

A bibliometric analysis of financial inclusion and economic uncertainty in developing economies (2002-2025)

Fred Konneh Songa Monson^{1&2*}, Mohamed Sao Kawa³, Michael Nicol Samai⁴ and Sallieu Koroma⁵

¹College of Business Administration, Capital University of Economics and Business, Beijing, China

²IMATT College, Affiliate of the University of Sierra Leone, Sierra Leone

³Institute of Social Studies Administration and Management (ISSAM), Njala University, Bo Campus, Sierra Leone

⁴Department of Software Engineering, Nankai University, Tianjin, China

⁵Department of Accounting and Finance, Fourah Bay College, University of Sierra Leone, Sierra Leone

*Correspondence: fredksm@yahoo.com

Abstract

This bibliometric analysis examines financial inclusion and economic uncertainty in developing economies between 2002 and 2025. Despite growing attention to financial inclusion, there is still a lack of comprehensive bibliometric analysis examining its relationship to economic uncertainty in developing economies. The bibliometric analysis follows the PRISMA 2020 guidelines and assesses 506 articles retrieved from the Web of Science Core Collection covering the period from 2002 and mid-2025, analysed using the Bibliometrix R package. Given the partial coverage of 2025, publication trends for that year should be interpreted with caution. Key findings show: (i) a rise in academic interest and significant contributions from a range of publications, authors, and institutions. (ii) Asian institutions are becoming more dominant in knowledge production; and (iii) despite regional heterogeneity in developing economies, there is a trend towards decontextualised analyses. This study calls for more empirical evidence examining financial inclusion and economic uncertainty within individual developing countries to provide context specific policy direction. The results encourage policymakers to create integrated financial inclusion plans that concurrently tackle digital revolution, economic uncertainty, and regional inequalities in emerging countries.

Received

24 September 2025

Received in revised form

26 March 2026

02 June 2026

Accepted

24 June 2026

Keywords:

Financial inclusion
Economic uncertainty
Developing economies
Financial stability
Economic development

1. Introduction

In recent times, researchers have become increasingly interested in studying the relationships between financial inclusion and economic uncertainty (Antwi et al., 2024; Esely & Taonezvi, 2024; Jamil et al., 2023; Le Quoc, 2025; Oyewole et al., 2024; Syed et al., 2024). Financial inclusion, which can be defined as the access to and use of formal financial services universally, is being regarded as an essential driver of sustainable growth, particularly in regions where unbanked people make up large segments of the population (Jejenywa et al., 2024). Besides the standard financial services, the effective inclusion of digital payments, insurance, and credit will support effective resource distribution and reduce poverty (Mbodj & Laye, 2025). Inclusive financial systems reduce geographical inequalities and bridge remote communities, creating the necessary sources of revenue and investment opportunities to ensure long-term economic prosperity (Esely & Taonezvi, 2024; Syed et al., 2024).

Despite the socio-economic benefits still associated with financial inclusion, developing economies are continuing to struggle with systemic uncertainty and macroeconomic instability. These instabilities are often compounded by external shocks that include market volatilities, geopolitical friction, as well as global pandemics (Oyewole et al., 2024). It is argued that the growth of inclusive financial institutions will support economic resilience; however, there is ongoing intense research on the exact impact of inclusion on uncertainty reduction (Antwi et al., 2024; Jamil et al., 2023). To date, the literature in the field of bibliometrics has mostly focused on overall developmental influences or specific interventions of technologies, overlooking the inclusion-and-uncertainty relationship. Galvez-Sanchez et al. (2021) studied the progress and research directions in the area of financial inclusion, and Suryavanshi et al. (2026) studied the development of the theme areas such as digitalisation and literacy in financial inclusion using Scopus data. Del Sarto and Ozili (2025) explored the transformative nature of FinTech and financial inclusion in emerging markets. While prior bibliometric studies have examined financial inclusion broadly (Gálvez-Sánchez et al., 2021) or its links with FinTech/sustainability (Del Sarto & Ozili, 2025; Suryavanshi et al., 2026), none has systematically mapped the specific nexus between financial inclusion and economic uncertainty in developing economies using the preferred reporting items of systematic reviews and meta-analyses (PRISMA) 2020 guidelines. However, there is still a research gap as there

is no existing bibliometric synthesis has explicitly focused on examining the intersection of financial inclusion and economic uncertainty in developing economies. The previous assessments were often based on Scopus and focused on one of the possible aspects like innovation or geographical trends. This research addresses this gap by performing a rigorous bibliometric investigation, according to the PRISMA 2020 guidelines, to identify the trends in publications, performance metrics, and intellectual organisation between 2002 and mid-2025 (Nezameslami et al., 2025; Page et al., 2021). The study contributes to a fresh take on the efficacy of financial system as a stabilising mechanism against uncertainty, giving a more precise conceptual framework on resilience in emerging markets.

This study primarily aims at conducting a comprehensive bibliometric analysis on financial inclusion and economic uncertainty of developing economies in the years 2002-2025. To begin with, the rate of the publication will be examined based on the annual scientific output, the average citations per year to understand how the research in this field has evolved and impacted the development of research across the years. Second, it aims to conduct a performance analysis, by determining the most pertinent sources, authors, affiliations, and countries based on corresponding author collaboration. Additionally, it examines the most widely referenced publications to find significant contributors and influential works. Third, the research endeavours to map the scientific landscape of relevant publications by word cloud analysis to reveal dominant terms, conceptual structure analysis to trace thematic evolution, and network analyses to uncover both the intellectual structure through co-citation patterns and the social structure via international collaboration networks.

In line with the objectives of conducting the research, the following are specific questions to be addressed in this research.

RQ1. How has research on financial inclusion and economic uncertainty in developing economies changed in terms of volume and citation impact each year between 2002 and 2025?

RQ2. Which publications, writers, institutions, and countries have made the most contributions to the literature, and how do they collaborate with one another?

RQ3. How have the main conceptual changes, knowledge networks and topic clusters in financial inclusion research under economic uncertainty evolved over time?

This study holds great significance for financial practitioners and policymakers in the global South, as well as other parties working with international development organisations, researchers and investors. First, it adds up to the body of scholarly knowledge whereby it provides an organised and current performance of the output of publications on financial inclusion and economic uncertainty based solely on developing economies. Using the bibliometric methods, this paper traces the main research trends, thematic patterns and collaborations of authors, which provides a more exhaustive picture of the way the field has developed. Second, it determines areas that are under examined and new research areas which can act as a guide to scholars in filling the gap. This is in line with the burgeoning need to ensure that research is channelled towards feasible policy and regulations frameworks that consolidates socio-economic vulnerabilities. Finally, the case study is rather educative to the decision-makers who wish to pursue the financial policies that will be inclusive and boost the economic sustainability and poverty alleviation. This is in tandem with the recent research which has underscored the need of policy reform, legislation as well as regulatory enhancements in encouraging a digital financial inclusion by the developing economies with specific focus on the central banks in Sub-Saharan Africa (Esely & Taonezvi, 2024).

The main motivation to conduct this study is the lack of a bibliometric-based analysis of the literature on the topic of financial inclusion and economic uncertainty interaction within the developing economies. With issues like economic shocks, financial uncertainty, and digital transformation having shown several years of impact in the direction of development agendas, it is more relevant to know how the scholarly work has transformed around these challenges. Instead of rehashing well-known econometric frameworks, this study uses co-word mapping, citation analysis, and performance metrics, tools that are uniquely positioned to shed light on thematic priorities, research gaps, and intellectual trajectories within this crucial field, to visualise and interpret the larger academic landscape.

The rest of this article is presented in five major sections. Section 1 gives the introduction of the study, including the background, and objectives of the study. Section 2 describes the methodological strategy used. The section 3 presents the results and interpretations including publication patterns, the citation, and the theme formations. Section 4 provides a discussion on the findings including the relevance in terms of theory, policy and practice. In the conclusion, Section 5 provides a general conclusion of the study with an explanation of the main findings, theoretical implications, policy implications. Section 6 presents limitations, and suggestions regarding future studies.

2. Methodology

This study employed bibliometric analysis, to explore financial inclusion and economic uncertainties in developing economies between 2002 and 2025. This bibliometric analysis covers the period from 2002 to mid-2025 to include both fundamental studies and recent developments particularly those following the onset of COVID -19 on financial inclusion and economic uncertainty in developing economies, thereby reflecting the evolving trends that have shaped policy and practice in the field. Bibliometric reviews have become more prominent which allow analysing large volumes of scientific information by assessing the effectiveness of research facilitated by accessible tools such as R and VOS viewer, along with extensive databases like Google Scholar, Scopus, and Web of Science (Passas, 2024). This bibliometric analysis adopted the PRISMA 2020 guidelines as its methodological framework. These guidelines were chosen because its offers a standardised reporting format that enhances reproducibility, transparency and so the reliability of the findings as suggested in literature (Nezameslami et al., 2025; Page et al., 2021).

2.1 Selection of software

The study used R-studio to carry out bibliometric analysis of the literature on the topics of financial inclusion and economic uncertainty in developing economies. R-studio operates in R programming language, existing research emphasizes that it is useful in conducting publication trends, performance analysis of articles and science mapping analysis (Aria & Cuccurullo, 2017). This software provides descriptive statistics with data visualization that can support quality numerical analysis and scientific calculations of existing literature (Aria & Cuccurullo, 2017).

2.2 Data base and acquisition

This bibliometric review made use of data obtained from the Web of Science Core Collection (WoSCC) data base including Social Science Citation Index (SSCI), Science Citation Index Expanded (SCI-EXPANDED) and Conference Proceedings Citation Index - Science (CPCI-S). The Web of Science was accessed via the electronic library of Capital University of Economics and Business, Beijing, China on 16th July, 2025. To enhance quality data search, the study employed a pre-defined search string on the key words by using Boolean operators ("AND/OR") as suggested in existing literature (Atkinson & Cipriani, 2018). The keywords used in the search string includes; financial inclusion, economic uncertainty, developing economies, financial stability and economic development. These keywords formed the search string; TS = (("financial inclusion*" OR "economic uncertainty*" OR "financial stabilit*" OR "economic development*") AND ("developing econom*")). This search provided a total of 532 records that were screened in this study. We used a broad initial search term to ensure that relevant literature were captured. All records were then screened thoroughly to preserve the quality and relevance of the final data set.

2.3 Data screening

The retrieved bibliographic records were carefully screened based on predefined inclusion and exclusion criteria. Eligible documents included articles and conference papers published between 2002 and 2025, and written in English. Publications were excluded if they were non-English, fell outside the study period, or were categorised as editorials, book chapters, retractions, or other materials not directly relevant to the study's aims. After applying these criteria, a total of 506 records were deemed suitable for full bibliometric analysis.

2.4 Data analysis and reporting

The bibliographic data of interest was exported in plain text format and imported to RStudio where Bibliometrix tool was used to analyse the information. The analysis presented descriptive statistics, multiple bibliometric networks and visual representations of the publication patterns, co-authorship and co-country graphs, the co-citation influences, as well as the evolution of topics. This analysis adopted the minimum thresholds for network visualisations based on exiting studies (Chandran MC & Chandran, 2026; Passas, 2024). All results have been categorised in a systematic order and presented in both tabular and graphical forms so that there can be clarity and also such that results are easy to interpret. Figure 1 presents the PRISMA flowchart which identifies the essential steps followed in retrieving data for this analysis. The PRISMA diagram, allows readers to assess the appropriateness of the methods, and so the reliability of the findings (Haddaway et al., 2022; Nezameslami et al., 2025). Thus, we list 506 documents eligible for analysis focused on financial inclusion and economic uncertainty in developing economies.

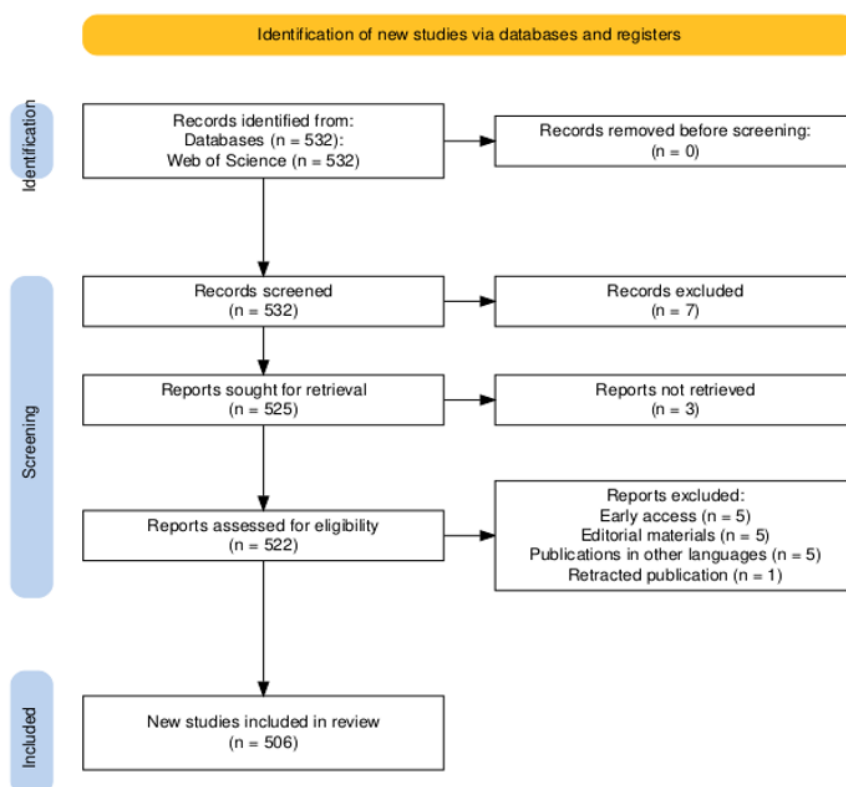


Figure 1. PRISMA steps undertaken during the bibliometric analysis

Source: Figure by the authors

3. Results

3.1 Publication trend

3.1.1 Annual scientific production

The annual scientific production on financial inclusion and economic uncertainty in developing nations from 2002 to 2025 is shown in Figure 2. According to Figure 2, research production have clearly increased over the past 20 years, with a notable acceleration starting in 2019. Global shocks including financial crises, pandemics, and policy disruptions have made the relationship between financial development and economic uncertainty more pertinent, and this tendency reflects growing scientific interest in this field (Jamil et al., 2023).

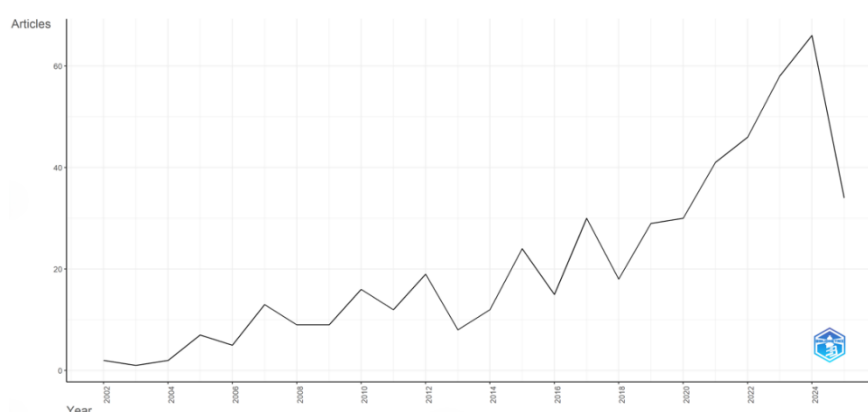


Figure 2. Annual scientific output

Source: Figure by authors

Though current research suggests a more complex approach, earlier studies have long debated the broader relationship between the financial sector development and economic growth (Erlando et al., 2020). For example, Syed et al. (2024), who indicate that although financial inclusion drives inclusive economic growth, its effectiveness is still at risk due to the frequent occurrence of such challenges as fraud and recessions. The significant increase in scientific output in 2020-23 might be explained by global interest in the adoption of digital financial systems, especially FinTech to increase access and minimise economic vulnerability in developing economies (Del Sarto & Ozili, 2025; Gálvez-

Sánchez et al., 2021). The apparent decline in 2025 publications is likely attributable to incomplete indexing and partial year coverage at the time of data retrieval rather than a genuine reduction in research interest.

3.1.2 Average citation per year

Figure 3 shows the trend of average annual citations of articles in 2002-2025, which provides information about the academic popularity and impact of the research on financial inclusion and economic uncertainty in the emerging economies. The statistics reveal that the scholarly impact is variable, yet mostly on the rise, with relatively three high citation rates in 2004, 2017, and 2021. The spikes in the observation indicate that certain foundational or highly relevant publications were of significant interest in the years. The noticeable increase in citations in 2017 and 2021 may be related to policy shifts that emphasised financial inclusion as the approach to promote economic resilience. According to Syed et al. (2024), financial inclusion will enhance inclusive growth thereby contributing to stable economic developments despite disruptions of recessions and fraud. These increased are also supported by the rise in academic interest of financial inclusion and the broader subjects like financial sector and economic performance (Erlando et al., 2020; Jamil et al., 2023). The decline in the average citations of 2024 and 2025 may be explained by the fact that these publications are new and slow indexing. The results show a steady increment in the academic involvement and a vibrant development in the academic influence of this subjects.

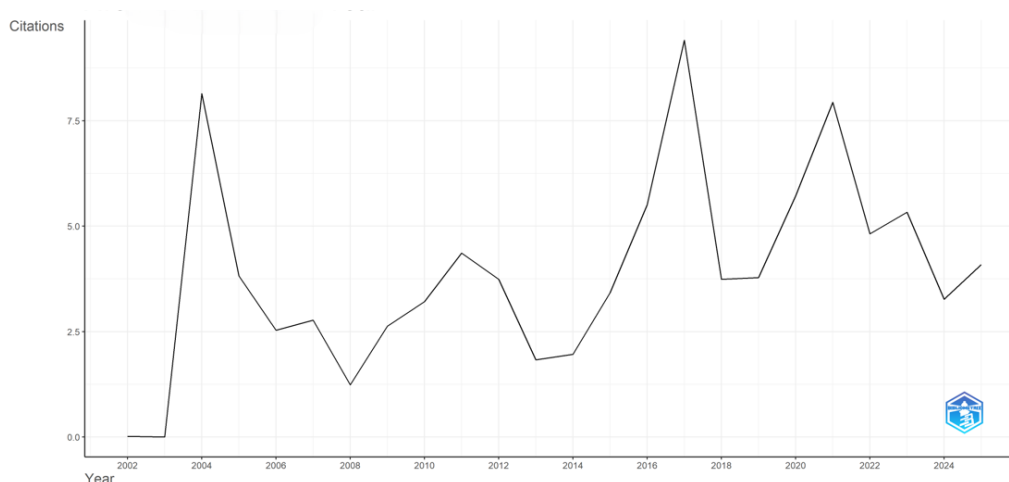


Figure 3. Average article citation per year

Source: Figure by authors

3.2 Performance analysis

3.2.1 Most relevant sources

Table 1 presents the ten most significant academic journals that have contributed to the literature on financial inclusion and economic uncertainty in developing economies from 2002 to 2025. *Sustainability* (n = 22) emerges as the primary source, highlighting the substantial correlation between sustainable development and inclusive financial systems, particularly regarding the Sustainable Development Goals (SDGs). *Resources Policy* (n = 13) ranks second, indicating the journal's increasing emphasis on the economic governance of natural resources and its effects on financial access and policy stability. The *Journal of Cleaner Production* (n = 9) indicates a correlation between inclusive finance and environmentally sustainable economic models. *Environmental Science and Pollution Research* (n = 8) and *Heliyon* (n = 7) prominently highlight a multidisciplinary interest in the intersection of environmental challenges and financial resilience in uncertain economic climates. *Technological Forecasting and Social Change* (n = 7) identifies innovation, digital transformation, and future financial systems as significant themes in the literature. *Energies* (n = 6) and the *Journal of Business Research* (n = 6) illustrate the relationship between energy access and business strategies concerning financial inclusion, especially in emerging markets where energy infrastructure and entrepreneurship are essential for inclusive economic growth. *Applied Economics* (n = 5) and the *Cambridge Journal of Economics* (n = 5) conclude the list, representing fundamental economic analyses of financial systems and uncertainty, encompassing macroeconomic stability, income inequality, and institutional responses. This distribution of sources indicates a diverse, interdisciplinary field that analyses financial inclusion from economic, environmental, technological, and policy perspectives, highlighting a dynamic research agenda influenced by local challenges and global development needs.

Table 1: Descriptive analysis: top 10-most relevant sources

No.	Sources	Articles
1	Sustainability	22
2	Resources Policy	13
3	Journal of Cleaner Production	9
4	Environmental Science and Pollution Research	8
5	Heliyon	7
6	Technological Forecasting and Social Change	7
7	Energies	6
8	Journal of Business Research	6
9	Applied Economics	5
10	Cambridge Journal of Economics	5

Source: Table by the authors

3.2.2 Most relevant authors

Table 2 provides a descriptive analysis of the ten most significant authors contributing to the literature on financial inclusion and economic uncertainty in developing economies from 2002 to 2025. Gopalan, S. (n = 8) is identified as the most prolific author in this domain, reflecting a sustained scholarly focus on the institutional and policy aspects of financial access and macroeconomic volatility in emerging markets. Paramati, S. R. (n = 6) and Rajan, R. S. (n = 6) also contribute significantly to the examination of the intersection of financial development, environmental risks, and economic performance, a topic of growing relevance in uncertain economic contexts. Cavoli, T. (n = 5) is a significant contributor, with research primarily centred on financial liberalisation and policy reform in Asia-Pacific economies. Savoia, A. and Sen, K. (each with n = 4) have made significant contributions to the discourse on institutional quality and inclusive finance, particularly in low-income countries. The inclusion of Alam, K. M. (n = 3), Dogan, E. (n = 3), Sarkodie, S. A. (n = 3), and Singh, S. (n = 3) underscores the varied methodological and geographical emphasis in contemporary research. This authorship pattern indicates a concentration of expertise among a limited but varied group of contributors, highlighting a collaborative and interdisciplinary approach to the study of financial inclusion in the context of increasing economic uncertainty. The combination of high and moderate fractionalised scores highlights differing levels of co-authorship and collaborative engagement among institutions and countries, providing significant insight into the changing dynamics of development-focused financial research.

Table 2: Descriptive analysis: top 10-most relevant authors

No	Authors	Articles	Articles fractionalised
1	Gopalan S.	8	3.75
2	Paramati S. R.	6	2.17
3	Rajan R.S.	6	2.50
4	Cavoli T.	5	1.75
5	Savoia A.	4	1.50
6	Sen K.	4	1.50
7	Alam K.M.	3	0.70
8	Dogan E.	3	1.00
9	Sarkodie S.A.	3	0.70
10	Singh S.	3	0.35

Source: Table by the authors

3.2.3 Most relevant affiliations

Table 3 shows the institutional framework of research concerning financial inclusion and economic uncertainty in developing economies from 2002 to 2025. The Indian Institute of Management (IIM System) and the National University of Singapore are identified as the leading institutions (n =13 each). The significant presence of Asian institutions, such as Jiangsu University (n = 11), the Chinese Academy of Sciences (n = 8), and the University of Electronic Science and Technology of China (n = 8), indicates an increasing scholarly emphasis on financial inclusion issues in emerging markets. The World Bank (n = 12) is identified as the most significant non-academic contributor, highlighting the policy implications of this research domain. Western institutions, including Harvard University (n = 8), the University of Manchester (n = 9), and the University of London (n = 8), exhibit ongoing engagement, albeit with lower output relative

to their Asian counterparts. This distribution indicates a geographical shift in research leadership, with institutions from developing economies increasingly central to the discourse on financial inclusion and economic uncertainty.

Table 3: Descriptive analysis: top 10-most relevant affiliations

No.	Affiliations	Articles
1	Indian Institute of Management (IIM System)	13
2	National University of Singapore	13
3	The World Bank	12
4	Jiangsu University	11
5	Royal Melbourne Institute of Technology (RMIT)	9
6	University of Manchester	9
7	Chinese Academy of Sciences	8
8	Harvard University	8
9	University of Electronic Science and Technology of China	8
10	University of London	8

Source: Table by the authors

3.2.4 Most relevant countries based on corresponding author collaboration

Figure 4 provides a comprehensive analysis of the ten most pertinent countries, categorised by the corresponding author's country of origin and the type of research collaboration, differentiating between Single Country Publications (SCP) and Multiple Country Publications (MCP). The data indicates that China significantly leads in publication volume, demonstrating a strong preference for SCP, which suggests a substantial national research capacity and effective internal collaboration. The United States of America (USA) is the nearest follower of China though it has a greater percentage of MCP which suggest its great contribution to international academic cooperation in financial inclusion and economic uncertainty. Notable contributors include the United Kingdom (UK), India and Australia which exhibit a perfect blend of home-based and cross-border partnerships. The presence and participation of developed and developing countries like the USA, China, UK, Australia, Malaysia, Italy, India, Pakistan, Canada and France in this research field confirms the already existing debates and academic interests concerning financial inclusion and its function within the broader financial sector and economic resilience initiatives (Erlando et. al, 2020; Jamil et al., 2023).

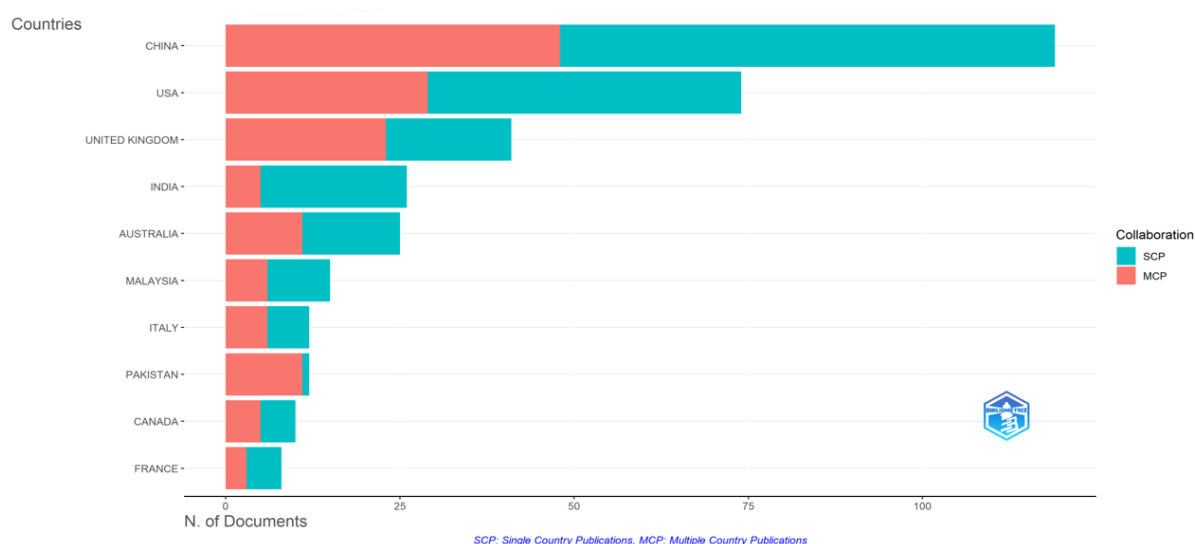


Figure 4. Top 10 corresponding author countries

Source: Figure by authors

3.2.5 Most globally cited articles

The top 10-most globally cited articles are presented in Table 4, with Bhattacharya et al., (2017) as the most cited article (4=542). Ariss (2010) is closely followed, with the highest number of citations (TC= 426). Whose work on the implications of market power in banking, supported by evidence from developing countries, serves as a significant reference in both policy and academic discussions. The prominence of energy-related studies, such as Schandl et al. (2016, TC=401) and Sen & Ganguly (2017, TC=388), indicates significant scholarly interest in the intersection of financial systems and sustainable development, especially in emerging markets where energy access poses a critical challenge for inclusion.

Paramati et al. are referenced twice (2017a, TC=349; 2017b, TC=286), indicating their substantial contribution to the comprehension of the macroeconomic aspects of financial inclusion. Additional significant contributions are noted from Monteiro et al. (2004, TC=304) and Wada et al. (2011, TC=242), both offering insights from multidisciplinary viewpoints. Recent research by Nawaz et al. (2021, TC = 241) indicates an increasing academic interest in the environmental aspects of economic uncertainty. Jin and Deininger (2009, TC =232) contribute to ongoing discussions regarding land rental markets, which are essential for comprehending financial inclusion in rural and emerging economies during the process of rural structural transformation.

Table 4: Descriptive analysis (top 10-most global cited articles)

No.	Paper	Total citations	TC per year
1	Bhattacharya et al., 2017, <i>Renew Energ</i>	542	60.22
2	Ariss, 2010, <i>J Bank Financ</i>	426	26.63
3	Schandl et al., 2016, <i>J Clean Prod</i>	401	40.10
4	Sen & Ganguly, 2017, <i>Renew Sust Energ Rev</i>	388	43.11
5	Paramati et al., 2017a, <i>J Travel Res</i>	349	38.78
6	Monteiro et al., 2004, <i>Int J Obesity</i>	304	13.82
7	Paramati et al., 2017b, <i>Energ Econ</i>	286	31.78
8	Wada et al., 2011, <i>Hydrol Earth Syst Sc</i>	242	16.13
9	Nawaz et al., , 2021, <i>Environ Sci Pollut R</i>	241	48.20
10	Jin & Deininger, 2009, <i>J Comp Econ</i>	232	13.65

Source: Table by the authors

3.3 Science mapping

3.3.1 World cloud analysis

The word cloud in Figure 5 graphically depicts the most common terms found in the corpus of research on financial inclusion and economic uncertainty in developing nations from 2002 to 2025. Prominent phrases like financial development, economic development, financial inclusion, and developing economies capture the fundamental ideas of this field of research. The increase of words like growth, innovation, and investment emphasises how academics remain interested in how the inclusive financial institutions are helping in the more general macroeconomic progress, particularly in the sectors that are economically vulnerable. These findings aligned with the literature of Ugwuanyi et al. (2022) who discussed the revolutionary impact of financial inclusion on economic growth by comparing traditional and digital finance in the context of the Sub-Saharan Africa region. The introduction of terms such as CO₂ emission, renewable energy, China and panel data implies technical complexity and multidimensionality of financial inclusion that requires a collaborative approach. This lexical landscape is the result of researchers trying to balance out between broad economic ideas and context-sensitive analysis of financial inclusion in different emerging countries. The word pattern suggests new interdisciplinary relationships between development economics, sustainability and finance.



Figure 5. Word cloud analysis by all keywords

Source: Figure by authors

3.3.2 Conceptual structure (thematic evolution by all keywords)

Figure 6 provides the conceptual map of the thematic development of literature on the topic of financial inclusion and economic uncertainty by dividing the patterns of keywords into two periods; 2002-2020 and 2021-2025. The themes change evidently in this visualisation, as showed by past research on topics related to such areas as agricultural

productivity, China and city amongst others, but more recent questions related to economic growth, financial stability and growth. Such change in theme shows an improved comprehension of the key role played by both traditional and digital financial services in ensuring economic growth, particularly in Sub-Saharan Africa (Ugwuanyi et al., 2022). Although the traditional financial systems continue to play a significant role, Ugwuanyi et al. (2022) note that digital financial solutions are especially effective when it comes to the low-income groups. The evolution of the themes also reveals the fact that the international policy institutions themselves are starting to value financial stability and inclusiveness more. Nevertheless, policy inefficiencies still persist between inclusive growth and economic stability as noted in existing literature (Damane & Ho, 2024). There are also a few determinants noted in the graphic that affect the coverage and effectiveness of financial inclusion efforts in developing countries, including financial innovation, poverty levels, financial institution performance, macroeconomic conditions, financial literacy, and regulatory systems (Ozili, 2020).

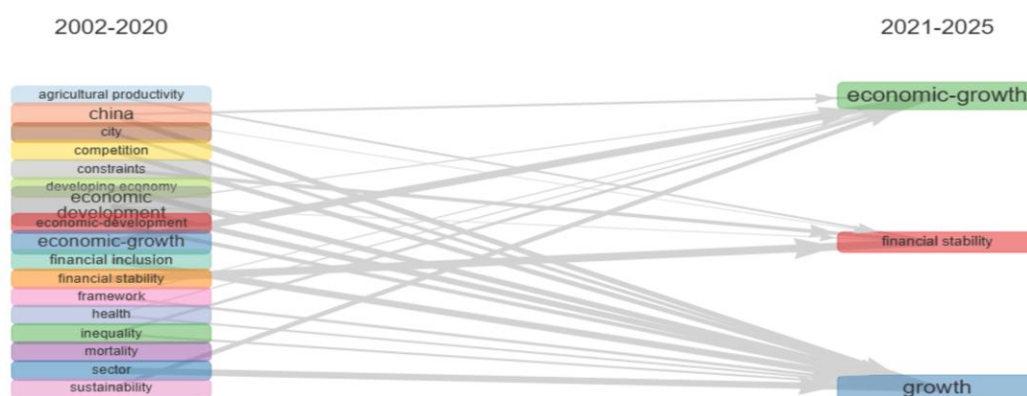


Figure 6. Conceptual structure: thematic evolution by all keywords

Source: Figure by authors

3.3.3 Analysis of intellectual structure (co-citation network by sources)

Figure 7 illustrates the intellectual structure of the co-citation network by sources, as well as connecting the various scholarly contributions in the field of financial inclusion and economic uncertainty in emerging countries between 2002 and 2025. The network is graphically separated into clusters, each of which represents a separate area of research community or Journal subjects focus. The challenge to address financial inclusiveness and stability can be explained by the existence of this subdivision, implying the diversity and multiplicity of research on this topic. These goals often receive distinct priority by the international policymakers, potentially overlooking trade-offs and overlaps between the two which, when not realised comprehensively, may lead to less-than-optimal policy decisions (Damane & Ho, 2024). This close examination of the co-citation network creates awareness of the necessity of a more comprehensive and holistic approach to research and policy-making as well as provides valuable data regarding the intellectual landscape in the context of financial inclusion and economic uncertainty.

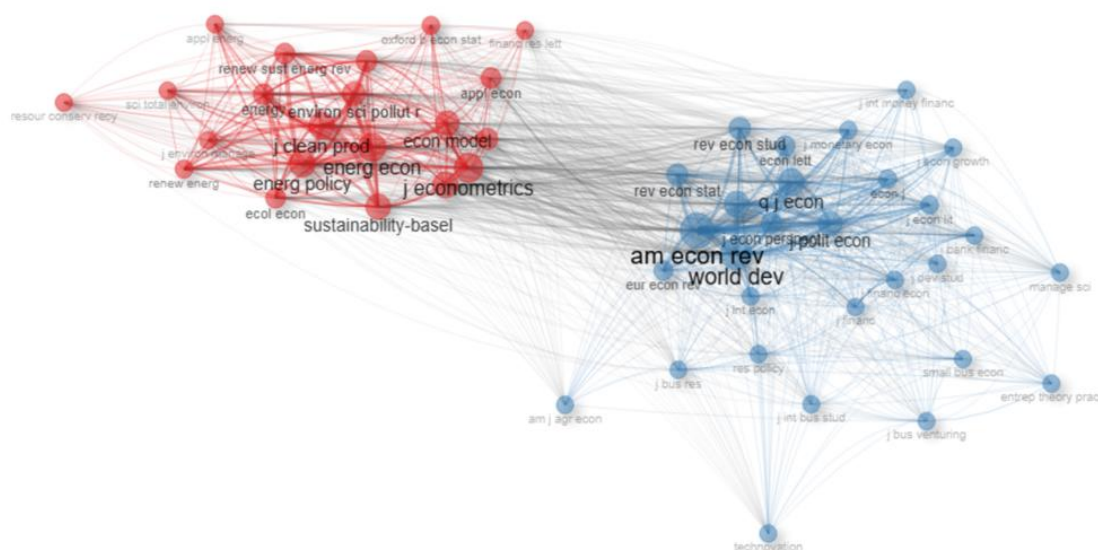


Figure 7. Intellectual structure: co-citation network by sources

Source: Figure by authors

3.3.4 Analysis of social structure (collaboration network by countries)

Figure 8 demonstrates the social composition of collaborative networks by country in the realms of financial inclusion and economic uncertainty in developing economies between 2002 and 2025. The network map shows an interconnectedness of the various countries and the manner in which they collaborate with the United States, China, and the United Kingdom being the key hotspots of activity. It appears that these countries are critical to the research community worldwide since they are the ones that make significant contributions and collaborate extensively. The position of these countries in the network shows that they are leading in addressing the issues related to financial inclusion and stability that are often at the centre stage among the international policymakers. These goals are often, however, addressed individually, and this might lead to the oversights of significant overlaps and trade-offs that unless properly understood may offer less than optimal policy results (Damane & Ho, 2024). Existing research calls for multidimensional approach and context specific initiations with focus on financial innovation, poverty, financial sector stability, economic conditions, financial literacy, and regulatory frameworks (Ozili, 2020). This diagram provides insights into the international efforts and partnerships needed to facilitate financial inclusion and economic uncertainty research and policy in developing economies.

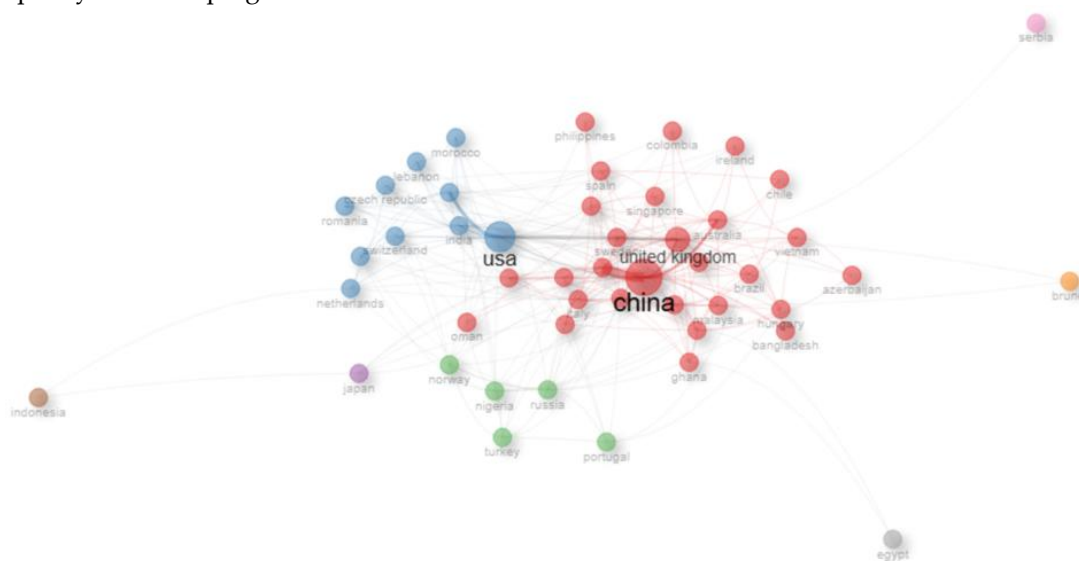


Figure 8. Social structure (collaboration network by countries)

Source: Figure by authors

4. Discussion

This bibliometric study revealed significant and valuable findings of financial inclusion and economic uncertainty in development debates particularly in developing economies. The rise in the annual scientific output starting 2019 to its highest point in 2024, displays that the world is more concerned about the socioeconomic impact of financial exclusion, especially in the face of such a crisis as pandemics and unstable policies (Jamil et al., 2023). This expanding corpus of research indicates a paradigm shift wherein financial inclusion is increasingly regarded as a mechanism to mitigate economic uncertainty rather than only a developmental agenda. The popularisation of such sources such as Sustainability and Resources Policy is an indicator of an interdisciplinary convergence between financial access and sustainable growth and institutional governance (Syed et al., 2024). Although some highly cited works on related themes such as sustainable development, energy were identified during the analysis, they were retained only when they explicitly intersect with financial inclusion and economic uncertainty. The thematic maps and keyword analyses show that financial inclusion research is becoming more interdisciplinary, with topics including energy, carbon emissions, tourism and public health. These themes were not considered as standalone topics; rather, they were included where the literature explicitly examined their relationship with financial inclusion and economic uncertainty, particularly in the context of sustainable development, resilience, and policy responses in developing economies.

Moreover, thematic progression and the use of the word cloud are used to underscores the necessity for a multidimensional and collaborative approach of financial inclusion including financial innovation, financial literacy, and environmental sustainability alongside increasing access (Ugwuanyi et al., 2022). On the same vein, major authors and research institutions, such as Gopalan, S., the Indian Institute of Management, and the National University of Singapore, portray focused knowledge in the analysis of the traditional and digital financial systems, specifically in reducing economic uncertainty. The country-level collaboration maps indicate that China, the United States and the UK

are the focal points with China having excellent national research potential and the USA having a heavy international collaboration. According to science mapping, the research themes have changed, i.e. agricultural productivity and rural development (2002-2020) to financial stability, economic growth, and digital financial solutions (2021-2025). These results show that studies on financial inclusion have risen beyond their initial issues to explore the contemporary concerns of inequality, environmental harm, and digital disruption problems that are quite pertinent in policy making in developing economies.

The change in the themes of research, starting with simple financial access and productive agriculture to digital finance and macroeconomics stability, replicates the increasing understanding that inclusive financial systems need to be tailored to various dimensions of vulnerability in developing economies. First, Collaboration networks show that countries that have strong national capacities like China are generating high volumes of research within their national borders and countries such as the United States, the United Kingdom, and Australia are making a significant contribution to research through cross-border collaborations, which implies that national policies and international cooperation are both influencing research outputs. In addition to this, the prevalence of the SCP in China as compared to the MCP method used in the USA and UK speaks of two different strategic intuition one is the one that deals with deep, country-specific national capacity whereas the other one aims at the harmonisation of international standards of financial governance. This implies that though the sector has converging objectives like the realization of the SDGs, the means of these objectives are varied. Second, the transformations in the centre of focus of research and the dynamic of collaboration networks. To start with, theoretical fragmentation was prevalent in the field, where financial inclusion has tended to be a by-product of economic growth. Nevertheless, the data indicate that inclusive finance has taken conceptual convergence with the current understanding that inclusive finance has become more of a proactive buffer to macroeconomic volatility. The theoretical fragmentation can be traced in the range of research clusters, i.e., digital financial systems and FinTech versus environmental sustainability and institutional performance, and the range of perspectives that scholars have towards financial inclusion. Third, the increase in citations in 2017 and 2021 implies that the research is becoming more of an event-driven phenomenon, which reacts to policy changes that value resilience. The trends that have been observed indicate financial inclusion research is not only increasing in volume, but also diversifying in the scope and geographical focus. The ongoing citation lag of the recent years is not a sign of a lack of interest but more a time in the intellectual incubation as scholars contemplate the numerous trade-offs that exist between the rapidity of digital growth and financial viability.

Our results are closely in line with the bibliometric trends that are perceived in recent seminal publications, especially with the transformative role of technology. In line with Galvez-Sanchez et al. (2021), our findings affirm a growing international concern with regards to Fintech as the main means of financial inclusion, particularly in the context of the 2030 Agenda. Likewise, our data confirms the geographical and thematic findings of Suryavanshi et al. (2026) who ranked India and the USA as the leading countries in the sphere and uncovered that digitalisation and financial literacy are the most visible clusters of research. Our analysis of the concentration of authorship and institutional leadership in Asia replicates the “prolific contributor” trends observed by Del Sarto and Ozili (2025), which once again supports the fact that emerging markets are now the focal point of financial inclusion research namely China and India. Such alignments indicate that there is a consensus across the world on the key drivers of inclusive growth in the digital era.

Notably, the results of this study are consistent with a growing body of literature emphasising the revolutionary potential of financial inclusion in lowering poverty and boosting economic engagement, particularly when bolstered by digital technologies. For example, the conclusion that both traditional and digital financial services contribute to growth in Sub-Saharan Africa is empirically supported by Ugwuanyi et al. (2022), a pattern that is reflected in our study’s thematic shift towards digitalisation. Our analysis of institutional affiliations and co-authorship patterns supports Syed et al.’s (2024) finding that good governance reduces the negative effects of economic uncertainty on inclusion. This finding highlights the importance of strong governance structures in promoting financial reform. The significant representation of authors and organisations from Asia and Africa supports the views of Mbodj and Laye (2025), who contend that maximising the advantages of financial inclusion requires focused, regionally relevant policy. The worldwide significance of financial inclusion as a development tool is further supported by these convergences, which show that academic and institutional efforts are increasingly coming together on common themes such as sustainability, access equity, and resilience.

Although this work confirms numerous trends in the earlier body of bibliometric research, it also outlines some clear deviations that offer new insights. Contrary to Galvez-Sanchez et al. (2021), who chiefly concentrated on the overall development of financial inclusion research, our research highlights the interaction of financial inclusion and economic uncertainty, especially in the context of global shocks and policy disruptions. We take the analysis a step further, adding cross-sectoral and interdisciplinary insights to the analysis that is, combining environmental, technological, and

macroeconomic factors, in comparison to Del Sarto and Ozili (2025) who focused on the role of FinTech in new markets. Unlike Suryavanshi et al. (2026), which have analysed thematic clusters between 2004 and 2022, our research is current up to mid-2025, reflecting the acceleration of research since 2019 and offers a more updated mapping of the collaboration networks, intellectual structure, and concept evolution. In addition, our analysis incorporates an in-depth examination of collaboration networks at the country level, which shows subtle functions of SCP-dominated and MCP-dominated research products, which the previous research considered partially. Such a method provides a better insight into the influence of national capacities and international relations in the generation of knowledge, and the new trends in interdisciplinary inquiry. All these differences suggest that our work is not only updating but also adding to the prior bibliometric research on the topic, giving a deeper conceptual understanding of how the research on financial inclusion cuts across economic uncertainty, as well as providing future research and policy advice in developing economies.

While most studies conceptualise financial inclusion as a uniformly positive force, our findings suggest that the relationship is more nuanced. For instance, Erlando et al. (2020) point out that while financial access fosters economic growth and lowers poverty, it can also increase income inequality. This dynamic is reflected in our observation of growing research interest but conflicting theoretical interpretations. Additionally, Le Quoc (2025) demonstrates that, ironically, interactions between economic complexity and digital financial inclusion might exacerbate inequality a subtlety that was not generally recognised in previous models. Similarly, our bibliometric analysis's conceptual framework demonstrates disjointed theoretical foundations and contradictory empirical findings with some studies show benefits for stability, while others highlights possible risks (Damane & Ho, 2024). The varied perspective suggest the lack of cohesive theoretical framework in existing literature resulting to different interpretations by academics and policy makers across different contexts. By highlighting this significant concerns for policy and academics, we contribute to this topic and suggest a more holistic, collaborative and context specific approaches in future research and practice.

5. Conclusion and implications

5.1 Summary of findings

Our analysis offers a detailed bibliometric mapping of the research horizon on the topic of financial inclusion and economic uncertainty in developing economies between 2002-2025. Through a comprehensive synthesis of more than twenty years of research, we have shown that the field has moved beyond being an economic niche sub-topic to a solid, multi-disciplinary field which has become central to global development discourse. A key contribution of this study is the identification of a volatility response dynamic; demonstrating that research output does not grow continuously but responds directly to major global economic and policy shocks. Compared to the previous studies that were investigating the technical processes within Fintech, the current analysis offers a novel insight into the fact that institutional quality and environmental sustainability have turned into the inseparable principles of the financial inclusion discourse. The findings reveal an Asia-led shift in knowledge production, particularly driven by emerging economies, highlighting their growing influence on the future direction of financial governance research and policy. Although the emergence of digital finance provides a natural path towards the Sustainable Development Goals, our analysis highlights a very important dilemma between fast inclusion and system stability. Our results also provide evidence of a transition towards a resilience-centric view on financial inclusion, in which financial systems are not only measured by access and accounts ownership but by the capacity to protect vulnerable people in times of economic, environmental and institutional uncertainty. In the end, this research can be used as a guiding framework of future scholars and practitioners as it provides a clear conceptual trade-off between the quantitative expansion of financial networks and the qualitative target of sustainable economic security.

5.2 Policy implications

For developing economies, the study's conclusions have important policy ramifications. First, policy makers ought to create specific regulatory principles that apply to the digital financial systems to reduce systemic risks such as fraud, cyber threats and system failures. These frameworks can make innovations in FinTech and mobile banking inclusive and safe by prioritising high-risk areas discovered in the literature. Secondly, the national financial authorities are encouraged to consider monitoring and evaluation systems that constantly measure the effectiveness of the financial inclusion efforts on economic equilibrium. By enacting tiered access controls, real-time fraud detection, and risk-based oversight, financial services can serve underserved populations without undermining systemic integrity. Thirdly, Governments can improve the relevance and strength of inclusive financial systems by basing their policies on empirical evidence of technological uptake and risk exposure so that digital financial tools can act as a dependable tool of economic growth. Finally, in order to ensure that policies are based on contextual insights and local knowledge, governments should promote and encourage research leadership from institutions in emerging economies.

6. Limitations and suggestions for future studies

6.1 Limitations of the study

The different limitations of this study should be realised. To start with, the research is based on bibliometric information, which may not be entirely reflective of the breadth and extent of the scholarly debate on financial inclusion and economic uncertainty. Second, the research study only considers the period 2002 to 2025, which would limit the generalisability of its findings to other periods. This may also affect citation delays for newly published articles. In addition, since data collection was accomplished in 2025, publications issued in that year may not be indexed at the time of retrieval. Therefore, the volumes and citations for 2025 should be interpreted cautiously, as they may not reflect scholarly output for that year 2025. Third, Web of Science Core Collection use may exclude important contributions of other sources and create biases therefore the study is limited by the Web of Science database's specific coverage and may not include works indexed after that date. Lastly, the quantitative emphasis of the study may lead to loss of the qualitative aspects of economic uncertainty and financial inclusion which is needed to achieve a comprehensive understanding of the topic.

6.2 Future research directions

In order to elaborate on the findings of this paper, future studies are to focus on some key areas. First, the paper recommends the need to employ more empirical data that looks at financial inclusion and economic uncertainty in the individual developing nations to give context specific policy guidance. Second, researchers should seek to know how digital financial systems will affect economic resilience and financial inclusion in emerging countries over time. Thirdly, future studies should examine the distinct opportunities and challenges that other countries and regions are facing with a special focus on the utility of contextual knowledge. Finally, future research should concentrate on how interdisciplinary collaboration can enhance the effectiveness of policy in financial inclusion by considering diverse viewpoints.

Declarations

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Ethical approval

Not applicable.

Authors' contributions

Fred Konneh Songa Monson: Introduction, Methodology, Data analysis, Discussion, Conclusions and implications, Reviewing and Proof reading. **Mohamed Sao Kawa:** Introduction, Discussion, Reviewing, Proof reading. **Michael Nicol Samai:** Reviewing, Editing Discussion and Proof reading. **Sallieu Koroma:** Methodology, Data analysis, Discussion, Reviewing and Proof reading Conclusion and implications. All authors have read and approved the final version of the manuscript.

Acknowledgment

The authors express deep appreciation to all reviewers for their invaluable comments.

Consent to publish

All the authors have consented to publish the article.

Consent to participate

Not applicable.

Competing interest

The authors declare that they have no conflict of interest.

Data availability

Data is available upon reasonable request to the corresponding author.

References

- Antwi, F., Kong, Y., & Gyimah, K. N. (2024). Financial inclusion, competition and financial stability: New evidence from developing economies. *Heliyon*, 10(13), e33723. <https://doi.org/10.1016/j.heliyon.2024.e33723>
- Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>

- Ariss, R. T. (2010). On the implications of market power in banking: Evidence from developing countries. *Journal of Banking & Finance*, 34(4), 765-775. <https://doi.org/10.1016/j.jbankfin.2009.09.004>
- Atkinson, L. Z., & Cipriani, A. (2018). How to carry out a literature search for a systematic review: a practical guide. *BJPsych Advances*, 24(2), 74-82. <https://doi.org/10.1192/bja.2017.3>
- Bhattacharya, M., Churchill, S. A., & Paramati, S. R. (2017). The dynamic impact of renewable energy and institutions on economic output and CO₂ emissions across regions. *Renewable Energy*, 111, 157-167. <https://doi.org/10.1016/j.renene.2017.03.102>
- Chandran MC, S., & Chandran, R. (2026). Evolution and impact of green finance: A comprehensive bibliometric analysis. *Sustainable Futures*, 11, 101623. <https://doi.org/10.1016/j.sfsr.2025.101623>
- Damane, M., & Ho, S. Y. (2024). The Impact of financial Inclusion on financial Stability: review of Theories and international Evidence. *Development Studies Research*, 11(1), 2373459. <https://doi.org/10.1080/21665095.2024.2373459>
- Del Sarto, N., & Ozili, P. K. (2025). FinTech and financial inclusion in emerging markets: a bibliometric analysis and future research agenda. *International Journal of Emerging Markets*, 20(13), 270-290. <https://doi.org/10.1108/IJOEM-08-2024-1428>
- Erlando, A., Riyanto, F. D., & Masakazu, S. (2020). Financial inclusion, economic growth, and poverty alleviation: evidence from eastern Indonesia. *Heliyon*, 6(10). e05235. <https://doi.org/10.1016/j.heliyon.2020.e05235>
- Esely, N., & Taonezvi, L. (2024). The nexus among digital financial inclusion, monetary policy transmission, and economic development in Sub-Saharan Africa. *Journal of International Economics and Management*, 24(2), 1-23. <https://doi.org/10.38203/jiem.024.2.0083>
- Gálvez-Sánchez, F. J., Lara-Rubio, J., Verdú-Jóver, A. J., & Meseguer-Sánchez, V. (2021). Research Advances on Financial Inclusion: A Bibliometric Analysis. *Sustainability*, 13(6), 3156. <https://doi.org/10.3390/su13063156>
- Haddaway, N. R., Page, M. J., Pritchard, C. C., & McGuinness, L. A. (2022). PRISMA2020: An R package and Shiny app for producing PRISMA 2020-compliant flow diagrams, with interactivity for optimised digital transparency and Open Synthesis. *Campbell Systematic Reviews*, 18(2), e1230. <https://doi.org/10.1002/cl2.1230>
- Jamil, A. R. M., Law, S. H., Mohamad Khair-Afham, M. S., & Trinugroho, I. (2023). Financial inclusion and economic uncertainty in developing countries: The role of digitalisation. *Economic Analysis and Policy*, 79, 786–806. <https://doi.org/10.1016/j.eap.2023.06.039>
- Jejenywa, T. O., Mhlongo, N. Z., & Jejenywa, T. O. (2024). AI solutions for developmental economics: opportunities and challenges in financial inclusion and poverty alleviation. *International Journal of Advanced Economics*, 6(4), 108-123. <https://doi.org/10.51594/ijae.v6i4.1073>
- Jin, S., & Deininger, K. (2009). Land rental markets in the process of rural structural transformation: Productivity and equity impacts from China. *Journal of Comparative Economics*, 37(4), 629-646. <https://doi.org/10.1016/j.jce.2009.04.005>
- Le Quoc, D. (2025). The impact of digital financial inclusion on income inequality amid economic complexity: a GMM and Bayesian regression approach. *Social Responsibility Journal*, 21(7), 1383-1400. <https://doi.org/10.1108/SRJ-10-2024-0727>
- Mbodj, A. ., & Laye, S. . (2025). Reducing Poverty Through Financial Growth: The Impact of Financial Inclusion and Development in Emerging Economies. *Journal of Business and Economic Options*, 8(1), 61-76. <https://doi.org/10.5281/zenodo.17371439>
- Monteiro, C. A., Conde, W. L., Lu, B., & Popkin, B. M. (2004). Obesity and inequities in health in the developing world. *International Journal of Obesity*, 28, 1181-1186. <https://doi.org/10.1038/sj.ijo.0802716>
- Nawaz, M. A., Seshadri, U., Kumar, P., & others. (2021). Nexus between green finance and climate change mitigation in N-11 and BRICS countries: Empirical estimation through difference in differences (DID) approach. *Environmental Science and Pollution Research*, 28, 6504-6519. <https://doi.org/10.1007/s11356-020-10920-y>
- Nezameslami, R., Nezameslami, A., Mehdikhani, B., Mosavi-Jarrahi, A., Shahbazi, A., Rahmani, A., ... & Neamatzadeh, H. (2025). Adapting PRISMA Guidelines to enhance reporting quality in genetic association studies: A framework proposal. *Asian Pacific Journal of Cancer Prevention: APJCP*, 26(5), 1641. <https://doi.org/10.31557/APJCP.2025.26.5.1641>
- Oyewole, O. J., Al-Faryan, M. A. S., Adekoya, O. B., & Oliyide, J. A. (2024). Energy efficiency, financial inclusion, and socio-economic outcomes: Evidence across advanced, emerging, and developing countries. *Energy*, 289, 130062. <https://doi.org/10.1016/j.energy.2023.130062>
- Ozili, P. K. (2020). Financial inclusion research around the world: A review. *Forum for Social Economics*, 50(4), 457-479. <https://doi.org/10.1080/07360932.2020.1715238>

- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *The BMJ*, 372, 1–9. <https://doi.org/10.1136/bmj.n71>
- Paramati, S. R., Alam, M. S., & Chen, C. F. (2017a). The effects of tourism on economic growth and CO₂ emissions: a comparison between developed and developing economies. *Journal of Travel Research*, 56(6), 712-724. <https://doi.org/10.1177/0047287516667848>
- Paramati, S. R., Mo, D., & Gupta, R. (2017b). The effects of stock market growth and renewable energy use on CO₂ emissions: Evidence from G20 countries. *Energy Economics*, 66, 360-371. <https://doi.org/10.1016/j.eneco.2017.06.025>
- Passas, I. (2024). Bibliometric analysis: the main steps, *Encyclopedia*, 4, 1014-1025; <https://doi.org/10.3390/encyclopedia4020065>
- Schandl, H., Hatfield-Dodds, S., Wiedmann, T., Geschke, A., Cai, Y., West, J., Newth, D., Baynes, T., Lenzen, M., & Owen, A. (2016). Decoupling global environmental pressure and economic growth: Scenarios for energy use, materials use and carbon emissions. *Journal of Cleaner Production*, 132, 45-56. <https://doi.org/10.1016/j.jclepro.2015.06.100>
- Sen, S., & Ganguly, S. (2017). Opportunities, barriers and issues with renewable energy development-A discussion. *Renewable and Sustainable Energy Reviews*, 69, 1170-1181, <https://doi.org/10.1016/j.rser.2016.09.137>
- Suryavanshi, U., Chaudhry, R., Arora, M., & Mittal, A. (2026). Mapping the evolution of financial inclusion: a retrospective overview using bibliometric analysis. *Global Knowledge, Memory and Communication*, 75(1-2), 818-841. <https://doi.org/10.1108/GKMC-11-2023-0452>
- Syed, A. A., Ullah, A., & Kamal, M. A. (2024). Does economic policy uncertainty impede financial inclusion in BRICS economies? The mediating role of quality of governance. *Economic Change and Restructuring*, 57, 11. <https://doi.org/10.1007/s10644-024-09596-y>
- Ugwuanyi, U., Ugwuoke, R., Onyeanu, E., Festus Eze, E., Isahaku Prince, A., Anago, J., & Ibe, G. I. (2022). Financial inclusion - economic growth nexus: traditional finance versus digital finance in Sub-Saharan Africa. *Cogent Economics & Finance*, 10(1), 2133356. <https://doi.org/10.1080/23322039.2022.2133356>
- Wada, Y., van Beek, L. P., & Bierkens, M. F. (2011). Modelling global water stress of the recent past: on the relative importance of trends in water demand and climate variability. *Hydrology and Earth System Sciences*, 15(12), 3785-3808. <https://doi.org/10.5194/hess-15-3785-2011>