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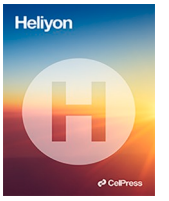

Review article

Examining the influence of financial inclusion on investment decision: A bibliometric review

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ABSTRACT

This study delves into the contemporary landscape of potential financial inclusion in investment decision-making, leveraging bibliometric research methods. Analyzing 161 publications from the Scopus database (2006–2023), the authors employ performance analysis and scientific mapping tools, including VOSviewer and Biblioshiny R studio. Through co-citation analysis, bibliographic coupling, co-occurrence of keywords analysis, thematic mapping, and thematic evolution analysis, the study uncovers the essential characteristics of the research field. The Result underscores that Innovative financial technologies are positioned as enablers of financial inclusion, with fintech's potential to drive positive social impact. The findings underscore that fostering financial literacy, addressing challenges in fintech adoption, and supporting entrepreneurship are crucial for maximizing the benefits of financial technologies. Overall, the study advocates for a comprehensive approach that combines financial inclusion, individual attitudes, and expertise, and fintech innovation to enhance access to financial services and expand investment opportunities for a more inclusive and prosperous economic landscape. However, the study acknowledges limitations, such as reliance on a single database and exclusion of specific keywords, urging a more inclusive approach to ensure a comprehensive understanding of relevant literature in this dynamic field.

1. Introduction

The idea of financial inclusion encompasses various dimensions and differs in its application from one region or country to another. Financial inclusion has evolved over time, and there have been advancements in research, policies, and practices related to this field [1,2]. The initiatives have been implemented globally, and it is important to assess their effectiveness and impact. Existing knowledge can inform policymakers about the most effective strategies and policies to promote financial inclusion, leading to evidence-based decision-making. The goal of financial inclusion is to enable disadvantaged populations, who have historically been excluded from using financial services and products, to have affordable access to them [3].

Previous studies have explored the topic of financial inclusion from different perspectives using bibliometric analysis. For instance, Mushtaq et al. [2], it has been noted that the literature on women's financial inclusion (WFI) is disjointed and lacking in a thorough analysis that would effectively consolidate the field's intellectual framework. Losada et al. [1], emphasized the significance of financial inclusion in social development, highlighting its potential for poverty reduction, bridging income gaps, facilitate better financial

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choices, encourage saving and profitable investing, and advance gender equality. Adel et al. [4], focused on the advances in financial inclusion research, employing bibliometric analysis to identify the main lines of investigation in the field. Liu et al. [5], examined how information and communication technologies (ICTs) can help microfinance institutions operate more effectively and sustainably. Khongwir & Sharmiladevi [6], provided insights into current research trends by conducting a bibliometric analysis on financial inclusion and financial literacy.

Although previous studies have offered comprehensive overviews of financial inclusion, research specifically focusing on financial inclusion's impact on investment decisions is relatively limited. Unlike previous bibliometric analyses, our study goes beyond providing statistical data by presenting the entire knowledge structure and development using performance analysis, science mapping, and thematic maps. This paper examines current research trends and suggests future research topics for academics and practitioners in the possible impact of financial inclusion on investment decisions.

By updating and extending their findings while drawing methodological inspiration from earlier research [1,4–6]. The primary objective of this study is to present a comprehensive overview of existing scholarly works by conducting an extensive bibliometric analysis focused on the potential influence of Financial Inclusion on investment decisions. Based on a sample of 161 publications pulled from Scopus between 2006 and 2023, the analysis was conducted. To accomplish this, two bibliometric software tools, namely Biblioshiny and VOSviewer, were utilized. The objective of this study is to fill the knowledge gap and provide insightful information by answering a number of significant research questions that clarify current patterns and give guidance for future investigations [7]. To advance these objectives, several research questions have been identified that will be addressed in this study, including the following:

- **RQ1**: Using performance analysis, what are the influential aspects of financial inclusion on investment decision literature in the field?
- **RQ2**: Using mapping and network analysis, what are the primary research trends of financial inclusion on investment decision literature in the field?
- **RQ3**: What comprehensive lessons can be learned from past literature to help us prepare for the future, and what goals can be established through a bibliometrics analysis of financial inclusion on investment decision?

The research on the effects of financial inclusion on investment decisions has benefited greatly from the study's several significant contributions. It does a thorough examination of the body of literature, considering trends in publication and citation, significant authors and institutions, and highly cited works on this topic spanning between 2006 and 2023. To pinpoint developing research trends and potentially game-changing developments, the study also makes use of scientific mapping methodologies. It also offers recommendations for future research priorities in this area. In addition, for academics and practitioners researching the potential effects of financial inclusion on investment decisions, this study improves comprehension and offers insightful information, visual representations, and future research options.

The organization of this paper's structure is as follows: A thorough analysis of the research technique used in this study is given in Section 2. This includes a full examination of the database that was used, the search methodology that was put in place, and a detailed explanation of the bibliometric techniques used, including the usage of the PRISMA Checklist. Section 3 follows with a thorough explanation of the findings from the bibliometric analysis. In-depth performance analysis, a look at science mapping, the identification of popular study areas, and helpful pointers for future research orientations are all included in this. The discussion in Section 4 centers on current research directions in investment decision. In Section 5, a research agenda for anticipated future advancements in financial inclusion and its connection to investment decision is described. The study's conclusion and limitations are highlighted in Section 6, which also provides significant closing remarks that highlight the most important learnings and consequences.

2. Materials and methods

To achieve this goal and in accordance with current research trends [8,9], bibliometric mapping was chosen as the research method

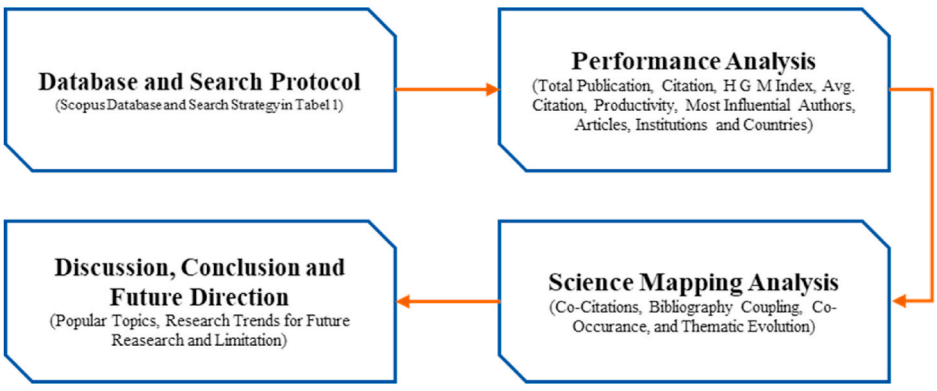

Fig. 1. Research framework. Source: Author elaboration.

because it is well-regarded for its ability to review and condense large amounts of data, and it can be analyzed through quantitative approaches [8,10,11]. Using this technique, researchers can determine the intellectual framework of a certain field of study and learn about the growing trend of collaborative networks [8,12,13].

The research framework shown in Fig. 1 serves as the foundation for the bibliometric analysis adapted from standard workflow consists of five stages [10] and analysis from Ref. [8]:

2.1. Database and search protocol

To create an overview of the knowledge landscape within the potential financial inclusion on Investment decisions, we gathered data from Scopus, a highly comprehensive repository of scholarly publications. Scopus is a well-regarded and extensive database that encompasses various social disciplines, including the fields of business, finance, and accounting [14,15]. To ensure a systematic and rigorous approach, we conducted a database search in line with one of the widely recognized protocols for systematic reviews. Therefore, the updated PRISMA procedure as revised was used to gather data for the bibliometric analysis by Page et al. [16], known as PRISMA 2020. As noted by Ref. [17], one advantage of the PRISMA procedure is its comprehensive checklist, which aids academics and researchers in raising the standard of their bibliometric analyses. Fig. 2 illustrates the sequential data collection steps for the bibliometric analysis, as depicted in the PRISMA flowchart.

Following the initial stage of the PRISMA protocol, the data curation process involved identifying relevant keywords. Like previous researchers, the earlier studies conducted on financial inclusion have paved the way for further exploration and analysis in this area. In this piece, we make a distinction between three fundamental tactics that researchers can employ singly or in combination [18,19].

A preliminary simulation was carried out to find appropriate keywords so that all pertinent studies on the possible influence of

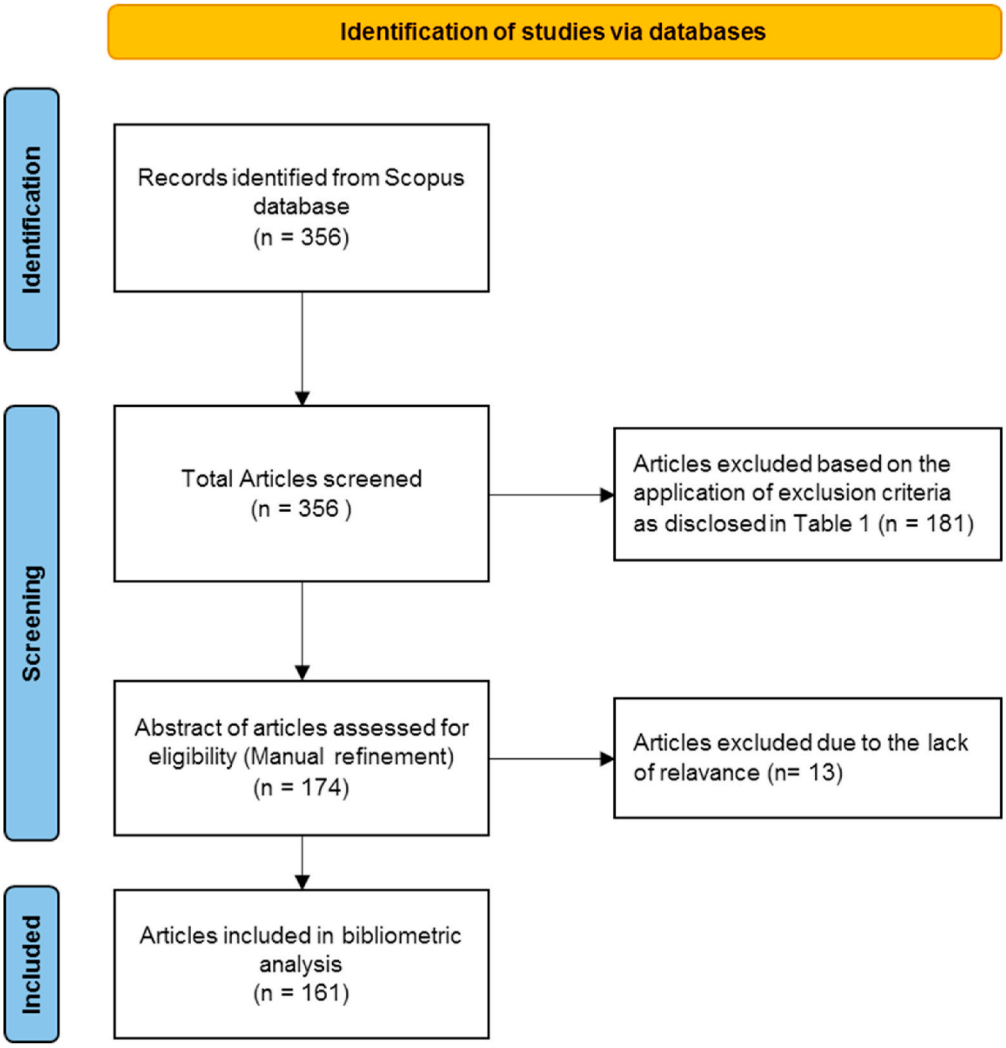

Fig. 2. RISMA flowchart. Source: Author-created work that was modified from Ref. [16].

financial inclusion on investment decision would be fully covered. Additionally, previous scientometric and bibliometric research conducted by various researchers in this field, such as [1,4,20], guided the selection of keywords. These researchers proposed keywords such as "financial inclusi*", microfinance, microcredit. To ensure a comprehensive exploration of the topic, additional keywords such as "Inclusi* Financ*", were incorporated into the study. These keywords were combined with a set of investment-related keywords, including "Investment Behavi*", "investment intention", "Investment decision*", "Investment Choice*", "Individual Investment*", "Personal investment*", "Financial investment*", "intention to invest", "investor* intention", "investor* decision", and "investor* behavio*". To ensure that this search is thorough, these chosen keywords must appear in the article titles, abstracts, or keywords.

When the first search criterion was used, the Scopus database turned up 356 documents that had been published up through March 10th, 2023. Several exclusion criteria were subsequently used. Due to this online selection, the sample solely consisted of English-language articles and reviews from the Scopus Database's categories of Business, Management and Accounting, Economics, Econometrics and Finance, and Social Sciences. We first examined abstracts to discover peer-reviewed literature directly linked to the study's goal. The study uses important keywords to precisely identify a vast research domain and its relationships.

In this step, the criteria followed for article selection involved concealing the identity of the articles, including journal names and authors' names, based on the suggestion from Ref. [21]. This was done to prevent subjective biases during the manual refinement process. The following criteria were used to determine which studies should be included: (1) Relevance to Financial Inclusion and Investment Decision; and (2) Studies that addressed the impact that Financial Inclusion might have on Investment Decision in fields such as business, economics, banking, stock market, technology, finance, and others. The exclusion criteria, however, included the following: (1) Studies that did not offer significant insights into financial inclusion and investment decision-making (see Table 1).

Hence, all the collected articles span the period from 2006 to 2023, indicating a relatively recent timeframe. The chosen articles were exported in plain text and comma-separated values (CSV) file formats after the search was complete to aid in the bibliometric analysis. Two key issues were noted in the first article in the final sample, which was published in the Portuguese Economic Journal in 2006 [22]. These issues were high unemployment and a growing percentage of the population living in poverty. They suggest that the growth of microenterprises, particularly in developing nations where microenterprises play a key role in employment, can successfully address these difficulties.

2.2. Bibliometrics analysis

The appeal of the bibliometric field has grown recently in business and economic study [8,14,15,23,24]. Biblioshiny and VOSviewer were used in this study data analysis to spot important patterns and trends in the possible effects of financial inclusion on investment decisions. This analysis involved the construction of a matrix that contained and classified all the papers for further analysis [10,25]. The data was then visualized using the VOSviewer program to provide visual representations, such as a subject dendrogram and a conceptual map, to help understand the links and interactions between various research streams [26]. By using these data analysis tools, the researcher was able to spot gaps in the literature and offer insightful information about the field's level of research at the time.

Performance analysis and science mapping are two categories under which bibliometric analysis techniques are used [8,10]. Science mapping looks at the connections between various components, whereas performance analysis concentrates on evaluating research components. According to the aims, scope, and research questions of the study, this article advises using a variety of approaches. Combining co-citation analysis for the past, bibliographic coupling for the present, co-word, and thematic analysis to discover relevant terms in potential future study lines can be used to examine the history, present, and future of a research domain [8,

Table 1
Search Strategy. Source: author elaboration.

Category	Criteria	No. of refined articles
Search String	TITLE-ABS-KEY "Financial Inclusi*" OR "Inclusi* Financ*" OR Microfinance OR Microcredit AND "Investment decision*" OR "Investment Choice*" OR "Financial investment*"	356
Access	Including both Open Access and others.	
Period	up till articles in 2022. A few articles for 2023 have already been published.	(1)
Subject Area	Business, Management and Accounting (130), Economics, Econometrics and Finance (193), and Social Sciences (120). Scopus subject area such as Engineering, Psychology, Computer Sciences, Environmental Science, Arts and Humanities, Medical, and others were excluded.	(136)
Document Type	The search was limited to document type articles (192). Therefore, documents such as Book Chapter (12), Book (6), Review (7), Conference Paper (1) and others were excluded	(26)
Source Type	Journal (190), and Book Series (2) were excluded	(2)
Language	The 186 articles that were published in languages other English were all excluded.	(4)
Publication Stage	Only final stage articles (174) were included, Article in Press (12) were excluded.	(12)
Manual refinement	The titles and abstracts of 174 publications were examined based on a manual refinement, and thirteen (13) irrelevant materials were eliminated.	(13)
Number of articles that will eventually remain after manual refinement		161

Abbreviations: Results of initial bibliometric analysis of the extensive scientific field.

27]. This method makes it possible to identify the structural and dynamic structure of knowledge within the subject or field of study under investigation [28]. The indicators encompassed within science mapping techniques are as follows [8,27,29].

Combining all the method, including network metrics, with the aforementioned techniques is essential for accurately the conceptual framework of the research subject under consideration [8,27,29–31]. In particular, network analysis significantly improves the conversation about research trends within particular study disciplines or topics.

3. Results and discussion

3.1. Performance bibliometrics analysis

This research centers on examining the performance of primary sources, journals, authors, institutions/affiliations, and countries in the domain of Financial Inclusion, as well as their connections with Investment Decision, to identify their essentiality (RQ1). To simplify the examination, this research restricted to journal articles and English-written articles. The adoption of a single language in the investigation is advantageous since it enables more efficient bibliometric analysis, which involves comparing keywords, article sources, and affiliations. The primary data are presented in Table 2 together with the average number of citations per year and a clearly exponential trend is evident.

Table 2 provides comprehensive insights into the sources, documents, and authors involved in the research conducted from 2006 to 2023, sourced from Biblioshiny/Scopus. Analyzing 161 articles from 109 sources, the study exhibited an impressive annual growth rate of 18.14 %. The fact that the growth rate is expressed as a percentage suggests that the research output is experiencing substantial growth from year to year. The articles had an average age of 3.98, and each document garnered an average of 15.33 citations, indicating a high level of relevance and significance. Identifying 392 authors and 510 author's keywords, the study showcased collaborative efforts, with only 34 single-authored documents. The research incorporated a wide range of sources, as reflected in the substantial 9543 references. Notably, Fig. 3 illustrates the evolution of the annual number of articles and the average number of citations, revealing a discernible exponential pattern. This trend signifies a consistent and substantial increase in both the production and impact of research over the specified timespan.

Fig. 3 captures the dynamic shifts in research output across the years. The initial years, 2006 and 2008, saw only one article published annually, while 2007 and 2009 had no publications. However, from 2010 onwards, there was a consistent upward trajectory, reaching its peak in 2022 with an impressive forty-one publications. This substantial increase indicates a growing interest and active involvement in academic research. The mean total citations per article varied over the years, with peaks such as 81 citations per article in 2010 and 51 citations per article in 2015, demonstrating the significant recognition and impact of research during these periods. The total number of articles analyzed each year is likely increasing significantly, contributing to the overall growth rate. Exponential trends often result in a rapid increase in the quantity of a measured variable over time. However, recent years have seen a decline in the mean total citations per article, adding an intriguing dimension to the overall trend.

3.1.1. Publication and citation aspects

The journals with the most publications and citations are listed in an initial overview. Figs. 4 and 5 show the ten journals with the most articles published in the collection, the ten journals with the most often cited sources, and Fig. 6 shows Bradford's Law, which describes the influence of the source of possible financial inclusion on investment decision.

The analysis of article distribution in prominent economics journals provides insights into the research focus and productivity of these journals. Journals with higher article counts indicate a higher volume of research output and likely cover a wider range of topics. They serve as platforms for researchers to disseminate their findings and engage in academic discussions. The Journal of Development Economics, as the leading journal in terms of article count, reflects its position as a highly influential publication in the field. Its focus on development economics attracts significant scholarly attention and contributes to the advancement of knowledge in this area. The distribution of articles across journals also sheds light on the diversity of research topics within economics. Journals with specialized focuses, such as Qualitative Research in Financial Markets or the Journal of Economic Behavior and Organization, cater to specific research areas, fostering in-depth exploration and analysis.

The Journal of Development Economics emerges as the most cited journal, with an impressive 143 citations. This highlights its

Table 2
Main information. Source: Bibliohiny/scopus.

Description	Results
Timespan	2006:2023
Authors	392
Sources	109
Articles	161
Growth Rate	18.14 %
Articles Average Age	3.98
Average citations per doc	15.33
References	9543
Keywords by the author	510
Single-authored docs	34

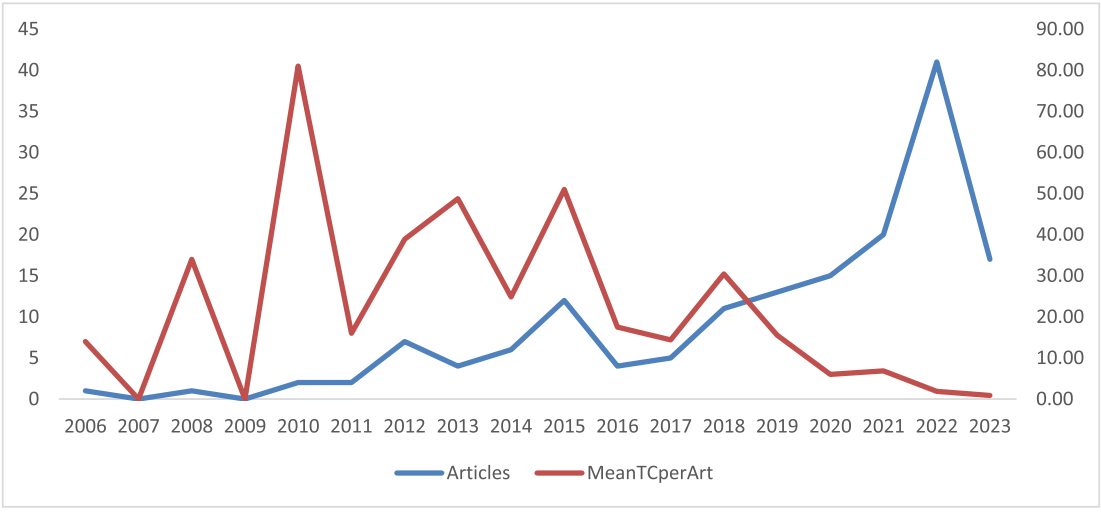

Fig. 3. Annual number of articles. Source: Bibliohiny/Scopus.

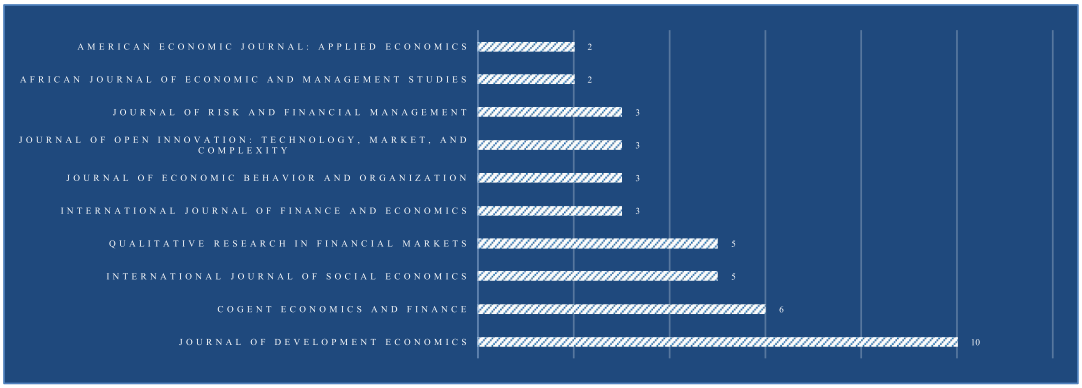

Fig. 4. The most relevant sources. Source: Bibliohiny/scopus.

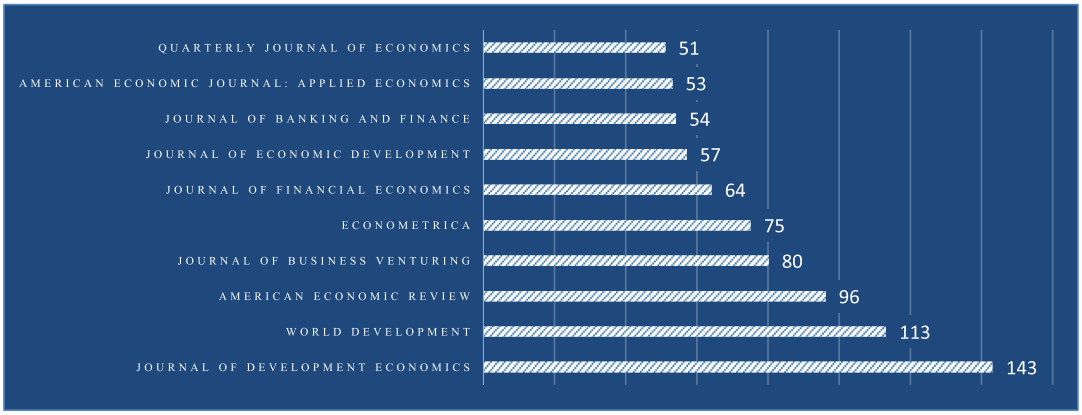

Fig. 5. The most frequently local cited source. Source: Bibliohiny/scopus.

pivotal role in shaping the field of development economics and its enduring impact on scholarly discourse. World Development follows closely behind with 113 citations, solidifying its position as a highly influential journal in the realm of economic development. The American Economic Review, a prestigious journal known for its rigorous research, garners 96 citations, reflecting its intellectual prominence and the recognition it holds within the economics community. The Journal of Business Venturing and Econometrica

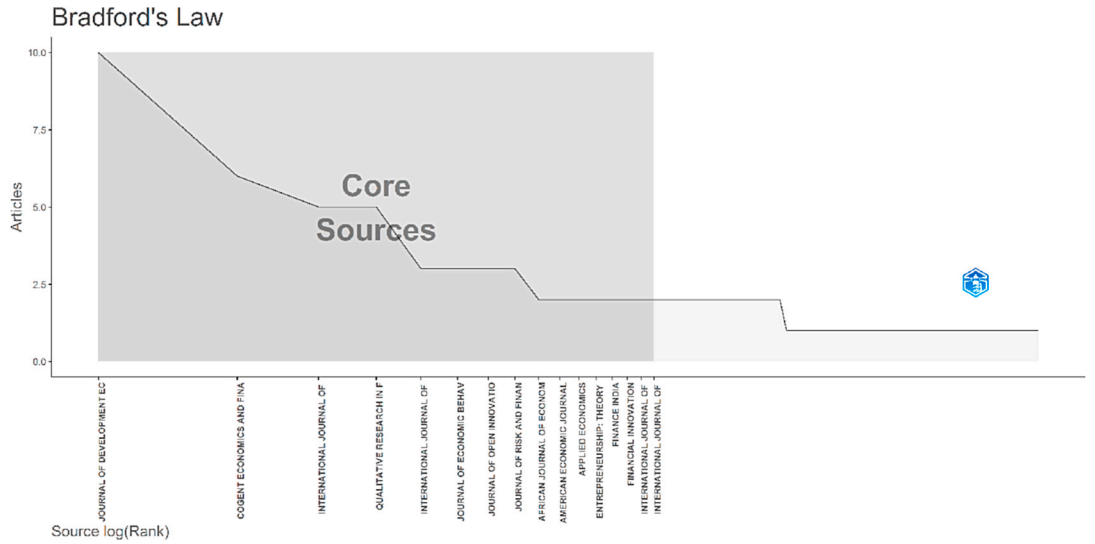

Fig. 6. Bradford's Law of the source. Source: Bibliohiny/Scopus.

demonstrate their significance with 80 and 75 citations, respectively. The high citation counts received by these journals demonstrate their significant role in shaping economic research, policy discussions, and decision-making processes. Through a significant number of citations, the identified journals have established their significance and shown how they have advanced economic research and information sharing.

The analysis of journal rankings based on Bradford's Law provides insights into the concentration and dispersion of research in economics and finance. Bradford's Law is a concept used to identify core sources by arranging journals in descending order of the number of articles on a subject [32]. If the journals are organized in this manner, successive zones of periodicals containing the same number of articles on the subject form a simple geometric series, as expressed in the statement [33]. It highlights the dominance of certain journals, particularly those in Zone 1, indicating their influential role within the field. The Journal of Development Economics occupies the top position, with a frequency of 10 and a cumulative frequency of 10, placing it in Zone 1. This suggests that the Journal of Development Economics is a highly influential and widely cited journal in the field. Following closely behind are Cogent Economics and Finance, the International Journal of Social Economics, and Qualitative Research in Financial Markets, which also occupy Zone 1. These publications provide important venues for scholars to share their discoveries and enhance knowledge.

The distribution of journals across zones reflects the varying degrees of specialization and breadth of topics within the field. As we move into Zone 2, we find journals like the International Journal of Managerial Finance, the International Review of Financial Analysis, and the Journal of African Business. These journals have a slightly lower frequency and cumulative frequency but still make significant contributions to the literature in their respective areas. This analysis of journal rankings based on Bradford's Law offers a valuable perspective on the landscape of economics and finance research. The identified influential journals provide researchers with a useful reference for accessing high-impact publications and staying updated on the latest developments in the field. Journals in Zone 1 tend to focus on more specific research areas, while those in Zone 2 cover a wider range of topics.

Table 3
Authors impact. Source: Bibliohiny/scopus.

Authors	H-index	G-index	M-index	Total Citation	Net Production	PY_start
MERSLAND R	3	3	0.3	80	3	2014
ABOR JY	2	2	0.4	43	2	2019
ANARFO EB	2	2	0.4	43	2	2019
ATTANASIO O	2	2	0.222	159	2	2015
AUGSBURG B	2	3	0.222	161	3	2015
ÇERA G	2	2	0.667	16	2	2021
CHEN I–C	2	2	0.333	5	2	2018
CHONG Y-L	2	2	0.333	5	2	2018
GINÉ X	2	2	0.143	201	2	2010
GYEKE-DAKO A	2	2	0.4	43	2	2019
KHAN KA	2	2	0.667	16	2	2021
MACHA JJ	2	2	0.333	5	2	2018
MAITRA P	2	2	0.167	45	2	2012
MORDUCH J	2	2	0.143	112	2	2010
OSEI KA	2	2	0.4	43	2	2019

3.1.2. Most influential authors, affiliations and countries

A wide range of authors, affiliations, and nations are involved in the fast-growing field of study that examines the connection between financial inclusion and investment decision. It is essential to build on the work of these important authors to stay current with the most recent research findings and progress in this subject. The most often cited writers in the literature on the relationship between financial inclusion and investment decision are included in the section that follows. The names of these writers are listed in Table 3, along with information about their published works and rankings based on a variety of measures, as shown in Fig. 7 most influential affiliations and most influential country in Table 4.

Analyzing authors impact in bibliometrics is crucial as it provides insights into the influence and significance of individual researchers, contributing to the assessment of their scholarly contributions and the overall impact of their work on the academic community [34–37].

The H-index, a bibliometric metric utilized in gauging the productivity and impact of a researcher or scholarly writer, delineates the breadth of a researcher's publications that have garnered at least H citations [33]. Additionally, the G-index and M-index are employed to provide a comprehensive assessment of their impact, contributing to a more holistic measurement of scholarly contributions. Among the authors examined, Mersland R emerges as a highly impactful author with an H-index of 3, a G-index of 3, and an M-index of 0.3. With a total citation count of 80 and a net production score of 3, Mersland R has made significant contributions since starting to publish in 2014. Abor JY, Anarfo EB, and Gyeke-Dako A exhibit similar impact metrics, with an H-index and G-index of 2, an M-index of 0.4, a total citation counts of 43, and a net production score of 2. These authors began publishing their work in 2019, indicating a relatively recent entry into the field but already showcasing notable impact. Attanasio O, Augsburg B, and Khan KA demonstrate a balanced combination of impact and productivity. Attanasio O, with an H-index and G-index of 2, an M-index of 0.222, and a total citation count of 159, has been published since 2015. Augsburg B, on the other hand, boasts an H-index of 2, a G-index of 3, an M-index of 0.222, and a total citation count of 161 since starting to publish in 2015. Khan KA, a more recent entrant in 2021, has already achieved an H-index and G-index of 2, an M-index of 0.667, and a total citation count of 16. Other authors such as Çera G, Chen I–C, Chong Y-L, Giné X, Macha JJ, Maitra P, and Morduch J also exhibit notable impact and productivity, albeit with varying citation counts and indices. These authors have made significant contributions to their respective areas of research, demonstrating their influence within the field.

Fig. 7 show Among these institutions, the University of Nigeria has emerged as a leading contributor with 13 published articles in this field. The University of Agder and Monash University have also made significant contributions, with 9 and 6 articles respectively. Other notable institutions include the University of Ghana, China University of Mining and Technology, Continental University, Zhongnan University of Economics and Law, Griffith University, Makerere University Business School, Menlo College, Udayana University, University of California, University of Regensburg, and University of Stellenbosch Business School, each having published 4 articles related to financial inclusion and investment decisions.

The United States (USA) emerges as the most influential country, with 20 published articles and a total citation count of 1169, resulting in an impressive average article citation of 58.45. The USA also demonstrates a significant presence in both single country publications (13) and multiple country publications (7), indicating its global engagement in research collaborations. Following the USA, the United Kingdom and Australia exhibit notable contributions to the field, with 7 articles each. The United Kingdom showcases a high average article citation (13.57) and primarily engages in single country publications (6), while Australia demonstrates a slightly higher average article citations (12.00) and a more balanced representation in both single (5) and multiple country publications (2).

Ghana and Norway demonstrate a similar level of influence, with 4 articles each. Although their total citation counts are identical (83), Ghana showcases a higher average article citation (20.75) compared to Norway (13.83). Both countries primarily engage in single country publications, indicating their focus on domestic research. Other influential countries include Austria, France, China, Liechtenstein, Germany, South Africa, Czech Republic, Nigeria, Portugal, and Sweden, each contributing varying numbers of articles and demonstrating different characteristics in terms of total citation count, average article citations, and the ratio between single

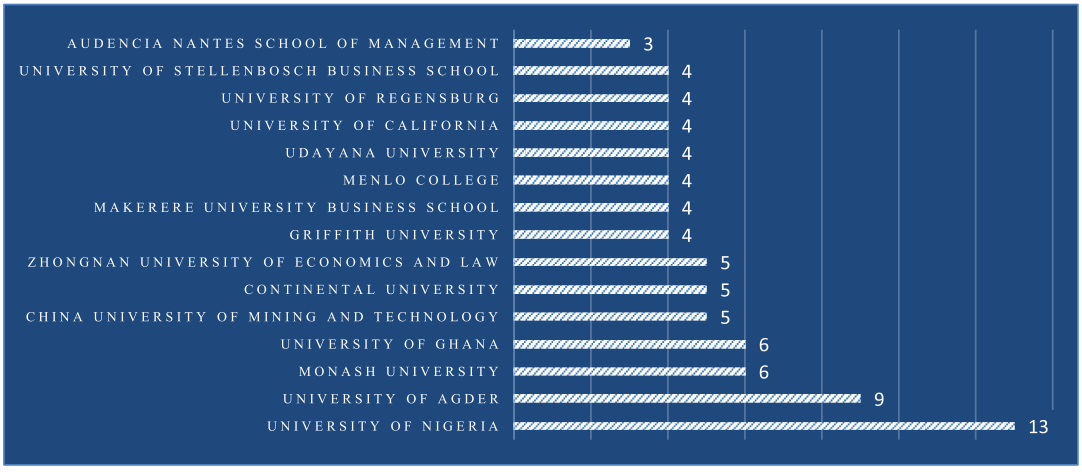

Fig. 7. Most influential affiliations. Source: Bibliohiny/scopus.

Table 4
Most influential country. Source: Biblioshiny/scopus.

Country	Articles	TC	AAC	SCP	MCP	Freq	MCP_Ratio
USA	20	1169	58.45	13	7	0.124	0.35
UNITED KINGDOM	7	95	13.57	6	1	0.043	0.143
AUSTRALIA	7	84	12.00	5	2	0.043	0.286
GHANA	4	83	20.75	3	1	0.025	0.25
NORWAY	6	83	13.83	4	2	0.037	0.333
AUSTRIA	1	65	65.00	1	0	0.006	0
FRANCE	5	59	11.80	4	1	0.031	0.2
CHINA	8	44	5.50	7	1	0.05	0.125
LIECHTENSTEIN	1	43	43.00	0	1	0.006	1
GERMANY	5	37	7.40	3	2	0.031	0.4
SOUTH AFRICA	5	37	7.40	4	1	0.031	0.2
CZECH REPUBLIC	2	21	10.50	1	1	0.012	0.5
NIGERIA	4	21	5.25	4	0	0.025	0
PORTUGAL	2	19	9.50	2	0	0.012	0
SWEDEN	1	19	19.00	1	0	0.006	0

TC: Total Cited; AAC: Average Article Citations; SCP: single country publications; MCP: multiple country publications.

country and multiple country publications.

3.1.3. Most influential article

Researchers and practitioners have frequently cited several significant publications in the literature on the connection between financial inclusion and investment decisions. Our understanding of the possible effects of financial inclusion on investment decisions has substantially increased thanks to these materials. The 15 papers with the greatest influence in terms of total citations are highlighted in this portion of the report. Table 5 displays the list along with information about each author, year of publication, global citation, normalized global citation, local citation, normalized local citation, and LC/GC ratio (%).

Table 5 presents a ranking of the top 15 cited articles, and among these highly cited articles, Moss et al. [38], stands out with a global citation count of 247 and a high LC/GC ratio of 1.62. Similarly, Kim et al. [39], demonstrates significant impact, with 225 global citation and a remarkable NLC of 8.80. Other influential papers by Bradley et al. [40], Attanasio et al. [41], and Field et al., [42]. Furthermore, the list includes works by Giné & Karlan [43], Fischer [47], and Randøy et al. [48], which have also received considerable citations and recognition for their research findings. It is important to note that some papers have received limited local citations (LC) despite a notable number of global citations (GC). This indicates that the impact of these papers is more widespread globally rather than within specific regions or countries.

3.2. Science mapping analysis

This section examines the relationship between financial inclusion and how it affects investment decisions by examining important trends and hot themes (RQ2). We use a variety of techniques to accomplish this, including co-citation analysis to review prior work, bibliographic coupling to evaluate recent works, and co-word analysis to pinpoint key terms for upcoming study paths. By combining word analysis and co-occurrence, the VOSviewer program developed by Ref. [26] used to visually show the co-citation patterns of authors and journals, the bibliographic coupling of nations and institutions, and the construction of word networks.

To further comprehend the development of themes in the area of financial inclusion and its effect on investment decision, thematic

Table 5
Articles ranking citated. Source: Bibliohiny/scopus.

Document by:	Year	GC	NGC	LC	NLC	LC/GC Ratio (%)
Moss et al. [38],	2015	247	4.84	4	2.53	1.62
Kim et al. [39],	2018	225	7.39	4	8.80	1.78
Bradley et al. [40],	2012	210	5.40	2	2.33	0.95
Attanasio et al. [41],	2015	156	3.06	10	6.32	6.41
Field et al. [42],	2013	113	2.32	9	1.50	7.96
Giné & Karlan [43],	2014	108	4.35	6	5.14	5.56
Giné et al. [44],	2010	93	1.15	15	2.00	16.13
de Janvry et al. [45],	2010	69	0.85	0	0.00	0.00
Mild et al. [46],	2015	65	1.27	0	0.00	0.00
Fischer [47],	2013	58	1.19	13	2.17	22.41
Randøy et al. [48],	2015	53	1.04	1	0.63	1.89
Thies et al. [49],	2019	43	2.77	0	0.00	0.00
Nukpezah & Blankson [50],	2017	36	2.50	0	0.00	0.00
Tchakoute Tchuigoua [51],	2015	35	0.69	3	1.89	8.57
Adusei & Obeng [52],	2019	35	2.25	1	2.17	2.86

GC: Global Citation; NGC: Normalized Global Citation; LC: Local Citation; NLC: Normalized Local Citation.

mapping and thematic evolution analysis are also undertaken [10]. To learn more about the conceptual development of the topic, these networks are carefully investigated. We may assess a variety of issues relating to financial inclusion and its potential future advancements by using these methods. We hope that this thorough analysis will help readers gain a clear grasp of the state of the field of financial inclusion research and how it affects investing decisions, as well as possible future research initiatives.

3.2.1. Co-citations analysis

Co-citation analysis, as previously indicated, is looking at the references cited by scientific publications within a certain dataset and studying the relationships between these cited publications to acquire insights about the evolution of major topics in a specific research field. Ferreira [53], focuses on the fact that co-citation analysis makes it possible to identify publications that are often quoted in tandem by several authors. This suggests a significant connection between the cited papers. Co-citation analysis, which helps find articles that are frequently mentioned together and suggest a significant relationship between them, can be put more simply. There were 9525 referenced references in total in our investigation, which included 161 papers. We set a minimum criterion of 3 citations for each referenced reference to ensure relevancy, and 51 references satisfied the requirement.

Fig. 8, a network diagram that depicts the links between references in possible financial inclusion on investment decision, is presented to help with understanding the co-citation study. The top ten references within the field of prospective financial inclusion on investment decision that were most frequently cited in our chosen papers are shown in Table 6.

Fig. 8 shows that the largest cluster (blue) has 10 cited references, followed by the second cluster (red) with 12 cited references, the third cluster (green) with 10 cited references, the fourth cluster (yellow) with 10 cited references, and the last cluster (purple) with 9 cited references. It is worth mentioning that the majority of the top 10 cited references listed in Table 6 are associated with the blue cluster of cited references.

3.2.2. Bibliography coupling analysis

In science mapping, the idea of bibliographic coupling is used to find publications that have a lot of shared references and are likely to have comparable content. This technique, which groups publications together based on the references they share, works best when applied across a specific time period [7,26]. Bibliographic coupling occurs when two documents share a common reference to a third document, suggesting a similarity in subject matter. By analyzing the links between publications through bibliographic coupling, valuable insights can be gained regarding the networking positioning and importance of articles within the selected dataset [29].

The bibliographic coupling analysis of journals employed a minimum criterion of two documents per journal, resulting in a final set of 109 journals that fulfilled the requirement. The top 10 journals with the highest link strength are listed in Table 7. Notably, the Journal of Development Economics and Journal of Economic Behavior and Organization, while included in the analysis, are not among the most prestigious journals in this field of study.

The final set contained 25 authors who met the basic criteria of 2 articles each, keeping with the authors' perspective on the bibliographic coupling. Table 8 presents the authors with the highest classified connection strengths based on the total link strength of the bibliographic coupling. The authors who have the strongest citational relationships are more prominent in the network of citations and participate in conversations more [29]. The degree of centrality of an author is measured by the number of connections they have inside a research network [8].

The result from Table 8, Chen I.-C. notes that the Technology Acceptance Model (TPB) has found widespread application in studies related to the adoption of technology and investment decisions. However, there is limited utilization of TPB in literature specifically addressing the adoption of particular financial services among smallholder farmers [63]. Anarfo et al. [64], suggest potential economic advantages associated with financial inclusion, such as fostering economic growth and development, boosting the total factor productivity of a country, and enhancing its ability to provide capital for investment. Augsburg et al. [65], labeled microcredit proves effective in influencing household borrowing and investment decisions, as demonstrated by a cluster randomized controlled trial in rural India, addressing challenges in imperfect capital markets and commitment problems. Agarwal et al. [66], stated that general

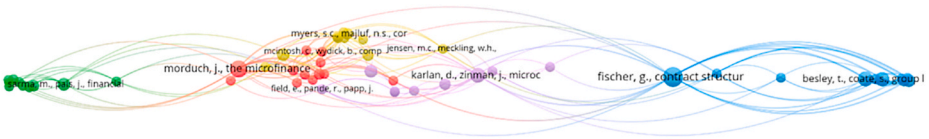

Fig. 8. Co-Citation analysis of Reference. Source: VOSviewer.

Table 6
Top 10 cited references in the selected sample. Source: VOSviewer.

Document By:	Links	Total Links Strength	Citation
Fischer [47],	18	37	12
Morduch [54],	21	28	9
Besley & Coate [55],	10	26	7
Abbink et al. [56],	8	24	5
Ghatak [57],	8	22	4
Karlan & Zinman [58],	17	20	7
Rai & Sjöström [59],	8	19	3
Cull et al. [60],	13	17	3
Galema et al. [61],	13	17	3
Hermes et al. [62],	13	17	3

Table 7
Journals in bibliographic coupling link strength. Source: VOSviewer.

Source	Link	TLS	Document	Citation
Journal of Development Economics	23	564	10	264
Journal of Economic Behavior and Organization	12	228	3	48
American Economic Journal: Applied Economics	16	213	2	249
Review of Development Economics	16	172	2	0
Financial Innovation	21	170	2	32
Journal of Development Studies	21	164	2	16
Applied Economics	20	157	2	17
Cogent Economics and Finance	25	142	6	12
International Journal of Social Economics	21	115	5	9
International Journal of Finance and Economics	22	113	3	25

Table 8
Authors in bibliographic coupling link strength. Source: VOSviewer.

Authors	Links	TLS	Document	Citation
Chen I.-C.	8	468	2	5
Chong Y.-L.	8	468	2	5
Macha J.J.	8	468	2	5
Abor J.Y.	14	418	2	43
Anarfo E.B.	14	418	2	43
Gyeke-Dako A.	14	418	2	43
Osei K.A.	14	418	2	43
Augsburg B.	18	396	4	161
Agarwal A.	6	306	2	1
Agarwal Y.	6	306	2	1

context of financial inclusion and economic development, one could infer that increased financial inclusion, facilitated by FinTech evolution, may positively impact investment decisions by providing broader access to financial services and fostering economic growth.

Following the bibliographic coupling of the 161 articles in the chosen data set, 69 of them satisfied the minimum requirement of 5 citations per document. The top 10 publications with the highest index are shown in Table 9 and Fig. 9.

The level of bibliographic coupling is shown by the total link strength, which is dependent on the number of citations each

Table 9
Document in bibliographic coupling link strength. Source: VOSviewer.

Document by:	TLS	Citation
Galariotis et al. [67],	155	3
Giné & Karlan [43],	142	108
Conning & Morduch [68],	138	19
Czura [69],	133	12
Ribeiro et al. [70],	127	5
Fischer [47],	124	58
Dorfleitner & Oswald [71],	118	20
Giné et al. [44],	116	93
Allen [72],	115	18
Attanasio et al. [41],	107	156

document has received. Notably, Galariotis et al. [67], has the highest link strength with a total of 155, although it has only received 3 citations. Conversely, Giné & Karlan [43], has a link strength of 142 with a much higher citation count of 108. The rankings also include authors such as Conning & Morduch [68], Czura [69], Ribeiro et al. [70], Fischer [47], Dorfleitner & Oswald [71], Giné et al. [44], Allen [72], and Attanasio et al. [41], along with their corresponding link strength and citation numbers.

3.2.3. Co-occurrence network

The purpose of performing a sort of content analysis known as keyword co-occurrence analysis is to be able to identify relationships between terms within a chosen set of publications. Fakhar Manesh et al. [73], underline the significance of this study since it enables the identification and clustering of theme regions, resulting in a visual depiction of the primary theoretical or underlying issues in the research field. Only 42 of the 655 keywords seemed to satisfy the predetermined requirement of appearing at least three times, while 4 were deemed irrelevant and were not included in the analysis. The analysis's findings are shown in Fig. 10, which shows a keyword co-occurrence overlay, and Table 10, which shows a keyword clustering for the authors.

The overlay visualization, shown in Fig. 10, is a useful graphic tool for examining the temporal distribution of terms within each cluster. It employs colors ranging from purple to green to yellow to indicate the chronological occurrence of keywords. By analyzing the overlay visualization, one can observe the shift in financial investment studies over time, from earlier subjects like lending behavior and microfinance to more recent and challenging concepts such as the financial market, entrepreneurship, digital finance, and fintech.

3.2.4. Thematic analysis

We utilized the abstract for the visualization of thematic evolution, which showcases the historical progression of themes and their development evolved [74]. The R programming language's biblioshiny package was used to analyze the theme progression. Based on the writers' subjective assessment, the historical periods were divided, ensuring a complete depiction of the theme development. The classification and mapping of these themes in a two-dimensional graphic based on their density and centrality was made possible by the co-word analysis, which allowed for the identification of keyword clusters and their treatment as themes [74].

This study sheds light on the subjects the publication covers and identifies the most important and current ones. For examining how research subjects change over time, it is helpful to understand the conceptual structure [8,10]. Four unique time periods were used by the researchers as analysis breakpoints. Throughout these times, there have been ongoing developments in the literature on the effects of financial inclusion on investment decisions. Fig. 11 depicts theme evolution in four slices, emphasizing how tendencies change over time. Fig. 12 shows a map with a theme.

The data analysis reveals important themes and concepts in the field of financial inclusion and development. These include microfinance institutions, finance, digital finance, financial inclusion, repayment, financial development, capital structure, attitude, expertise, economic growth, fintech adoption, saving behavior, poverty reduction, and impact investments. Key areas of focus identified are microfinance, financial development, saving behavior, and capital structure. The analysis highlights the role of microfinance in promoting financial inclusion and contributing to economic growth [75]. It examines the expansion and effectiveness of financial systems for economic development [76]. Additionally, saving behavior and its impact on individuals and societies are emphasized [77], along with the relationship between capital structure and financial performance. The study also investigates the influence of attitudes and expertise on economic growth [39] and acknowledges the growing significance of fintech in enhancing financial

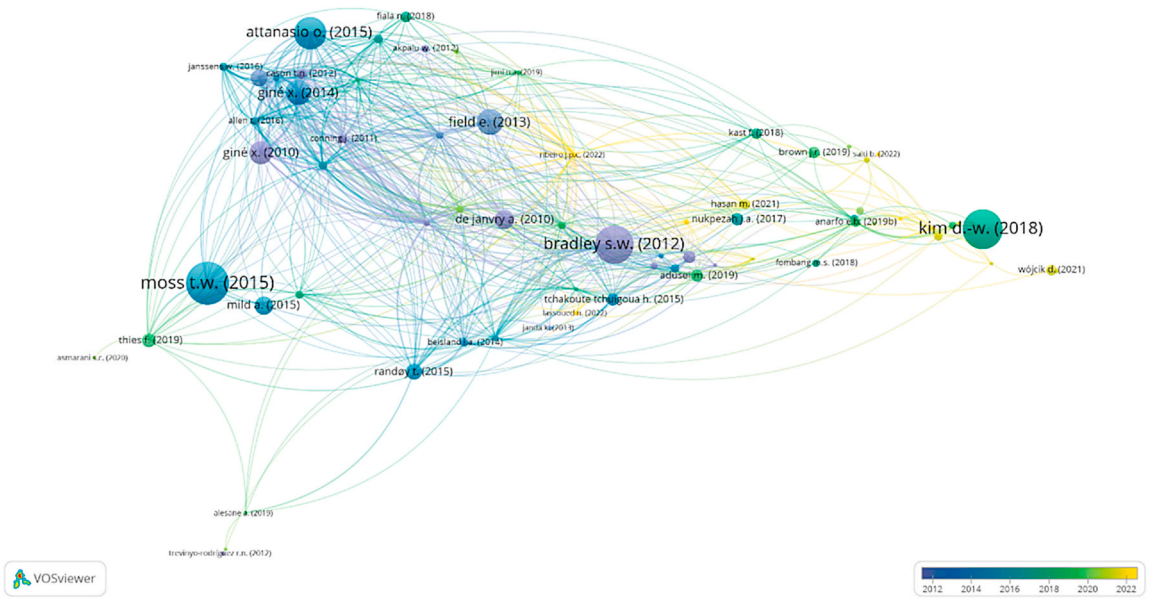

Fig. 9. Overlay Visualization of bibliographic coupling document. Source: VOSviewer.

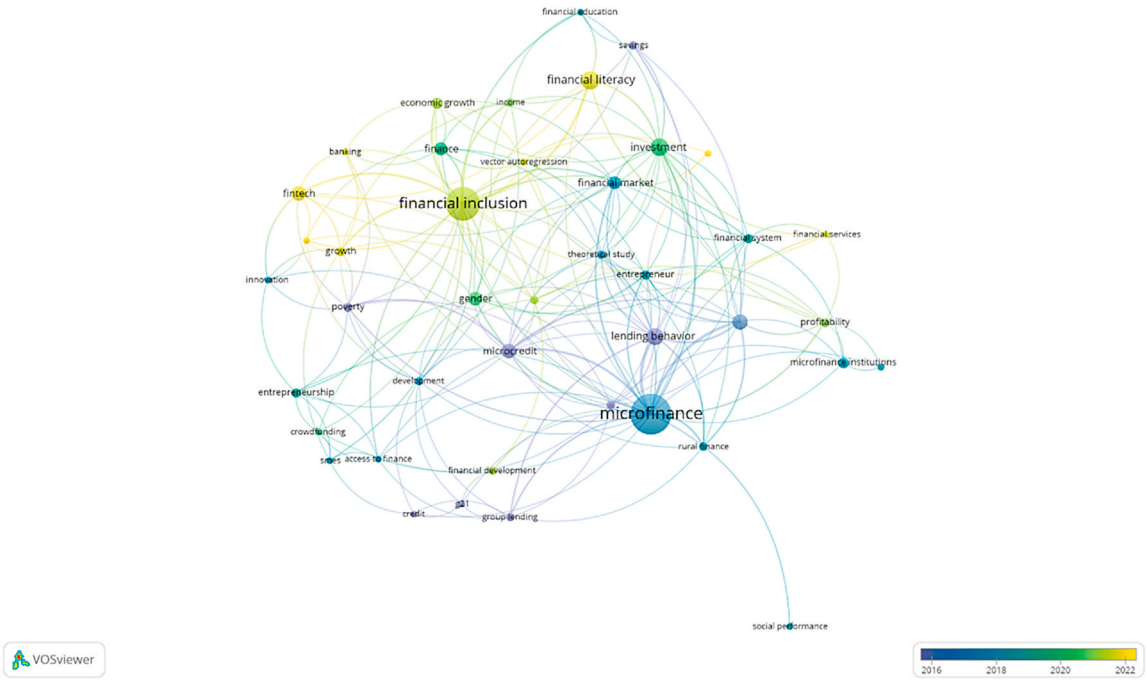

Fig. 10. Co – occurrence authors keywords. Source: VOSviewer.

accessibility [78] and reducing poverty [50]. The study also explores the concept of impact investments that aim to generate both financial returns and positive social and environmental outcomes.

4. Research trends

Finance is a challenging and intricate field, and academic interest in it has recently surged. While the study of investment decisions is not new, financial inclusion has received significant scholarly attention and witnessed exponential growth in recent years. Based on a comprehensive analysis of keyword co-occurrence, thematic maps, and thematic evolution (RQ2), three prominent themes have emerged that require further academic focus in both current and future research agendas.

4.1. Financial inclusion and development

This subsection investigates the critical link between financial inclusion, where all individuals have access to essential financial services, and its pivotal role in fostering economic development through informed investment decisions. It assesses the multifaceted ways in which enhanced financial inclusion, including access to banking, credit, and insurance, influences individuals' capacity to make well-informed investment choices, ultimately contributing to economic growth. It involves providing equal access to financial services, facilitating small deposits, encouraging investments, fostering entrepreneurship, and supporting underrepresented sectors of the economy. Gender equality in financial inclusion is particularly important, as it contributes to building an inclusive society and empowering both men and women. By ensuring the equal participation of females in the workforce and the country's growth narrative, gender inclusion is promoted [79]. The importance of achieving sustainable growth through access to more financial resources has been highlighted by the identification of drivers for increased financial integration between commercial banks and microfinance institutions [80]. Even though higher risk/return borrowing groups often have lower loan repayment rates, high-risk borrowers' repayment rates can be improved by optional revenue sharing; however, the effect is lessened if they can break sharing arrangements [81]. Additionally, Bandiera et al. [82], introduce a new microfinance product designed for women, facilitating their transition from agriculture to service-based activities like small-scale trading, through features such as larger loan amounts, fixed repayment dates, and fund monitoring.

Psychological factors, such as guilt aversion and shame aversion, have been found to influence borrowers' behavior in microfinance contracts, with shame aversion having a stronger impact than guilt aversion when joint liability and public repayment are present [83]. Qian et al. [84], demonstrate that while developing financial services have a beneficial impact, established financial services in China have little impact on the income and consumption levels of rural populations. Financial development initially hinders financial integration between commercial banks and microfinance organizations, but as integration advances, it has a favorable effect [80]. Macroeconomic fundamentals and institutional strength play independent roles in fostering inclusive finance for businesses from the effects of financial development and economic growth [85]. Nguyen & Doan [77], determine the various determinants of individual

Table 10
Clustering authors keywords. Source: VOSviewer.

Keywords	Cluster	Links	TLS	Occurrences
Banking	1	7	7	3
Financial Institutions	1	7	8	3
Fintech	1	9	15	10
Growth	1	10	14	5
Innovation	1	6	7	3
Microcredit	1	16	25	10
Poverty	1	10	13	5
Capital Structure	2	3	3	3
Financial Services	2	5	6	3
Financial System	2	10	12	5
Microenterprise	2	11	15	4
Microfinance Institutions	2	6	6	6
Profitability	2	9	12	5
Credit	3	5	5	3
Development	3	12	13	4
Economic Development	3	14	14	4
Financial Development	3	3	3	4
G21	3	5	5	3
Group Lending	3	8	12	4
Financial Education	4	5	7	3
Financial Inclusion	4	26	58	37
Financial Literacy	4	7	17	14
Income	4	8	10	4
Investment	4	20	30	13
Savings	4	7	8	4
Credit Provision	5	14	34	11
Digital Finance	5	3	3	3
Financial Market	5	14	21	8
Lending Behavior	5	15	37	12
Rural Finance	5	7	14	4
Access To Finance	6	8	9	3
Crowdfunding	6	6	6	3
Entrepreneurship	6	8	9	5
Gender	6	13	17	9
Smes	6	6	7	3
Economic Growth	7	7	11	7
Entrepreneur	7	12	17	5
Finance	7	9	12	8
Theoretical Study	7	10	14	4
Vector Autoregression	7	8	9	3
Microfinance	8	32	81	49
Social Performance	8	1	2	3

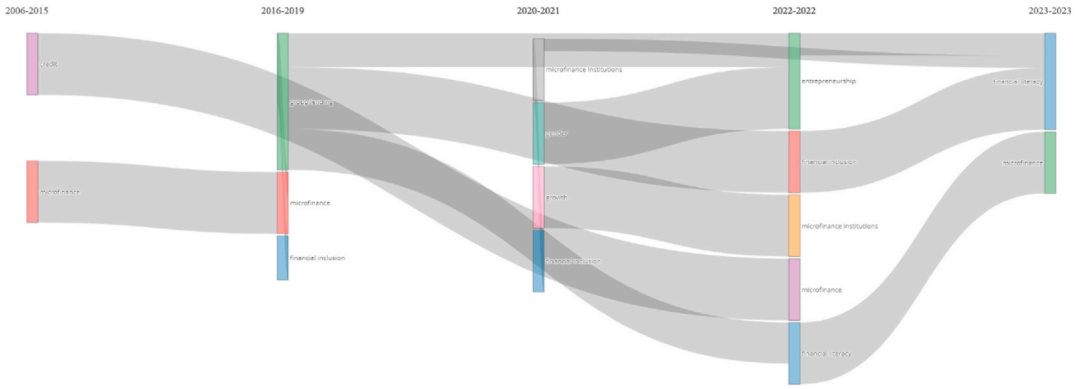

Fig. 11. Thematic evolution. Source: Biblioshiny.

saving behavior in Vietnam. While gender, student status, and basic financial behavior have a negative effect on saving behavior, other determinants, such as financial literacy, financial background, marital status, financial attitudes, and advanced financial behavior, have a positive influence. The influence of financial consultants on rural residents' saving behaviors is examined, with notable gains in small savings programs, financial literacy, and consultant behavior noted [86]. According to Matos Bautista et al. [87], capital

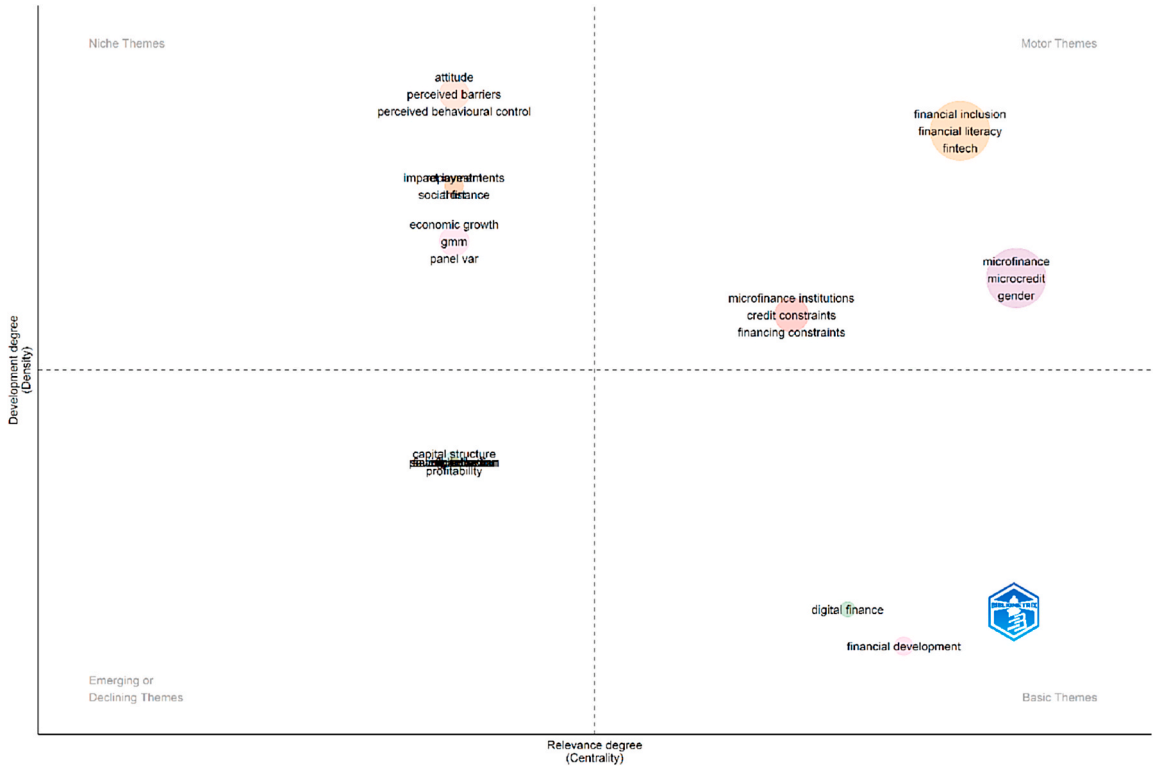

Fig. 12. Thematic map. Source: Biblioshiny.

structure and credit risk have a negative influence, indicating the need to strengthen credit policies and share decision-making authority in order to draw in more investors and address the declining profitability and market share. Additionally, Li et al. [88], empirical analysis of the detrimental effects of financial sustainability on capital leverage demonstrates how profitability suppresses this link, lending credence to the pecking order argument.

Financial inclusion is crucial for development and empowerment, enabling equal access to financial services. Gender equality is essential for inclusive growth. Financial integration and innovative products drive sustainable growth. Psychological factors influence borrower behavior. Emerging financial services positively impact income and consumption levels. Macroeconomic fundamentals and institutional quality shape inclusive finance. Various determinants affect personal saving behavior. Financial consultants and improved credit policies play important roles. Financial sustainability and profitability impact capital leverage. Overall, inclusive finance drives development and addresses financial challenges.

4.2. Attitudes and expertise in economic growth

This subsection explores the intricate relationship between individuals' attitudes, including risk tolerance and ethical considerations, and their level of expertise in the context of investment decision-making. It delves into how these attitudes and expertise, when combined, can significantly impact not only investment choices but also their subsequent effects on economic growth and development. By scrutinizing the interplay of attitudes and expertise, this section aims to provide a comprehensive understanding of the factors that drive investment decisions and their broader implications for economic prosperity. Financial inclusion has been shown to positively affect economic growth, highlighting how crucial it is for policymakers to consider financial inclusion as a long-term engine of economic growth [89]. Improved macro-fundamentals significantly reduce barriers, and the role of institutions in fostering inclusive finance differs from that of financial development and economic growth [85]. Established, larger, less competitive and regulated, foreign-owned, and affiliated firms encounter fewer financial obstacles. Furthermore, financial inclusion, including dimensions such as availability, penetration, and composite measures, positively influences economic growth, while the usage dimension shows no statistical significance [90]. Financial inclusion has had an impact on recent economic growth, with commercial bank branches, commercial bank depositors, domestic bank credits, and companies using banks for financial investment all playing substantial roles [91]. This suggests that financial inclusion, both traditional and digital, has a favorable and considerable impact on economic growth [92]. Enhancing financial knowledge, promoting inclusive financial services, and fostering positive financial behavior contribute to improving financial capability, highlighting the significance of behavior [93]. Also, financial integration between commercial banks and microfinance institutions, made possible by elements like increasing agency costs and enhanced financial development, promotes sustainable growth and increases access to financial resources [80].

The studies draw attention to the beneficial effects of financial inclusion on economic expansion. Inclusionary measures should be prioritized by policymakers as a factor in long-term economic prosperity. Institutions, financial behavior, and knowledge all play significant roles in enhancing financial competence. Access to financial resources and sustained growth are supported through financial integration between commercial banks and microfinance firms.

Table 11
Future research direction.

Main Stream	Sub Stream	Future Research	Reference
Financial Inclusion and Development	Microfinance	• Examining how microfinance institutions' (MFIs') financial integration is impacted by variables such financial development, loan demand, and the number of active borrowers.	[80,88]
		• Examine the impact of client financial circumstances on the adoption of Islamic microfinance, along with other Islamic financial products and services, and assess the potential for market expansion in the agricultural industry, aiming to generate a positive social impact through poverty reduction and job creation.	[101]
		• Explore additional ratios that can shed light on the profitability factors of various firms within the finance sector.	[87]
		• Exploring the inclusion of cultural variables and examining the impact of digitalization would be valuable avenues for further exploration in the field.	[102]
		• Understanding the long-term and scaled-up effects of microfinance on the economy is crucial for both research and policy-making, particularly in regions with a high concentration of extreme poverty and subsistence agriculture.	[82]
		• Researching how emotions, heuristics, and rational reasoning interact when making microfinance decisions may offer insightful information for creating policies and gaining a better knowledge of how people behave.	[83]
	Financial Development	• Researching the connection between better meeting of practical requirements and women's involvement in strategic decision-making.	[52,82,103,104]
	Saving Behavior	• Expanding the study's focus, Saving Behavior aims to consider various internal and environmental factors influencing saving behaviors, while concurrently evaluating the role of financial advisors in promoting savings and investment practices, especially in low-income, illiterate rural areas.	[86]
	Capital Structure	• Investigate capital structure in microfinance institutions with the dynamics of earnings management and its relationship with debt and donated equity.	[105]
Attitudes and Expertise in Economic Growth		• Enhance the support for institutions engaged in policy and microfinance, it is crucial to broaden the study's focus, encompassing emerging economies and comparing perspectives between developed and developing nations.	[89]
		• Explore the impact of financial education programs on the underserved population, their financial management skills, and the subsequent effects on their utilization of financial services and overall economic growth.	[90]
		• Extend the study's geographic scope to encompass a larger sample of developing nations, and investigate specific elements, such as population size, political factors, economic development, and education levels that influence the relationship between digital financial infrastructure and economic growth.	[92]
Fintech and Social Impact	Fintech Adoption	• Investigate the impact of policy initiatives aimed at promoting a competitive landscape and increasing fintech adoption on closing inclusion gaps and raising awareness among the population about the benefits of fintech services.	[90]
	Poverty Reduction	• Examine the effects of financial literacy on poverty reduction in various emerging and underdeveloped nations, assess the efficacy of financial inclusion initiatives, and consider the potential use of financial technology (FinTech) to enhance access and inclusion for diverse population groups, with the possibility of establishing financial literacy indexes tailored to these specific circumstances.•	[70,75]
		• Investigate the role and impact of financial consultants in facilitating poverty reduction efforts, particularly in low-income and low-literacy rural areas.	[86]
		• Monitoring and evaluating the gender provisions of peace agreements and tracking the impact of gender-responsive investments.	[106]
		• Explore the effectiveness of formal financial inclusion strategies compared to informal finance and banking methods in poverty reduction, with a focus on different regions, subnational divisions, and countries.	[107]
		• Investigate the role of women's empowerment in poverty reduction by exploring the impact of their enhanced participation in decision-making processes on socio-economic development, with a focus on assessing the economic and social outcomes.	[103]
		• Understanding the specific mechanisms through which financial services targeting technological advancement and cultural development contribute to poverty reduction among rural residents.	[84]
	Impact Investments	• Extending the use of thorough measuring techniques, such as the three-step methodology that is suggested, to evaluate and compare the non-financial performance of other impact investment vehicles outside of microfinance.	[108]

4.3. Fintech and social impact

Fintech innovations have the potential to drive positive social impact by facilitating more informed and inclusive investment decisions. Kakinuma [94], examines the connections between quality of life, leisure, and the adoption of fintech. The study's findings emphasize the significance of digital literacy by showing how fintech adoption mediates the relationship between financial literacy and quality of life. Mahmud et al. [95], propose a Customer Fintech Readiness (CFR) index for assessing fintech adoption in Bangladesh, revealing the country's current lag and providing insights for policy interventions. Noreen et al. [96], focuses on how policies for financial inclusion have been implemented successfully in Pakistan, including the use of fintech and targeted financial literacy programs. Maharjan et al. [97], identifies the challenges faced by youth in fintech adoption, emphasizing the need to address internet issues. Imam et al. [98], introduce the FinTech Opportunity Index (FOI) and examine fintech potential and constraints in the SAARC and ASEAN areas. Nukpezah and Blankson [50] emphasize the importance of social networks in microfinance schemes for poverty reduction. Prince et al. [99], highlight the impact of microcredit training on capital creation and borrower motivation. Agarwal [66], talk about how fintech can help with financial inclusion, economic development, and poverty eradication. Lastly, Ayayi & Dali [100], explain the efficient approach of entrepreneurial microcredit support in developing individuals' skills and spirit. In summary, fintech significantly affects society by fostering financial inclusion, economic expansion, and poverty eradication. It is necessary to pay attention to issues like inadequate awareness and regulatory frameworks. Support for microfinance and entrepreneurship is greatly aided by social networks, financial literacy initiatives, and the development of soft skills. Fintech impact investments foster thriving financial ecosystems and constructive social change.

5. Future research direction

The bibliometric analysis carried out in this study recommends a future research agenda (RQ3) and helps to consolidate new research trend topics in the literature on financial inclusion in investment decisions. A helpful summary of significant prospective research avenues is provided in Table 11 for academics interested in new areas of study on the influence of financial inclusion on investment decisions.

6. Conclusions and limitations

6.1. Conclusion

This study makes a substantial contribution to our knowledge of how financial inclusion may affect investing decisions. It provides a thorough examination of the literature, graphic depictions of the knowledge hierarchy, and recommendations for further study. The results emphasize how crucial financial technologies are to increasing access to financial services and investment opportunities. For academics and practitioners in this field, the study offers useful perspectives and recommendations. The paper's methodology, results, discussion of research trends, research agenda for the future, and concluding remarks are all included in the following sections.

The study also highlights the dynamic nature of financial inclusion and its connection to investment decisions. Considering the multifaceted character of financial inclusion across areas and nations, it emphasizes the necessity for context-specific approaches and regulations. The results highlight how crucial it is to do ongoing research, evaluate policies, and learn from best practices to support evidence-based decision-making in favor of financial inclusion and its effects on investment choices. The report also recommends areas for further research and directions, such as examining the impact of financial inclusion in various sectors, the function of regulatory frameworks, and the influence of financial literacy on excluded people's investment decision-making. Researchers, decision-makers, and practitioners can use these findings to further their work and promote inclusive and sustainable investment decisions.

6.2. Limitation

Because our samples were taken from a single database, future studies can expand it to include samples from additional databases for comparison and comprehensiveness. The fact that our sample size is limited to search phrases is another drawback of this study. Because certain keywords were disregarded, it's possible that some important articles were missed. To generalize the results, further study can expand the sample size by including more keywords. Despite these drawbacks, we hope that the current work can serve as a foundation for further investigation.

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Institutional review board statement

Not applicable.

Informed consent statement

Not applicable.

Data availability statement

There is no research related data stored in publicly available repositories and the data will be made available upon request to the corresponding author.

CRediT authorship contribution statement

Eko Pranajaya: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Mohammad Benny Alexandri:** Supervision, Project administration. **Arianis Chan:** Supervision, Project administration. **Bambang Hermanto:** Supervision, Project administration.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2024.e25779.

Table 1
Search Strategy.

Category	Criteria	No. of refined articles
Search string	TITLE-ABS-KEY "Financial Inclusi*" OR "Inclusi* Financ*" OR Microfinance OR Microcredit AND "Investment decision*" OR "Investment Choice*" OR "Financial investment*"	356
Access	Including both Open Access and others.	
Period	up till articles in 2022. A few articles for 2023 have already been published.	(1)
Subject Area	Business, Management and Accounting (130), Economics, Econometrics and Finance (193), and Social Sciences (120). Scopus subject area such as Engineering, Psychology, Computer Sciences, Environmental Science, Arts and Humanities, Medical, and others were excluded.	(136)
Document Type	The search was limited to document type articles (192). Therefore, documents such as Book Chapter (12), Book (6), Review (7), Conference Paper (1) and others were excluded	(26)
Source Type	Journal (190), and Book Series (2) were excluded	(2)
Language	The 186 articles that were published in languages other English were all excluded.	(4)
Publication Stage	Only final stage articles (174) were included, Article in Press (12) were excluded.	(12)
Manual refinement	The titles and abstracts of 174 publications were examined based on a manual refinement, and thirteen (13) irrelevant materials were eliminated.	(13)
Amount of articles that will eventually remain after manual refinement		161

Abbreviations: Results of initial bibliometric analysis of the extensive scientific field.

Table 2
Main Information. Source: Bibliohiny/ Scopus.

Description	Results
Timespan	2006:2023
Authors	392
Sources	109
Articles	161
Growth Rate	18.14 %
Articles Average Age	3.98
Average citations per doc	15.33
References	9543
Keywords by the author	510
Single-authored docs	34

Table 3
Authors Impact. Source: Bibliohiny/ Scopus.

Authors	H-index	G-index	M-index	Total Citation	Net Production	PY_start
MERSLAND R	3	3	0.3	80	3	2014
ABOR JY	2	2	0.4	43	2	2019
ANARFO EB	2	2	0.4	43	2	2019
ATTANASIO O	2	2	0.222	159	2	2015
AUGSBURG B	2	3	0.222	161	3	2015
ÇERA G	2	2	0.667	16	2	2021
CHEN I–C	2	2	0.333	5	2	2018
CHONG Y-L	2	2	0.333	5	2	2018
GINÉ X	2	2	0.143	201	2	2010
GYEKE-DAKO A	2	2	0.4	43	2	2019
KHAN KA	2	2	0.667	16	2	2021
MACHA JJ	2	2	0.333	5	2	2018
MAITRA P	2	2	0.167	45	2	2012
MORDUCH J	2	2	0.143	112	2	2010
OSEI KA	2	2	0.4	43	2	2019

Table 4
Most Influential Country. Source: Biblioshiny/ Scopus.

Country	Articles	TC	AAC	SCP	MCP	Freq	MCP_Ratio
USA	20	1169	58.45	13	7	0.124	0.35
UNITED KINGDOM	7	95	13.57	6	1	0.043	0.143
AUSTRALIA	7	84	12.00	5	2	0.043	0.286
GHANA	4	83	20.75	3	1	0.025	0.25
NORWAY	6	83	13.83	4	2	0.037	0.333
AUSTRIA	1	65	65.00	1	0	0.006	0
FRANCE	5	59	11.80	4	1	0.031	0.2
CHINA	8	44	5.50	7	1	0.05	0.125
LIECHTENSTEIN	1	43	43.00	0	1	0.006	1
GERMANY	5	37	7.40	3	2	0.031	0.4
SOUTH AFRICA	5	37	7.40	4	1	0.031	0.2
CZECH REPUBLIC	2	21	10.50	1	1	0.012	0.5
NIGERIA	4	21	5.25	4	0	0.025	0
PORTUGAL	2	19	9.50	2	0	0.012	0
SWEDEN	1	19	19.00	1	0	0.006	0

Table 5
Articles Ranking Citated. Source: Bibliohiny/ Scopus.

Document by:	Year	GC	NLC	LC	NLC	LC/GC Ratio (%)
Moss et al. (2015)	2015	247	4.84	4	2.53	1.62
Kim et al. (2018)	2018	225	7.39	4	8.80	1.78
Bradley et al. (2012)	2012	210	5.40	2	2.33	0.95
Attanasio et al. (2015)	2015	156	3.06	10	6.32	6.41
Field et al. (2013)	2013	113	2.32	9	1.50	7.96
Giné & Karlan, (2014)	2014	108	4.35	6	5.14	5.56
Giné et al. (2010)	2010	93	1.15	15	2.00	16.13
de Janvry et al. (2010)	2010	69	0.85	0	0.00	0.00
Mild et al. (2015)v	2015	65	1.27	0	0.00	0.00
Fischer, (2013)	2013	58	1.19	13	2.17	22.41
Randøy et al. (2015)	2015	53	1.04	1	0.63	1.89
Thies et al. (2019)	2019	43	2.77	0	0.00	0.00
Nukpezah & Blankson, (2017)	2017	36	2.50	0	0.00	0.00
Tchakoute Tchuigoua, (2015)	2015	35	0.69	3	1.89	8.57
Adusei & Obeng, (2019)	2019	35	2.25	1	2.17	2.86

Table 6
Top 10 cited references in the selected sample

Document By:	Links	Total Links Streng	Citation
Fischer, (2013)	18	37	12
Morduch, (1999)	21	28	9
Besley & Coate, (1995)	10	26	7
Abbink et al. (2006)	8	24	5
Ghatak, (1999)	8	22	4
Karlan & Zinman, (2011)	17	20	7

(*continued on next page*)

Table 6 (*continued*)

Document By:	Links	Total Links Streng	Citation
Rai & Sjöström, (2004)	8	19	3
Cull et al. (2009)	13	17	3
Galema et al. (2011)	13	17	3
Hermes et al. (2011)	13	17	3

Table 7
Journals in bibliographic coupling link strength.

Source	Link	TLS	Document	Citation
Journal of Development Economics	23	564	10	264
Journal of Economic Behavior and Organization	12	228	3	48
American Economic Journal: Applied Economics	16	213	2	249
Review of Development Economics	16	172	2	0
Financial Innovation	21	170	2	32
Journal of Development Studies	21	164	2	16
Applied Economics	20	157	2	17
Cogent Economics and Finance	25	142	6	12
International Journal of Social Economics	21	115	5	9
International Journal of Finance and Economics	22	113	3	25

Table 8
Authors in bibliographic coupling link strength.

Authors	Links	TLS	Document	Citation
Chen I.-C.	8	468	2	5
Chong Y.-L.	8	468	2	5
Macha J.J.	8	468	2	5
Abor J.Y.	14	418	2	43
Anarfo E.B.	14	418	2	43
Gyeke-Dako A.	14	418	2	43
Osei K.A.	14	418	2	43
Augsburg B.	18	396	4	161
Agarwal A.	6	306	2	1
Agarwal Y.	6	306	2	1

Table 9
Document in bibliographic coupling link strength.

Document by:	TLS	Citation
Galariotis et al. (2011).	155	3
Giné & Karlan, (2014).	142	108
Conning & Morduch, (2011).	138	19
Czura, (2015).	133	12
Ribeiro et al. (2022).	127	5
Fischer, (2013).	124	58
Dorfleitner & Oswald, (2016).	118	20
Giné et al. (2010).	116	93
Allen, (2016).	115	18
Attanasio et al. (2015).	107	156

Table 10
Clustering Authors Keywords.

Keywords	Cluster	Links	TLS	Occurrences
Banking	1	7	7	3
Financial Institutions	1	7	8	3
Fintech	1	9	15	10
Growth	1	10	14	5
Innovation	1	6	7	3
Microcredit	1	16	25	10
Poverty	1	10	13	5
Capital Structure	2	3	3	3
Financial Services	2	5	6	3
Financial System	2	10	12	5
Microenterprise	2	11	15	4
Microfinance Institutions	2	6	6	6
Profitability	2	9	12	5
Credit	3	5	5	3
Development	3	12	13	4

(*continued on next page*)

Table 10 (*continued*)

Keywords	Cluster	Links	TLS	Occurrences
Economic Development	3	14	14	4
Financial Development	3	3	3	4
G21	3	5	5	3
Group Lending	3	8	12	4
Financial Education	4	5	7	3
Financial Inclusion	4	26	58	37
Financial Literacy	4	7	17	14
Income	4	8	10	4
Investment	4	20	30	13
Savings	4	7	8	4
Credit Provision	5	14	34	11
Digital Finance	5	3	3	3
Financial Market	5	14	21	8
Lending Behavior	5	15	37	12
Rural Finance	5	7	14	4
Access To Finance	6	8	9	3
Crowdfunding	6	6	6	3
Entrepreneurship	6	8	9	5
Gender	6	13	17	9
Smes	6	6	7	3
Economic Growth	7	7	11	7
Entrepreneur	7	12	17	5
Finance	7	9	12	8
Theoretical Study	7	10	14	4
Vector Autoregression	7	8	9	3
Microfinance	8	32	81	49
Social Performance	8	1	2	3

Table 11
Future Research Direction.

Main Stream	Sub Stream	Future Research	Reference
Financial Inclusion and Development	Microfinance	• Examining how microfinance institutions' (MFIs') financial integration is impacted by variables such financial development, loan demand, and the number of active borrowers.	(Kendo & Tchakounte, 2022; Y. Li et al., 2022)
		• Examine how client financial circumstances affect both the direct and indirect adoption of Islamic microfinance as well as other Islamic financial goods and services. Analyzing the potential for market expansion in the agricultural industry may have a positive social impact by reducing poverty and creating jobs.	(Umar et al., 2022)
		• Explore additional ratios that can shed light on the profitability factors of various firms within the finance sector.	(Matos Bautista et al., 2022)
		• Exploring the inclusion of cultural variables and examining the impact of digitalization would be valuable avenues for further exploration in the field.	(Kala Kamdjoug et al., 2020)
		• Understanding the long-term and scaled-up effects of microfinance on the economy is crucial for both research and policy-making, particularly in regions with a high concentration of extreme poverty and subsistence agriculture.	(Bandiera et al., 2022)
		• Researching how emotions, heuristics, and rational reasoning interact when making microfinance decisions may offer insightful information for creating policies and gaining a better knowledge of how people behave.	(Dhami et al., 2022)
	Financial Development	• Researching the connection between better meeting of practical requirements and women's involvement in strategic decision-making.	(Adusei & Obeng, 2019; Bandiera et al., 2022; Berguiga & Adair, 2021; Chhatoi et al., 2022)
	Saving Behavior	• By taking into account numerous internal and environmental elements that affect saving behaviors, Saving Behavior could broaden the study's focus. assessing the role financial advisors play in encouraging savings and investment practices, particularly in low-income, illiterate rural areas.	(Mohanta & Dash, 2022)
	Capital Structure	• Capital structure in microfinance institutions could further investigate the dynamics of earnings management and its relationship with debt and donated equity.	(Lassoued, 2022)
Attitudes and Expertise in Economic Growth		• Support the function of institutions involved in policy and microfinance. To provide a larger perspective, it is also critical to broaden the study's focus to include rising economies and to compare judgments of developed and developing nations.	(Ali et al., 2021)

(*continued on next page*)

Table 11 (*continued*)

Main Stream	Sub Stream	Future Research	Reference
		• Explore the impact of financial education programs on the underserved population, their financial management skills, and the subsequent effects on their utilization of financial services and overall economic growth.	(Ifediora et al., 2022)
		• Extend the study's geographic scope to cover a larger sample of developing nations, and look into the specific elements—such as population size, political factors, economic development, and education levels—that affect the relationship between digital financial infrastructure and economic growth.	(Ugwuanyi et al., 2022)
Fintech and Social Impact	Fintech Adoption	• Investigate the impact of policy initiatives aimed at promoting a competitive landscape and increasing fintech adoption on closing inclusion gaps and raising awareness among the population about the benefits of fintech services.	(Ifediora et al., 2022)
	Poverty Reduction	• Examine the effects of financial literacy on poverty reduction in various emerging and underdeveloped nations, as well as the efficacy of financial inclusion initiatives. Financial technology (FinTech) may be used to improve access and inclusion for various population groups, and studies may establish financial literacy indexes specific to these circumstances.	(Hasan et al., 2021; Ribeiro et al., 2022)
		• Investigate the role and impact of financial consultants in facilitating poverty reduction efforts, particularly in low-income and low-literacy rural areas.	(Mohanta & Dash, 2022)
		• Focus on monitoring and evaluating the gender provisions of peace agreements and tracking the impact of gender-responsive investments to inform policy and enhance efforts towards poverty reduction.	(Davies & True, 2022)
		• Explore the effectiveness of formal financial inclusion strategies compared to informal finance and banking methods in poverty reduction, with a focus on different regions, subnational divisions, and countries.	(Girón et al., 2022)
		• Investigate the role of women's empowerment in poverty reduction by exploring the impact of their enhanced participation in decision-making processes on socio-economic development, with a focus on assessing the economic and social outcomes.	(Chhatoi et al., 2022)
		• Understanding the specific mechanisms through which financial services targeting technological advancement and cultural development contribute to poverty reduction among rural residents.	(Qian et al., 2022)
	Impact Investments	• Extending the use of thorough measuring techniques, such as the three-step methodology that is suggested, to evaluate and compare the non-financial performance of other impact investment vehicles outside of microfinance.	(Meyer & Krauss, 2021)

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