development, making it a significant priority on the global agenda (UNSGSA, 2022). It promotes socio economic benefits (Rastogi & E., 2018), reduce poverty (Koomson et al., 2020; Li, 2018), foster entrepreneurship (Ajide & Ojeyinka, 2022), improve economic development (Emara & El Said, 2021; Le et al., 2020), promote overall social inclusion (Ozili, 2020) and influence environmental performance (Chaudhry et al., 2022; Liu et al., 2022).

FI has significantly evolved, with notable advancements in research, policies, and practices. It has shifted from primarily serving wealthier individuals to focusing on the needs of the poor and marginalized. Although formal research specifically termed "financial inclusion" was limited before

1970, that era witnessed crucial foundational work in informal financial systems, cooperative banking, and the early development of economic theories related to financial accessibility (Ardener, 1964; Meyer, 1940; Seibel, 1967).

The 1970s marked a pivotal moment with Dr. Muhammad Yunus establishing the Grameen Bank in Bangladesh, providing small, unsecured loans to the impoverished, demonstrating the potential of microcredit to empower low-income individuals and stimulate economic development, and promoting the philosophy that credit is a human right (Yunus, 2004). This success spurred the global expansion of microfinance institutions (MFIs) during the 1980s and 1990s, earning recognition from international organizations like the World Bank (World Bank, 1989). Between 1970 and 2000, research in financial inclusion concentrated on areas such as the effectiveness of microfinance models like the Grameen Bank in alleviating poverty and fostering small-scale entrepreneurship (Khandker, 1996), the necessity for regulatory frameworks and policies to oversee microfinance (Gallardo, 2002) and technology's role, such as electronic banking and ATMs, in service delivery and access patterns (Leyshon & Pollard, 2000; Uchupalanan, 2000).

The 2000s ushered in a technological revolution with digital financial services, highlighted by M-Pesa in Kenya, which broadened access to financial services through mobile phones (Ngugi et al., 2010). During the 2010s, FI became part of the Millennium Development Goals and was later incorporated into the Sustainable Development Goals (SDGs), with specific emphasis on Goal 1: No Poverty and Goal 10: Reduced Inequality, highlighting its role in eradicating poverty and reducing economic disparities (UNESCO, 2017). From 2000 to 2019, research in FI focused on the rise of digital financial products and services, such as mobile banking, transformed access to financial services (Gomber et al., 2018), sustainability of microfinance and microcredit (Basto et al., 2020), financial literacy in gender inclusion (Hasanova, 2018; Potrich et al., 2018), blockchain and fintech (Gomber et al., 2018; Salampasis & Mention, 2018), and integration of financial services with social protection programs (Bhatia & Bhabha, 2017).

The 2020s further accelerated this trend, driven by the COVID-19 pandemic, which underscored the necessity for secure digital financial solutions and a focus on financial literacy and regulatory frameworks to ensure equitable access (Pazarbasioglu et al., 2020; Tay et al., 2022). Post-COVID-19, several research areas in FI have gained prominence as scholars and practitioners seek to address the evolving landscape. The key areas of focus include the resilience and adaptation of FI initiatives, digital financial services and fintech innovations, cybersecurity and fraud prevention, regulatory and policy frameworks and financial literacy education in response to the pandemic's challenges (Demirgüç-Kunt et al., 2022; Despotović et al., 2023; Ong et al., 2023).

Although prior research has addressed various facets of financial inclusion, there remains a necessity for a thorough bibliometric analysis that charts the development and patterns of research themes and methodologies across time. Therefore, this study aims to map recent advancements in financial inclusion research using a bibliometric approach. Through applying bibliometric tools and methodologies, this research examined a diverse array of scholarly publications to identify prominent research trends, influential authors, leading journals, and collaborative networks. The outcomes of this investigation will enhance understanding of the current landscape of financial inclusion research and pinpoint areas warranting further exploration, thereby supporting ongoing efforts to promote FI on a global scale.

2. METHODOLOGY

A bibliometric analysis, a quantitative method for examining academic literature through bibliographic data to describe, assess, and track published studies (Garfield et al., 1964; White and McCain, 1989), was employed to conduct a comprehensive review of scholarly research, aligning with the latest research trends. The methodological aim was to examine publications, citations and sources of information.

2.1 Data Sources

Bibliometric analysis heavily relies on robust data sources like Web of Science, Scopus, Dimensions.ai, PubMed, and Google Scholar to quantitatively analyze scholarly literature across various fields. These databases compile and index academic journals, conference papers, books, and other scholarly works. In this study, data were collected from Dimensions.ai to map recent advancements in the knowledge landscape of FI, as these databases have been previously utilized for bibliometric analysis across various disciplines (Banshal et al., 2022; Singh et al., 2024; Thelwall, 2018). The study focused on a 'topic' search approach, including titles and abstracts with specific search terms ("Financial Inclusion", "Financial Accessibility", "Banking Inclusion", "Digital Finance Inclusion", "Inclusive Finance", "Financial Services Access", "Access to Financial Services", "Financial Access", "Banking the Unbanked"). By July 15, 2024, 13, 245 relevant papers had been published.

Inclusion criteria were rigorously defined to select high-quality data, limiting searches to articles with specified terms in their title or abstract, resulting in 9,538 relevant documents. Only peer-reviewed journal articles published from 2015 to 2024 were included, focusing on open-access articles indexed in UGC Journal List Group-II, encompassing Scopus and Web of Science databases.

Exclusion criteria ensured homogeneity and data reliability by excluding articles published before 2000 or after June 30, 2024, non-English articles, and non-original research types like reviews, commentaries, editorials, and meta-analyses. This process aimed to streamline the dataset and focus on high-quality, relevant research aligned with the study's objectives. The details have been present in figure 1.

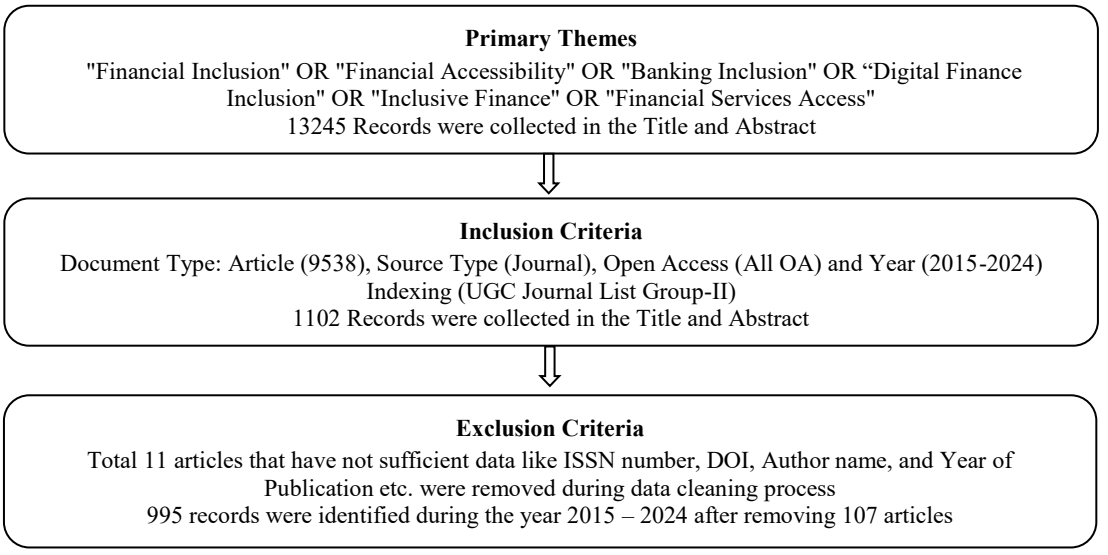

Figure 1: Diagrammatic flow chart

2.2 Data Analysis

The study utilizes Biblioshiny, an R-based bibliometric package, and a VOS viewer for analyzing and visualizing relationships among authors, journals, countries, keywords, and co-citations (Rodríguez-Soler et al., 2020). VOS viewer generates maps of co-authorship, bibliographic coupling, and co-citation based on bibliographic data.

3. RESULTS AND DISCUSSION

3.1 Analysis Using Biblioshiny

Utilizing Biblioshiny, this study navigates the complex landscape of FI research. Extracting and visualizing data reveals patterns and trends in academic literature. Table 1 presents the main information about the data. The dataset from Dimensions.ai includes 995 articles from 314 publications (2015-2024), showing a 26.64% annual growth rate in scholarly output. With an average document age of 2.56 years and 23.82 citations per document, the dataset highlights its significance. A total of 25,329 references were reviewed, providing a comprehensive literature scope.

Table 1
Main Information About Data

Description	Results
Timespan	2015:2024
Sources (Journals, Books, etc.)	314
Documents	995
Annual Growth Rate %	26.64
Document Average Age	2.56
Average citations per doc	23.82
References	25392

3.1.1 Annual Scientific Production

The quality of publications is a key indicator of scientific research trends. Figure 2 shows the annual research publications and average citations in financial inclusion from 2015 to 2024. It highlights the exponential progress in the numbers and their impact, revealing a substantial increase over time. Initially, publications were sporadic, with fewer than 50 articles published each year from 2015 to 2018. However, from 2019 onward, there was a steady upsurge in the number of publications, peaking at 263 articles in 2023. In 2024, there are already 134 articles, with more expected by year-end. This increase reflects growing academic interest.

Although the number of articles has increased, the average citations per article has declined in recent years, complicating the overall trend. The average citations per article varied, with higher impacts from 2015 to 2018. From 2019 to 2020, the Mean TC per Year remained relatively stable but started to decline sharply from 2021 onward. This suggests that while there is increasing scholarly attention to financial inclusion, the average impact of these publications, as measured by citations, has diminished in recent years.

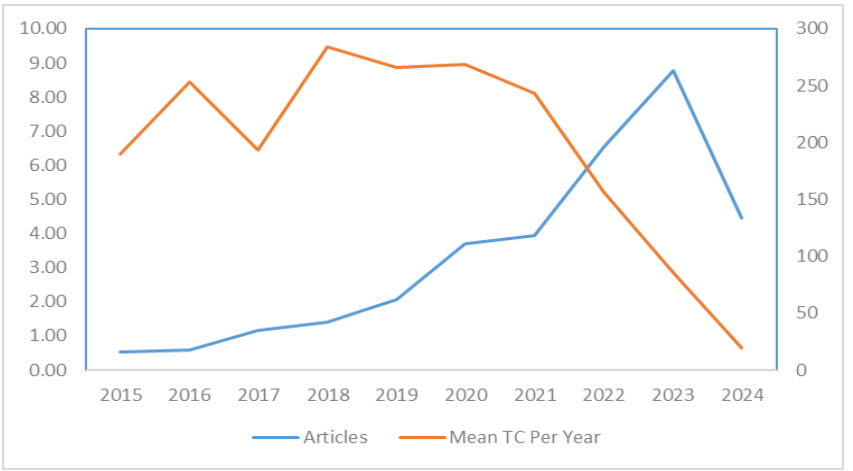

Figure 2: Annual scientific production

3.1.2 Most Influential Sources

This section summarizes the journals with the highest publication and citation counts. Figures 3 and 4 display the top ten journals based on the number of articles and global citations, respectively. Figure 5 depicts Bradford's Law, highlighting the research sources in FI.

3.1.2.1 Most Relevant Sources

Figure 3 identifies "Sustainability," with 116 articles, as the most prolific for publications in the field. Specialized journals such as "Cogent Economics & Finance" (46 articles), "PLOS One" (36 articles), "Heliyon" (30 articles) and "Borsa Istanbul Review" (23 articles). Other significant sources include "Cogent Business & Management", "Economic Research-Ekonomska Istraživanja," "Environmental Science and Pollution Research," "Economies" and "Journal of Open Innovation: Technology, Market and Complexity."

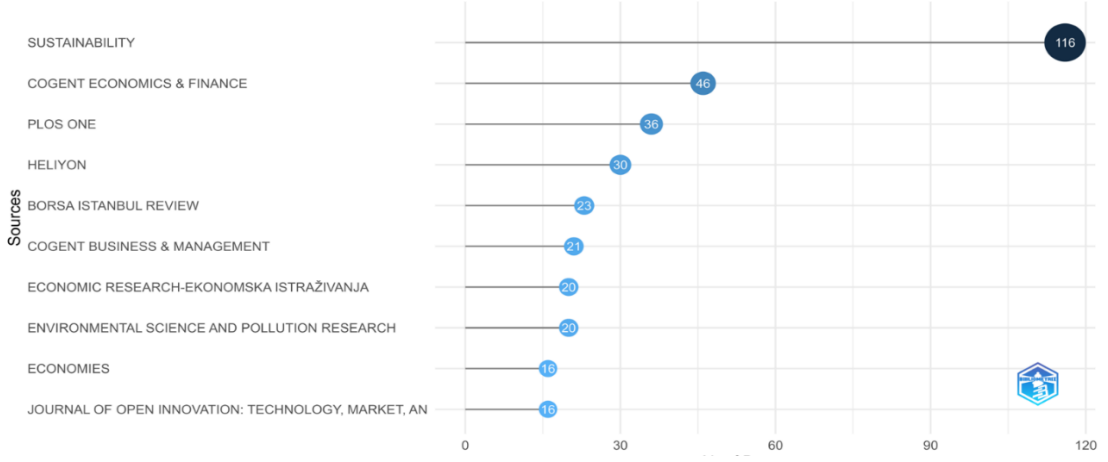

Figure 3: Most Relevant Sources

3.1.2.2 Most Frequently Locally Cited Sources

Figure 4 highlights the most frequently locally cited sources in FI research. "Sustainability" leads with 2,152 citations, underscoring its crucial role in development economics and its lasting scholarly impact. "Borsa Istanbul Review" follows with 1,606 citations, establishing it as a key journal in economic development. “Technological Forecasting and Social Change” have 820 citations. "European Journal of Finance" has 800 citations. "Review of Development Finance" and "Journal of Financial Intermediation" have 797 and 653 citations, respectively. Other notable locally cited sources include “Mental Science and Pollution Research”, “Cogent Economics & Finance”, “World Development”, and “Economic Modeling”. The significant citations of these journals underscore their crucial role in influencing economic research, policy debates, and decision-making processes.

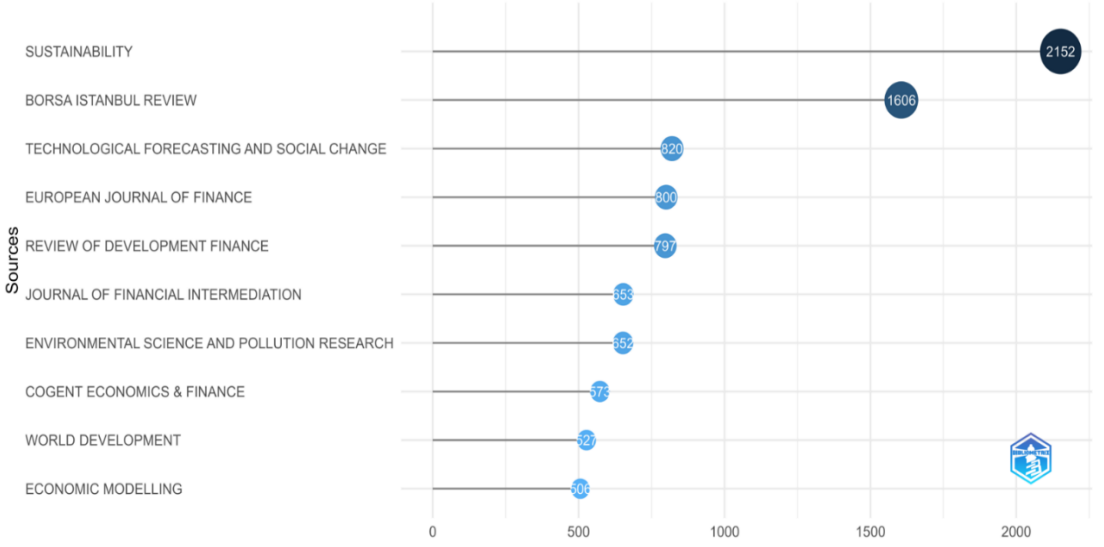

Figure 4: Most Frequently Locally Cited Sources

3.1.2.3 Sources Bradford’s Law

Figure 5 examines journal rankings following Bradford's Law, illustrating the distribution and concentration of research in economics and finance. According to Bradford's Law, journals are organized in descending order of article count on a topic, revealing core sources through zones that contain equal numbers of articles. Zone 1 journals dominate, showing their influential role. "Sustainability" leads with 116 articles, placing it in Zone 1 as a highly influential journal. The following are "Cogent Economics & Finance," "PLOS One," "Heliyon," "Borsa Istanbul Review," and "Cogent Business & Management," which are also in Zone 1 and provide key platforms for scholarly communication. Zone 2 includes journals like "Financial Innovation,” “International Journal of Financial Studies,” "International Journal of Financial Research," "International Journal of Economics and Financial Issues,” and "Applied Economics." These journals have lower frequencies but still significantly contribute to the literature. This analysis reveals the different levels of specialization and subject areas within the field. Journals in Zone 1 concentrate on niche topics, whereas those in Zone 2 address a broader range of subjects.

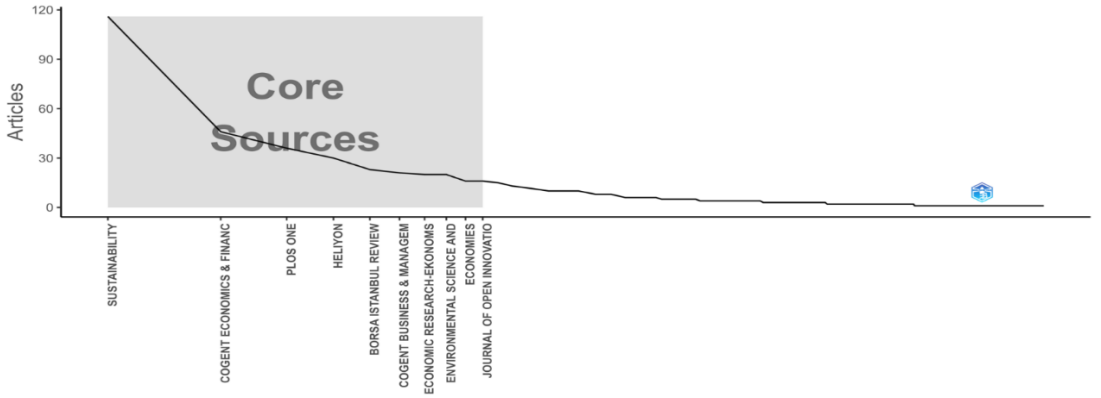

Figure 5: Sources Bradford's Law

3.1.3 Most Prolific Authors

This section highlights the prolific authors in the FI research domain. Figures 6 and 7 display the most relevant authors and authors production over time, respectively while Table 2 details author local impact by H index. Figure 8 presents the most globally cited articles.

3.1.3.1 Most Relevant Authors

Figure 6 highlights several authors' prolific contributions in the FI research field. Leading the list is Asongu SA, with 24 total articles and 10.00 fractionalized articles, demonstrating a substantial individual impact. Following closely is Wang Y, contributing 12 articles with a fractionalized count of 3.32, indicating consistent scholarly output. Zhang Y, Li W, Ozili PK, Zhang X, and Li H also feature prominently with significant total article counts and fractionalized metrics, reflecting their collaborative efforts and research influence. Additionally, Ansong D, Li Y, and Mhlanga D contribute notably with their respective publications and fractionalized article counts, underscoring their contributions to advancing knowledge in financial inclusion. The fractionalized count considers shared authorship, offering a more precise representation of each author's research output and impact. These metrics provide a comprehensive view of each author's research output, accounting for collaborative authorship to accurately gauge individual scholarly impact.

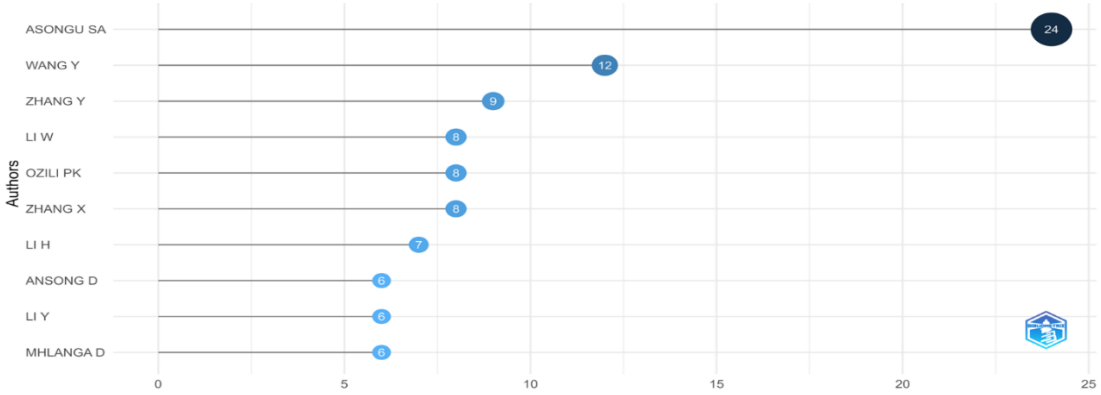

Figure 6: Most Relevant Authors

3.1.3.2 Authors Production Over Time

Figure 7 provides a comprehensive overview of the top ten authors' scholarly output over time in the field of FI research. Asongu SA positions out as the most prolific author, publishing consistently from 2016 to 2024, with a peak annual citation rate (TCpY) of 32.2 in 2020, reflecting strong impact during that period. Wang Y follows with publications spanning from 2017 to 2024, achieving a peak TCpY of 25.5 in 2021. Zhang Y contributed significantly from 2018 to 2023, with a peak TCpY of 30.67 in 2022, showcasing impactful contributions during those years. Li W, despite a shorter publication span from 2022 to 2023, achieved a notable peak TCpY of 41.5 in 2023, indicating impactful research output within a condensed timeframe. Ozili PK, publishing from 2018 to 2023, reached a peak TCpY of 9.67 in 2022. Other influential authors such as Zhang X, Li H, Ansong D, Li Y, and Mhlanga D each exhibit varying TCpY rates, underscoring their contributions and influence across different periods in financial inclusion research.

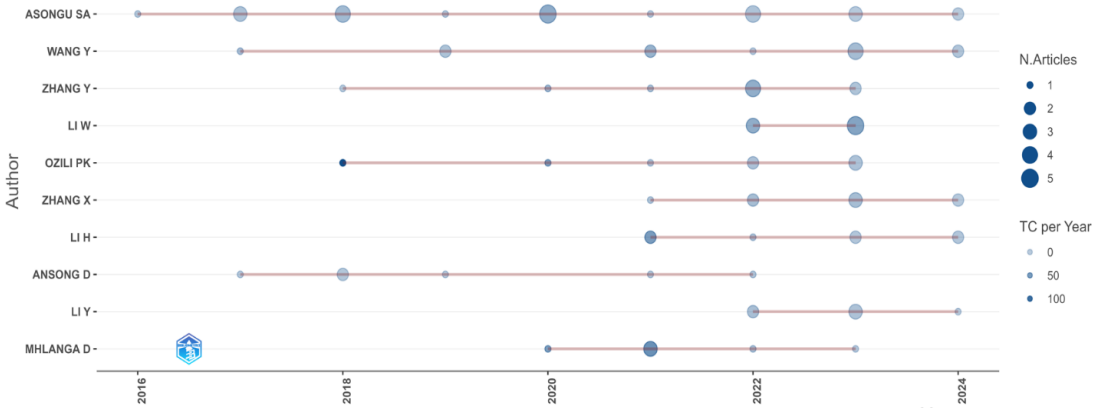

Figure 7: Authors Production Over Time

3.1.3.3 Authors' Local Impact by H Index

Table 2 presents the local impact of prolific authors, detailing each author's H-Index, G-Index, M-Index, total citations (TC), number of publications (NP), and the year of their first publication (PY_start). The H-Index reflects both productivity and impact by considering the number of publications and citations. The G-Index, M-Index, total citations, and publication count collectively offer a thorough perspective on each author's academic contributions. For example, Asongu SA emerges prominently with an H-Index of 12, indicative of significant impact derived from 447 total citations across 24 publications starting from 2016. Li W showcases a notable M-Index of 2.333, underscoring strong average citation impact relative to their eight publications initiated in 2022. Wang Y and Zhang Y both maintain H-Indexes of 7, with substantial citation counts reflecting their contributions since 2017 and 2018, respectively. Ozili PK stands out with 1,246 total citations dispersed over eight publications since 2018, demonstrating impactful research output in a relatively brief period.

Table 2

Authors' Local Impact by H Index

Author	h_index	g_index	m_index	TC	NP	PY_start
Asongu SA	12	12	1.333	447	24	2016
Li W	7	8	2.333	177	8	2022
Wang Y	7	12	0.875	285	12	2017
Zhang Y	7	9	1	248	9	2018
Ansong D	5	6	0.625	69	6	2017
Mhlanga D	5	6	1	524	6	2020
Nguyen NT	5	5	0.833	252	5	2019
Ozili PK	5	8	0.714	1246	8	2018
Sherraden M	5	5	0.625	55	5	2017
Zhang X	5	8	1.25	89	8	2021

3.1.3.4 Most Global Cited Articles

Figure 8 presents a compilation of the top ten most globally cited articles in FI, showcasing key metrics such as total citations (TC), citations per year (TC per Year), and normalized total citations (Normalized TC). Leading the list is Ozili PK's 2018 paper in the "Borsa Istanbul Review", which has amassed 944 TC, with a high citation rate of 134.86 per year and a normalized TC of 14.26, underscoring its significant impact and ongoing relevance. Allen F's 2016 publication in the "Journal of Financial Intermediation" follows closely with 625 citations, averaging 69.44 per year and a normalized TC of 8.23, reflecting its enduring influence within the academic community. Similarly, Tchamyou VS's 2019 publication in the "Technological Forecasting and Social Change" follows closely with 527 citations, averaging 87.83 per year and a normalized TC of 9.92. Other noteworthy globally cited documents include Li J's 2020 publication in "Economic Modelling", Tchamyou VS's 2019 contribution to the "Journal of African Business", Zins A's 2016 work in the "Review of Development Finance", Grohmann A's 2018 research in "World Development", Demir A's 2020 publication in the "European Journal of Finance", Fungáčová Z's 2015 paper in the "China Economic Review", and Omar MA's 2020 research in the "Journal of Economic Structures". These papers have significantly influenced discussions on FI through their comprehensive analyses and empirical insights. Tchamyou VS's contributions across multiple papers affirm a strong presence in the field with substantial citation rates and normalized impact scores.

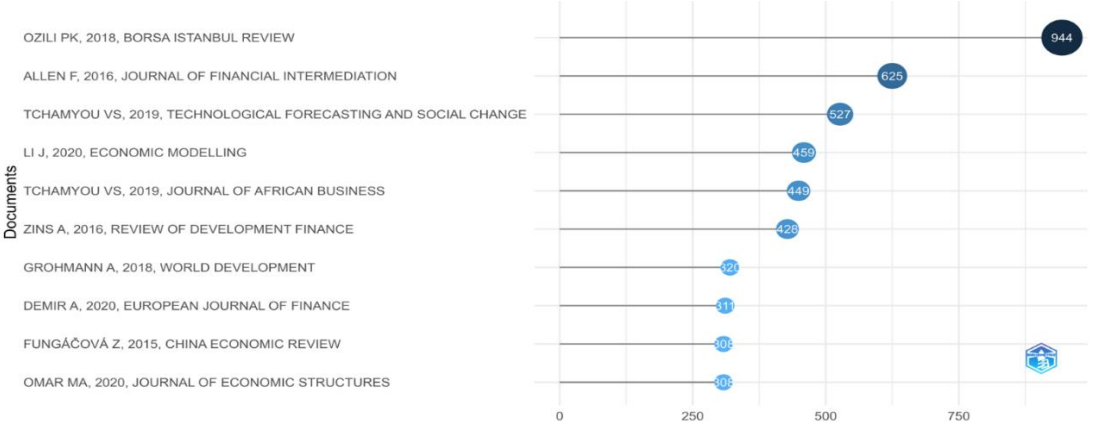

Figure 8: Most Global Cited Articles

3.1.4 Most Prolific Affiliation

This section offers an overview of the top ten affiliations with the most publications in FI research. Figure 9 displays these affiliations, showcasing The "University of Ghana" and "University of South Africa" as a prominent hub with ten publications. Following closely are "The University of Johannesburg" and "Washington University in St. Louis" with 9 publications, and the "Universiti Putra Malaysia", "African Governance and Development Institute" and "Covenant University" with 8 publications each. Other most prolific affiliations were "The University of Economics Ho Chi Minh City", "The University of North Carolina at Chapel Hill", and "The World Bank", with 7 publications.

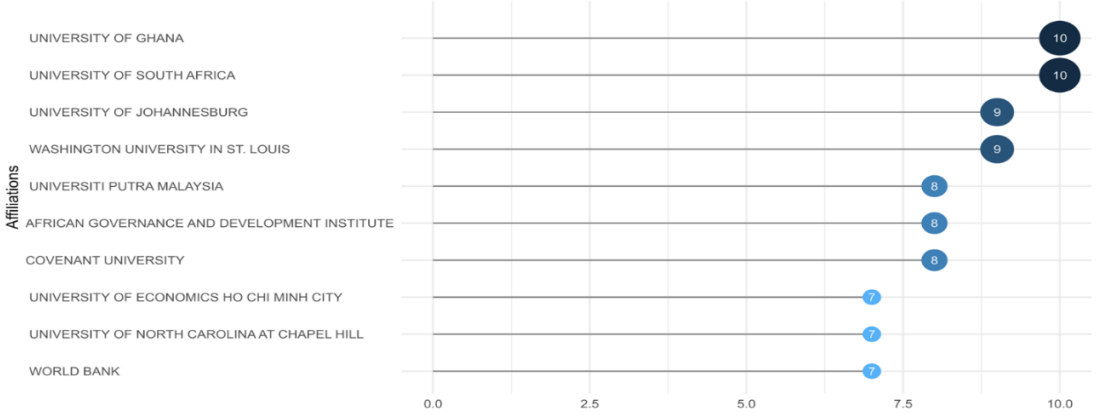

Figure 9: Most Relevant Affiliations

3.1.5 Most Prominent Words

This section uses a word cloud to examine prominent words and phrases in selected financial inclusion papers. Figure 10 illustrates these keywords to identify prevalent themes and topics in the field. This highlight "Financial inclusion" as the most frequent term, appearing 458 times, followed by "Inclusive finance" mentioned 71 times, and "Digital inclusive" with 55 occurrences, emphasizing broad financial topics and their alignment with sustainability goals. Other significant terms such as "Economic growth", "Financial development", "Mobile money", "Financial access", "Financial literacy" and "Digital finance" and "Income inequality" underscore the connections between FI, economic development, and the role of technology in financial services. Terms like "Financial institutions", "Sustainable development", "Financial stability", "Digital transformation", and "Carbon emissions" highlight broader aspects and implications within FI research, including poverty reduction and policy considerations.

Figure 10: Word Cloud

3.1.6 Thematic Analysis

In this section, thematic evolution and thematic map analysis were carried out to identify and analyze themes or topics within a body of literature. Figure 11 shows thematic evolution, and Figure 12 displays thematic maps in the research domain of financial inclusion.

3.1.6.1 Thematic Evolution

Figure 11 illustrates the thematic evolution in financial research from 2015 to 2024, divided into three periods. Between 2015 and 2018, prominent themes included "Financial access," which underscored the need to offer financial services to underserved communities; "Financial inclusion," which aimed to guarantee that all individuals and businesses can access valuable and affordable financial products and services; and "Economic growth," which emphasized the contribution of financial inclusion to economic development. Moving into the period from 2019 to 2023, "Financial inclusion" remained significant, while "Inclusive finance" gained prominence, reflecting efforts to make financial systems more equitable. Other notable themes during this period were "Financial access", "Financial literacy," underscoring the necessity of financial education, "Sustainable development," showing the intersection of finance with sustainability goals, and "Financial services," which continued to evolve with the financial inclusion agenda. By 2024, "Financial inclusion" maintained its central role, with new themes such as “Mobile money", emphasizing the role of mobile technology in FI, "Digital finance," pointing to the increasing digitization of financial services, and "Financial development," emphasizing broader financial system improvements and their impacts. This thematic evolution showcases shifts in research focus and the emergence of new areas of interest over the years.

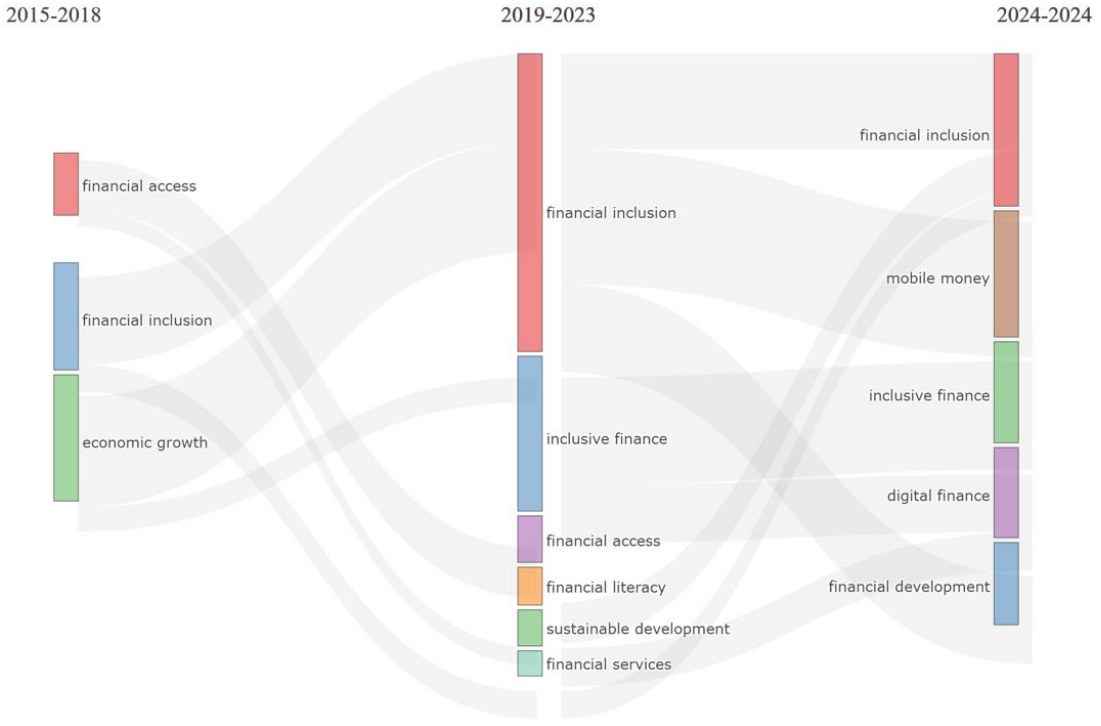

Figure 11: Thematic Evolution

3.1.6.2 Thematic Map

Figure 12 shows a thematic map categorizing various themes into four quadrants grounded on their development degree (density) and relevance degree (centrality). In the upper left quadrant, labeled as Niche Themes, found specialized but less central themes like "financial capability." This theme is significant within specific contexts but does not have widespread influence across the broader field. The upper right quadrant, recognized as Motor Themes, contains well-developed and highly central themes such as "Sustainable development", "Microfinance institutions", "Development goals", "Inclusive finance", "Digital inclusive" and "Carbon emissions". These themes are both crucial and well-integrated into the larger research landscape, driving significant advancements and discussions. In the lower left quadrant, labeled Emerging or Declining Themes, are less developed and less relevant themes like "Financial access", "Financial sector", "Digital transformation", and "Mobile banking". These themes may be gaining traction or losing their significance in the field. Lastly, the lower right quadrant, well-known as Basic Themes, includes central but underdeveloped themes such as "Financial inclusion", "Economic growth" and "Financial development". These themes are foundational to the field but require further development to enhance their influence and integration.

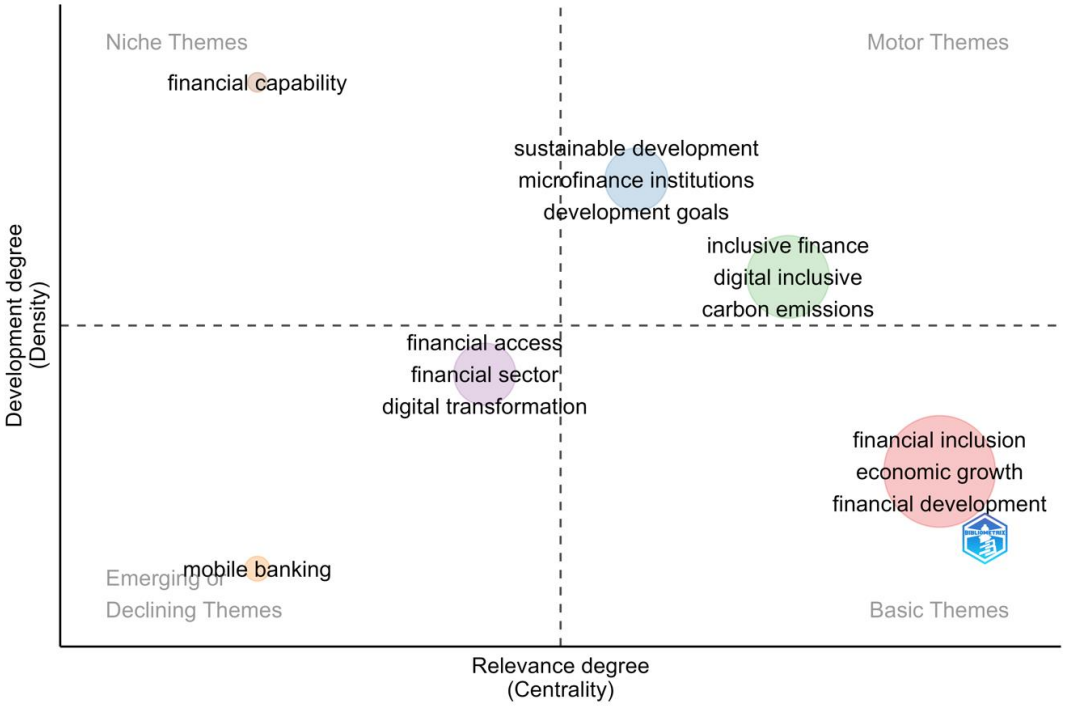

Figure 12: Thematic Map

3.2 Analysis using VOS viewer

The study employed VOS viewer, a sophisticated software tool for creating and visualizing bibliometric networks. This application facilitates the analysis of intricate relationships among research publications, authors, and institutions, highlighting the interconnectedness of scholarly work. By using VOS viewer, the study examined the dynamics within the financial inclusion research landscape, pinpointing key influencers, emerging trends, and collaborative synergies that are shaping the field's development.

Integrating VOS viewer's features enriches the understanding of the subject area and offers insights into potential avenues for future research and collaboration.

3.2.1 Co-Authorship Analysis

Co-authorship analysis is a technique employed in bibliometrics and scientometrics to investigate collaborative relationships among academic paper authors. It entails analyzing patterns of co-authorship to comprehend the structure and dynamics of scientific collaboration, encompassing author, institution, and country networks within the field of FI research.

3.2.1.1 Author Collaboration Network

Figure 13 reveals authors actively collaborating and contributing to FI research. Prominent authors exhibit a considerable impact through strong collaborative networks and impactful research contributions. This analysis offers insights that can help promote strategic partnerships and broaden research networks in the field of FI. Criteria set include a minimum of 2 documents and 10 citations per author, with 271 authors meeting these thresholds out of 2474 initially considered. While not fully interconnected, the largest connected subset comprises 128 authors, indicating active collaboration in financial inclusion research. Asongu, SA leads with 24 documents, 447 citations and a link strength of 250, indicating substantial collaborative connections and influence within scholarly networks. Ansong, D follows with 21 documents, 285 citations and a link strength of 24, showcasing consistent engagement and impact in the research community. Wang, Y has contributed 12 documents, also with 285 citations but a slightly lower link strength of 17, suggesting significant citation impact but potentially fewer collaborative ties. Sherraden, M's 6 documents have garnered 69 citations and a link strength of 21, reflecting focused research contributions within a narrower scope. Lastly, Li, H's 4 documents, 49 citations and a link strength of 16 underline a niche but impactful presence in FI research highlighting robust collaborative relationships in the research community.

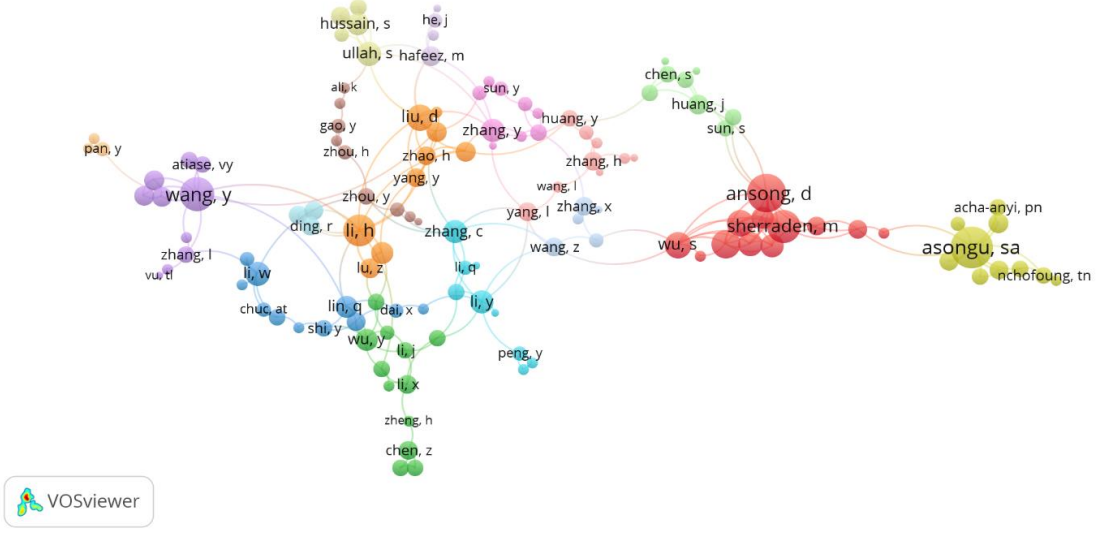

Figure 13: Author Collaboration Network

3.2.1.2 Institutional Collaboration Network

Figure 14 illustrates the network of institutional collaborations in the FI research domain, highlighting a key group of institutions actively engaged in collaborative efforts. These leading institutions significantly impact the field through strong networks and influential research outputs. The analysis offers important insights for researchers and institutions aiming to develop strategic partnerships and enhance their networks within FI. The selection criteria included a minimum of 3 documents and 30 citations per organization, with 139 out of 1,262 institutions meeting these criteria. The total strength of co-authorship links among the selected organizations was evaluated, involving 111 interconnected institutions. The institutions in the FI research domain demonstrate significant output and influence, as evidenced by their document counts, citation totals, and link strength. The "University of South Africa" leads with 17 documents, 282 citations and a total link strength of 15. Following closely is "Coventry University" with 12 documents, 198 citations and a link strength of 13, alongside "Washington University in St. Louis", which has 9 documents, 138 citations and a link strength of 13. The "African Governance and Development Institution" stands out with 8 documents, 258 citations and a link strength of 12. Other notable institutions include "Magyar Agrár- és Élettudományi Egyetem" (6 documents, 184 citations, link strength 10), "University of Cape Town" (7 documents, 157 citations, link strength 10), and "University of North Carolina at Chapel Hill" (7 documents, 75 citations, link strength 10). "Zhejiang University" (6 documents, 184 citations, link strength 9) and "Nankai University" (5 documents, 112 citations, link strength 8) also make significant contributions. "Universitas Indo Global Mandiri" (4 documents, 152 citations, link strength 8), "University of Hong Kong" (6 documents, 71 citations, link strength 8), and "University of Johannesburg" (13 documents, 284 citations, link strength 8) showcase their collaborative roles. Additional key players include "University of Queensland" (4 documents, 62 citations, link strength 8), "Central University of Finance and Economics" (6 documents, 210 citations, link strength 7), "Multimedia University" (5 documents, 186 citations, link strength 7), "Renmin University of China" (5 documents, 78 citations, link strength 7) and "SOAS University of London" (5 documents, 466 citations, link strength 7). Finally, "Universiti Putra Malaysia" (8 documents, 98 citations, link strength 7), "University of Aberdeen" (3 documents, 99 citations, link strength 7) and "University of Ghana" (14 documents, 163 citations, link strength 7) further highlight the strong collaborative network within the FI research community.

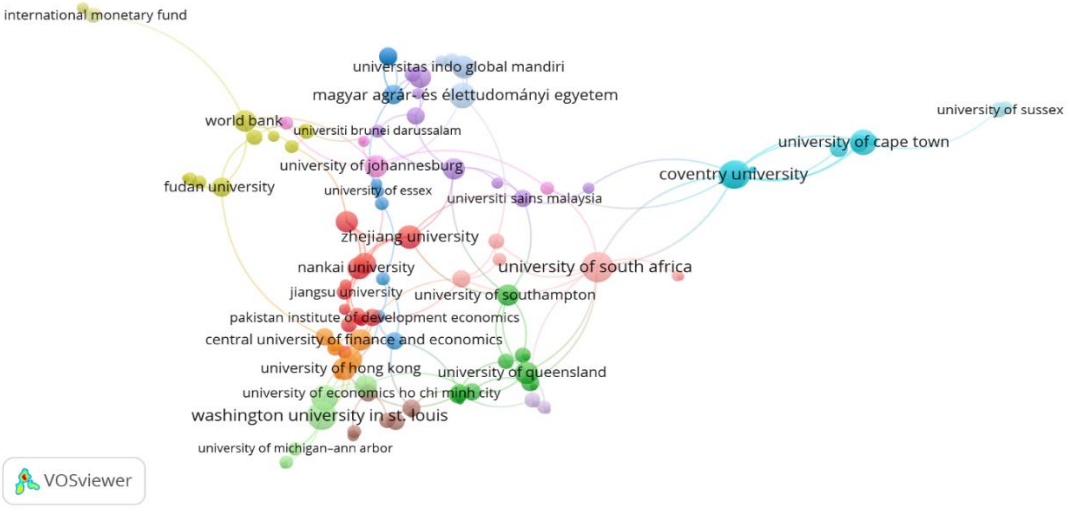

Figure 14: Institutional Collaboration Network

3.2.1.3 Country Collaboration Network

The country network analysis presented in Figure 15 highlights "United Kingdom", "China", and the "United States" as leading contributors in research and collaboration within the FI domain. Other countries, while enthusiastically contributing, show opportunities for increased collaboration. Criteria included a minimum of 3 documents and 30 citations per country, with 58 out of 93 countries meeting these thresholds. The total strength of co-authorship links between countries was calculated. The analysis of selected countries in the FI research domain reveals significant contributions and collaborative strengths. The "United Kingdom" leads with 125 documents, 6020 citations and a total link strength of 104. "China" follows with the highest document count at 211, 4582 citations and a link strength of 77. The "United States" also plays a major role with 88 documents, 3893 citations and a link strength of 68. "Malaysia" contributes 51 documents, 1061 citations, and a link strength of 62, while "South Africa" has 64 documents, 1213 citations, and a link strength of 56. "Pakistan" with 37 documents and 955 citations, holds a link strength of 54 and "Saudi Arabia" with 246 documents and 3893 citations, exhibits a significant presence. "Australia" adds 34 documents, 1177 citations and a link strength of 32.

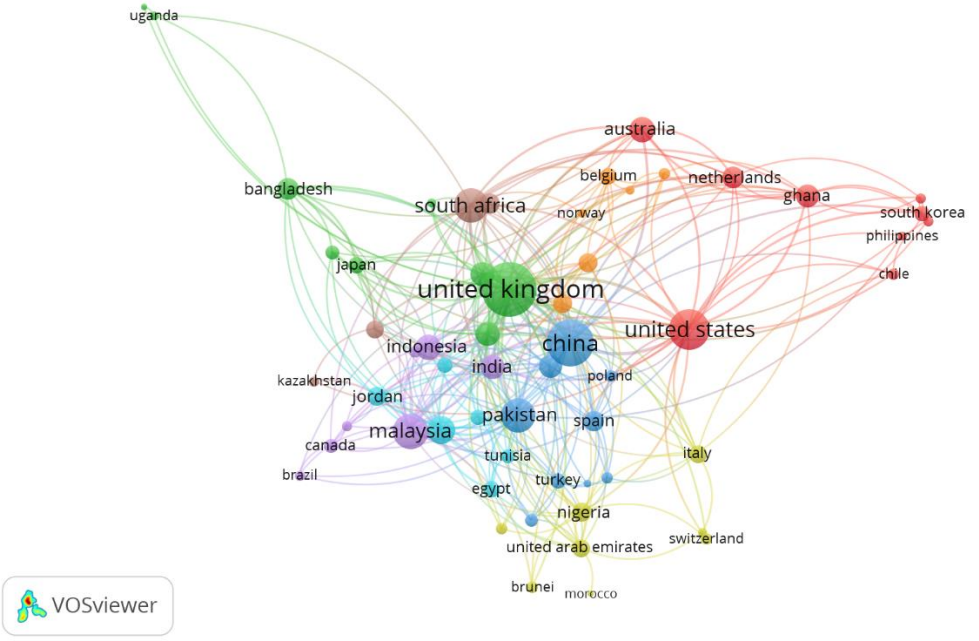

Figure 15: Country Collaboration Network

3.2.2 Bibliographic coupling

Bibliographic coupling was employed to analyze and visualize document similarities based on shared references, providing insights into influential papers and their interconnections within the FI research domain. Figure 16 illustrates the findings regarding the interconnectedness of documents through bibliographic coupling. The criteria required a minimum of 30 citations per document, with 195 out of 995 documents meeting this threshold. The total strength of bibliographic relationships was evaluated, identifying 188 documents with significant linkages. Ahamed (2019) is notable for having 295 citations and a total link strength of 462. Following closely is Ifediora (2022) with 33 citations and a link strength

of 417. Ahmad (2020) has received 99 citations and a total link strength of 394. Asongu (2020a) is recognized for 37 citations and a link strength of 370. Demir (2020) has amassed 311 citations and a link strength of 364. Ozili (2020), with 225 citations, has a link strength of 342. Additionally, Asongu (2020b) contributes with 90 citations and a link strength of 334. Tchamyou (2019b), who has the highest citation count at 527, has a link strength of 327. Chen (2021) achieved 31 citations along with a significant link strength of 325, while Pandey (2022) also has 31 citations and a link strength of 320. These documents play a crucial role in the financial inclusion research landscape, reflecting their considerable influence and the broad collaborative networks they engage with.

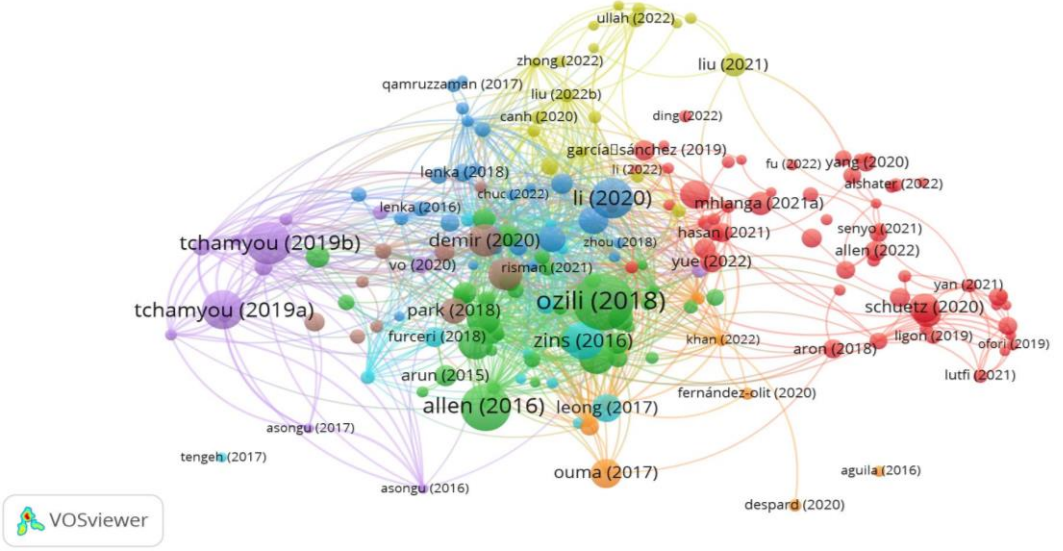

Figure 16: Bibliographic coupling document interconnectedness

3.2.3 Co-citation analysis

The co-citation analysis provides insights into the connections and relationships among the most commonly cited references and authors in the field of FI research.

3.2.3.1 Co-citation Cited Reference

Using VOS viewer for bibliometric analysis, co-citation relationships were examined based on a dataset where cited references had a minimum of 30 citations. Out of 25,172 cited references, 61 met this criterion. Figure 21 displays the analysis of co-cited references within the financial inclusion research domain. This examination identifies key influential works frequently referenced, showcasing their citation counts and total link strengths. Allen et al. (2016), in the "Journal of Financial Intermediation," leads with 113 citations and the highest total link strength of 784. Demirguc-Kunt et al. (2018), in "World Bank Publications," has 122 citations and a total link strength of 624. Kim et al. (2018) in "Research in International Business and Finance" is noteworthy with 74 citations and a link strength of 538. Beck et al. (2007), in the "Journal of Economic Growth," has received 83 citations and a total link strength of 518. Ozili (2018), in the "Borsa Istanbul Review," stands out with 82 citations and a total link strength of 469. These references play a vital role in shaping the discussions and advancements in the FI research field, highlighting their widespread acknowledgment and significant impact on future research.

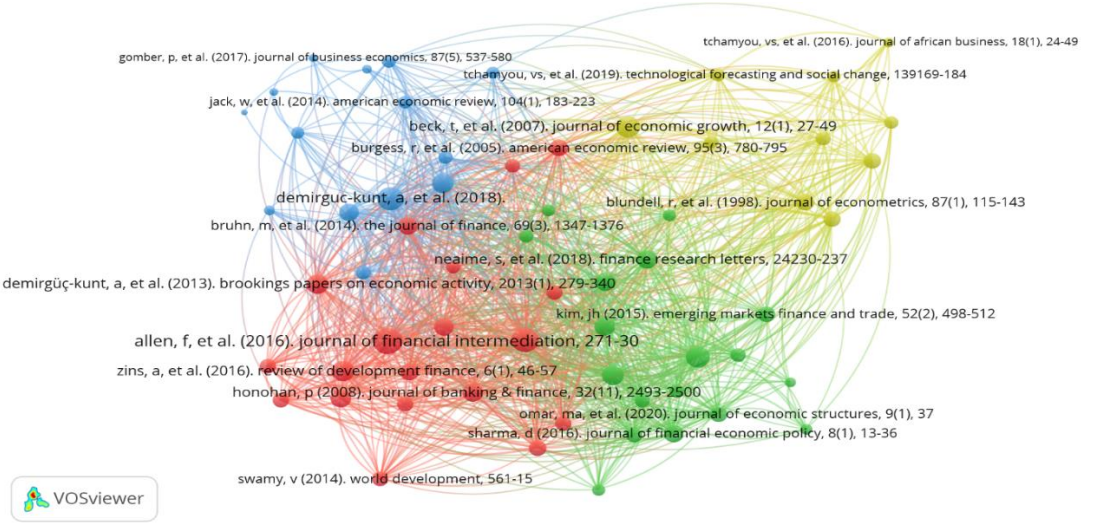

Figure 21: Co-citation Cited Reference

3.2.3.2 Co-citation Cited Author Mapping

Figure 22 presents a co-citation analysis of authors in the realm of FI, aiming to pinpoint the most influential figures based on their citation counts and connections with other researchers. The analysis set a minimum citation threshold of 30, resulting in a selection of 284 authors from a total of 46,913. Leading the list is A. Demirguc-Kunt, with 984 citations and a substantial link strength of 32,354. Following this is Simplice A. Asongu, who has 627 citations and a link strength of 25,731. Leora Klapper is also prominent, with 659 citations and a link strength of 22,294. Thorsten Beck has 503 citations and a link strength of 17,539, while Ross Levine contributes significantly with 362 citations and a link strength of 12,679. These authors play a crucial role in advancing research on FI, with their significant contributions shaping academic discussions and enhancing understanding in the field.

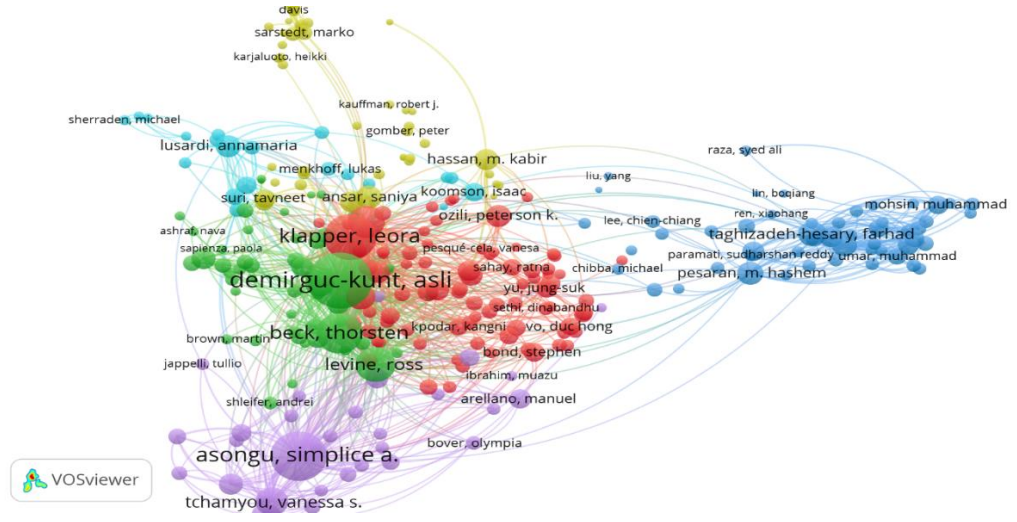

Figure 23: Cited Author mapping

4. CONCLUSION

This bibliometric study highlights a growing interest in the essential function of FI in improving access to finance and promoting economic growth. The interdisciplinary nature of this research reflects the complexities involved in the topic, underscoring the need for collaboration across various fields. This trend further emphasizes the increasing importance of financial inclusion across diverse academic disciplines, illustrating the intricate relationships between technology, society, and financial systems. It offers an in-depth look at the changing landscape of FI research over the last twenty years. The research output from 2019 to 2024 has experienced a significant increase, reflecting an expanding recognition of financial inclusion's role in supporting the ongoing digital transformation in the global economy. This rise suggests heightened global interest in the subject, likely influenced by technological progress, rising public awareness, and the focus on financial inclusion within the UN Sustainable Development Goals.

This bibliometric analysis has provided a comprehensive overview of the evolving landscape of financial inclusion research over the past two decades. Research output during 2019–2024 has seen a noticeable upswing, indicating a growing acknowledgment of FI, effectively fostering the ongoing digital revolution in the global economy. The global interest in FI, likely driven by technological advancements, increasing public awareness, and the emphasis on UN SDG.

The study has illuminated key trends and highlighted influential contributors within the field, revealing the dynamic interplay between economic theories, technological innovations, and policy interventions to enhance financial access and equity. By mapping out the productive hubs of research activity, such as leading journal, Borsa Istanbul Review and prolific authors like Asongu SA, this study underscores their pivotal roles in advancing knowledge and shaping scholarly discourse. Moreover, the collaborative networks identified among institutions and countries, exemplified by entities like the “World Bank” and the “United Kingdom”, emphasize the position of global cooperation in tackling complex challenges related to FI. The thematic analysis further underscores the field's evolution from foundational topics like economic growth and financial access towards emerging themes such as digital finance and sustainable development, reflecting the adaptive nature of research in response to contemporary socio-economic issues. These findings offer valuable insights for researchers, policymakers, and practitioners seeking to leverage collaborative strategies and innovative approaches to promote inclusive economic growth and societal well-being worldwide.

While these findings are significant, it is important to recognize the study's limitations and the necessity for further investigation. Future research should focus on exploring the impact of FI on marginalized groups, assessing the effectiveness of alternative financing options, and examining the potential influence of emerging digital technologies in advancing FI and economic growth.

In summary, this study provided valuable insights into the present state of FI research. As the financial landscape continues to change, both researchers and policymakers must remain attentive in identifying and addressing the emerging challenges and opportunities introduced by digital financial services. This proactive approach will help ensure that the benefits of FI are shared fairly, supporting inclusive and sustainable economic development.

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