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Mapping the Landscape of Financial Literacy and Financial Resilience: A Bibliometric Analysis of Research Trends and Patterns

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Purpose: This study aims to quantitatively map research trends in financial resilience and literacy within economics, finance, business, and management.
Design & Methodology: A bibliometric analysis of 1691 papers from 2002 to 2023 was conducted using the Scopus database and Biblioshiny, a tool from the Bibliometrix package. Key journals, authors, countries, articles, and topics were identified, along with citation and social network analyses.
Findings: Financial literacy and resilience have evolved into a multidisciplinary field. The analysis reveals the conceptual framework and social and intellectual organization, highlighting areas for further research.
Research Limitations: This study is limited by the quality and quantity of available literature on the Scopus database and differences in methodology and populations studied.
Practical Implications: The study identifies key issues and potential research areas, informing researchers about new topics and collaboration opportunities.
Social Implications: Enhancing financial literacy and resilience can improve financial well-being, reduce inequality, and promote economic growth.
Originality/Value: This study offers a comprehensive overview of global research on financial literacy and resilience, identifying trends and factors affecting investing activity.

Keywords: Financial literacy, resilience, financial resilience, finance, financial well-being.

1. Introduction

Financial literacy and resilience are crucial for individual and social well-being, especially in today's complex global economy. These skills enable individuals to make informed financial decisions and weather economic challenges (OECD, 2021). Understanding the literature on financial literacy and resilience is vital for policymakers, educators, and researchers. This

paper uses bibliometric data to analyze research patterns and trends in these areas. By employing bibliometric methodologies, we aim to identify key research issues, influential authors, prestigious journals, and noteworthy trends over time. This analysis will highlight the state of knowledge and research gaps, providing insights into the factors affecting financial literacy and resilience. The Organisation for Economic Co-operation and Development (OECD) and the World Bank have both emphasized the importance of these concepts for economic stability and growth (OECD, 2021; World Bank, 2020). Despite numerous studies on financial literacy and resilience, a comprehensive review mapping the scientific landscape is still needed. This bibliometric study offers a qualitative and quantitative overview of existing literature, identifying research gaps, trends, and promising areas for further investigation. This study will contribute to the field by providing a bibliographic review of research publications, outlining major themes and emerging research developments. This analysis will aid policymakers, educators, and researchers in developing evidence-based strategies to improve financial literacy and foster resilience among individuals and communities.

1.1 Financial Literacy and Financial Resilience

Financial literacy and resilience are vital for fostering individual and societal well-being. This section reviews key concepts, research findings, and trends in financial literacy and resilience.

1.1.1 Financial Literacy

Financial literacy is essential for making sound financial decisions. Lusardi and Mitchell (2014) highlighted its link to risk management, retirement planning, and better financial outcomes. Remund (2010) proposed a comprehensive definition of financial literacy, encompassing knowledge, skills, and attitudes for wise financial decision-making. Huston (2010) emphasized the need for accurate assessment tools for diverse demographics. Agarwal et al. (2020) found that higher financial literacy leads to better financial decisions. Xie and Zottoli (2017) showed that financial education improves financial behaviors. Hung, Parker, and Yoong (2009) highlighted the effectiveness of participatory, behavior-based financial education strategies. Fernandes et al. (2014) found a positive link between financial literacy and retirement savings. Lown, Tanaka, and Zeldes (2017) showed that financial literacy influences investment behavior.

1.1.2 Financial Resilience

Financial resilience refers to the ability to withstand financial shocks. Brown and Wilson (2020) identified key determinants of resilience, such as financial literacy, saving habits, credit availability, and social support. Shim et al. (2019) found that financial education programs enhance resilience, especially in low-income groups. Xu and Zia (2019) highlighted the role of digital financial services in promoting resilience. Johnson and Sherraden (2007) emphasized the importance of financial assets in mitigating financial shocks.

1.1.3 Integrating Financial Literacy and Financial Resilience

Research indicates a strong connection between financial literacy and resilience. Hu and Kaestner (2021) found that higher financial literacy correlates with greater financial resilience. Nacu et al. (2021) stressed the importance of integrating resilience-building strategies into financial education. Choi et al. (2004) highlighted the need for targeted approaches to

effectively enhance financial literacy. The reviewed research underscores the dynamic nature of financial resilience, the multifaceted character of financial literacy, and their potential interplay.

1.2 Bibliometric Analysis

Bibliometric analysis involves evaluating bibliographic data to understand research trends and patterns. This approach helps track the evolution of research, identify emerging trends, and recognize influential authors and publications in financial literacy and resilience (Chen, 2017). Bibliometric analysis allows researchers to visualize the intellectual structure of a field, assess research quality, and identify gaps in the literature (Zupic & Ater, 2015; Rafols et al., 2012). By analyzing citation trends and publication impact, researchers can identify significant studies and their influence on the academic community (Bornmann et al., 2017).

2. Research Questions

The following are the research questions

1. What is the state of financial literacy & financial resilience research at the moment?

2. What are the key themes and subtopics covered in the published works on financial resilience and literacy?

3. Which authors, publications, and organisations have significantly advanced the field?

4. What are the current study findings on the association between financial literacy and financial resilience?

5. What are gaps and areas for further research in the financial literacy & financial resilience literature?

3. Research Objectives

The objectives of this study is as follows.

1. To carry out a thorough bibliometric study of the research on financial literacy as well as financial resilience.

2. To recognise important concepts, patterns, and future directions for research in the area of financial literacy & financial resilience.

3. To evaluate the contributions of significant writers, publications, and organisations to the field of investigation about financial literacy and resilience.

4. To investigate the relationship connecting financial literacy & financial resilience and to review the research that has already been written about it.

5. To pinpoint areas of financial literacy & financial resilience research where further work needs to be done.

4. Research Methodology

The report shows the findings of a bibliometric analysis using a temporal window of 2002 to 2023. Choosing the right database to measure academic output is important. The Scopus database was used as the research's source of bibliographic data.

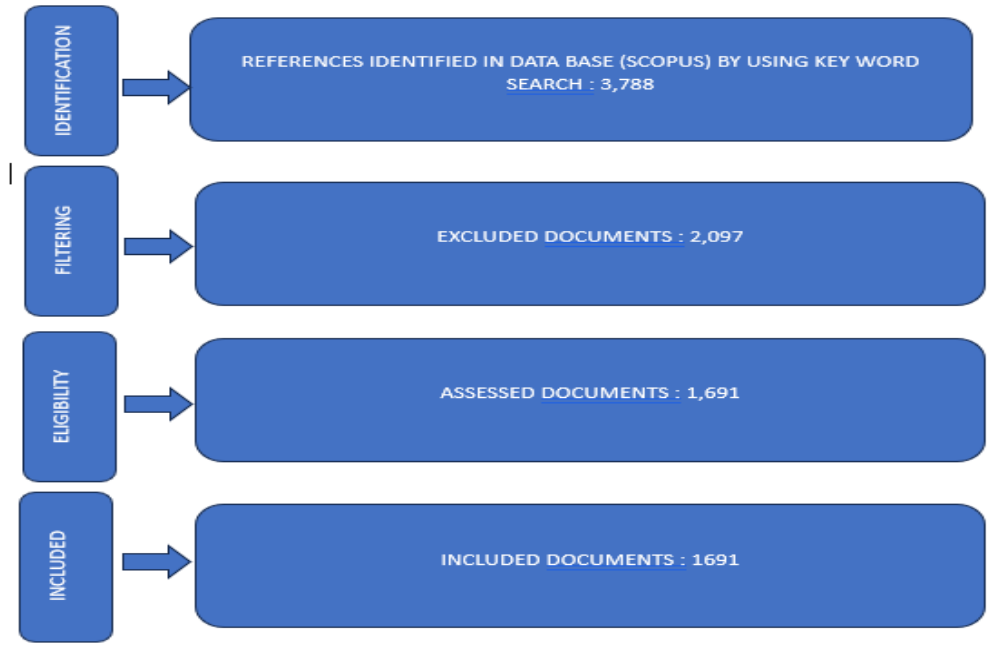


Fig. 1 Process of Search, recovery, and information selection for bibliometric analysis

4.1 Selection of Database

Scopus was chosen for the bibliometric analysis due to its comprehensive coverage of academic research across fields such as technology, health, social sciences, and humanities (Scopus, n.d.). Its vast indexing, including academic publications, conference papers, books, and patents, allows for a thorough evaluation of research outputs. Scopus' interdisciplinary nature is ideal for investigating the intersection of various fields, providing a broad perspective and enhancing the analysis's relevance (Elsevier, n.d.).

Preparing for Data Analysis

Keywords for Search	("Financial Literacy" AND "Financial" OR "Resilience")
Documents Type	Article
Languages	English
Time Span	2002:2023
Subject Category	Economics, Business, finance, & Social Science

4.2 Selection of Bibliometric Tool

Bibliometric methods were used for comprehensive mapping, statistical analysis, and quantitative review of scientific literature (Tella & Olabooye, 2014). The R-package Bibliometrix, particularly its web-based tool Biblioshiny, enabled in-depth bibliometric research, data processing, and visualization (Aria & Cuccurullo, 2017). Bibliometrix is valued

for its capabilities in network, descriptive, and bibliometric analysis, and it integrates well with other scientific R programs.

5. Data Analysis and Findings

Descriptive analysis looks at bibliometric data and concentrates on the basic characteristics of the data collection, such as sources, journals, documents, and authors. Scientific mapping creates information structures for upcoming study through the use of visualisation, network analysis, field plots, and thematic maps.

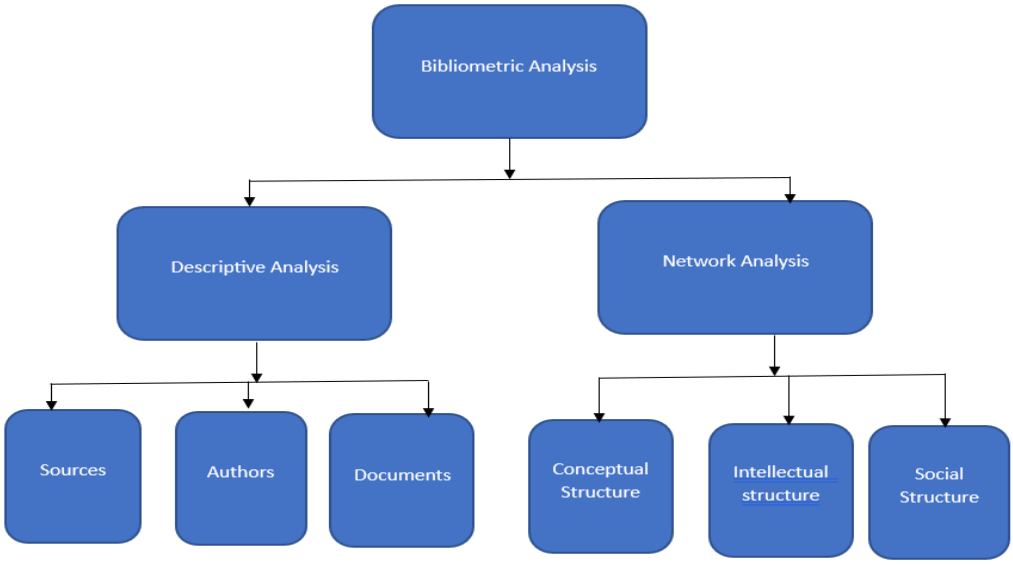


Fig 2 showing the path of data analysis

5.1 Descriptive Analysis

Data Set: The Scopus dataset spans from 2002 to 2023, comprising 1,691 documents from 649 sources, including books and journals. The dataset shows an average document age of 4.11 years and a 22.51% average yearly growth rate, with 75,259 references. Content is described by 3,457 Author's Keywords (DE) and 1,143 Keywords Plus (ID). The dataset includes 3,623 authors, with an average of 2.76 co-authors per work and a 19.81% rate of international co-authorship. All 1,691 entries are classified as articles. This dataset offers a comprehensive compilation of research data from diverse sources and publications.

5.2 Three Field plots

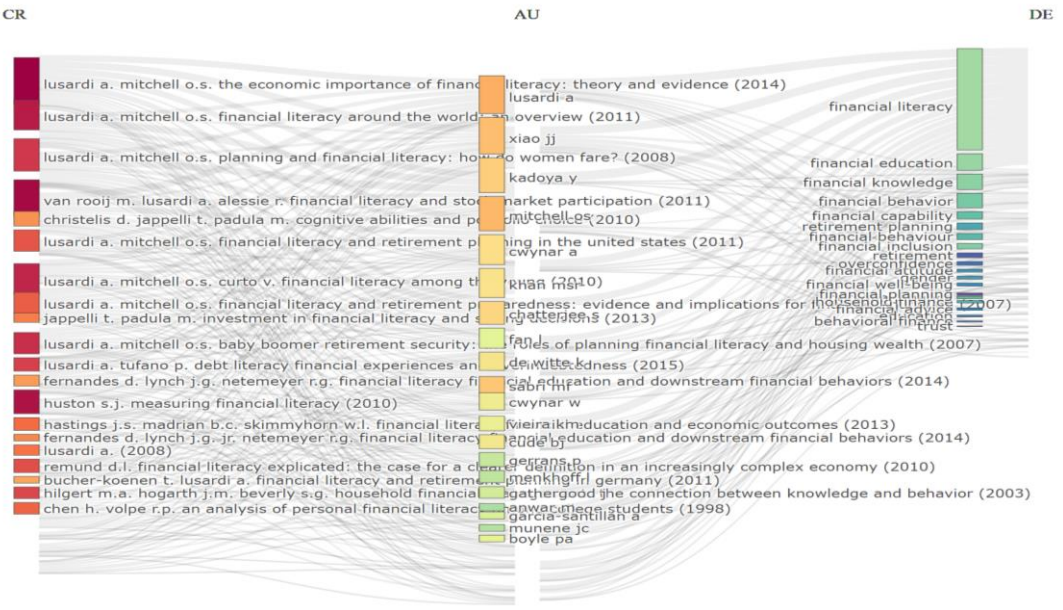


Fig 3 showing the Three Field plots

Field plots in three using Sankey Plots, having the size of the portion equal to what is displayed on the node, to depict the association between three fields (Riehmann et al., 2005). In the Sankey Plot, the sources that were picked for evaluation are on the right side, the authors were on the left, and the keywords appear in the middle row. Each item listed the origins and well-known authors for key words like "financial literacy," "financial resilience," and "financial education." All significant publications addressed the topic of "financial literacy," highlighting its crucial role in fostering "financial resilience."

5.3 Sources

5.3.1 Annual Scientific Production: Scientific production has steadily increased over time, with a significant rise from 2015 to 2019. The peak year was 2022, with 323 papers published. However, there is a slight decline in 2023 compared to 2022.

5.3.2 Average Article Citations per Year: The average number of citations per article has varied, peaking at 342.83 in 2007 and dropping to 0.37 in 2023. This suggests a potential decline in scientific influence and a limited window of research importance, corroborated by the reduction in the total years cited for each work.

5.3.2 Most Relevant Sources:

- Journal of Financial Counselling and Planning: 60 publications
- Sustainability (Switzerland): 52 publications
- International Journal of Bank Marketing: 34 publications

- International Journal of Consumer Studies: 31 publications
- Journal of Pension Economics and Finance: 30 publications

These journals have the highest article counts, with publication numbers decreasing from 27 to 12 in other journals.

5.3.4 Source Impact: Metrics such as h-index, g-index, m-index, total citations, number of papers, and the start year of publication are used to assess the impact of journals in their respective fields.

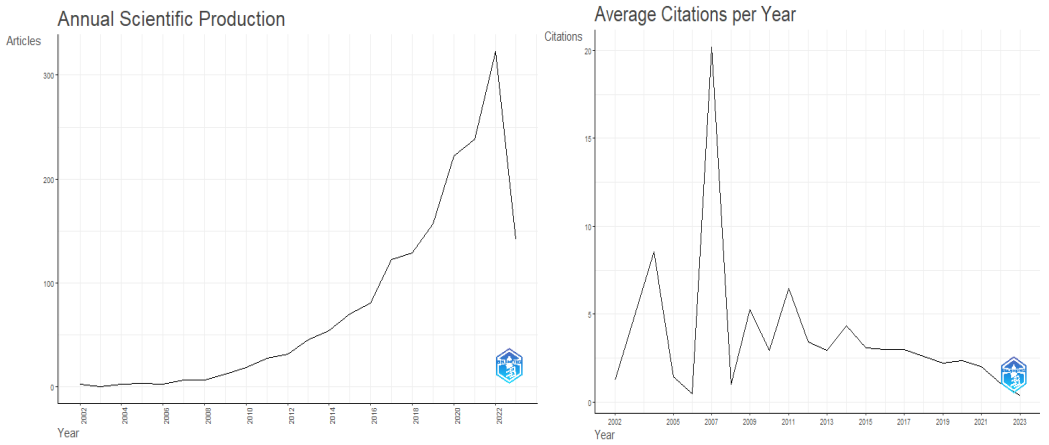


Fig 4 showing Annual Scientific Production & Average citations per year

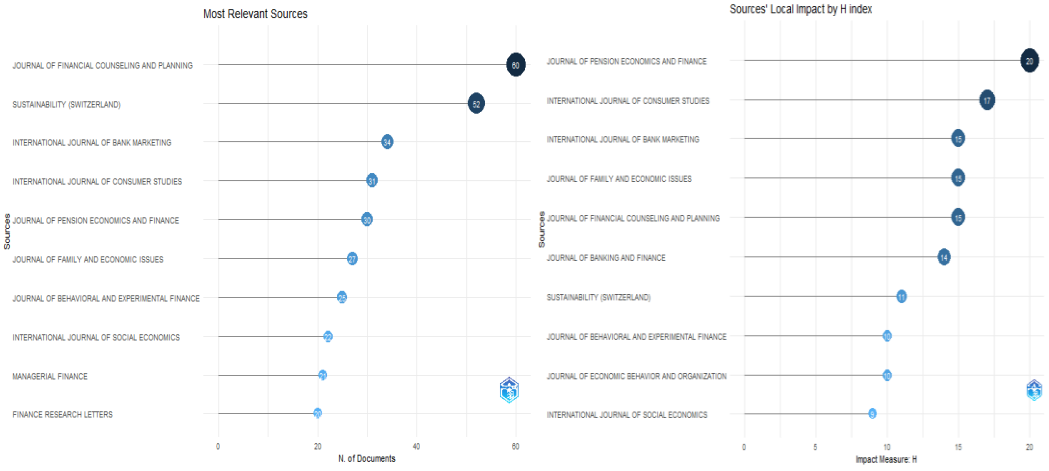
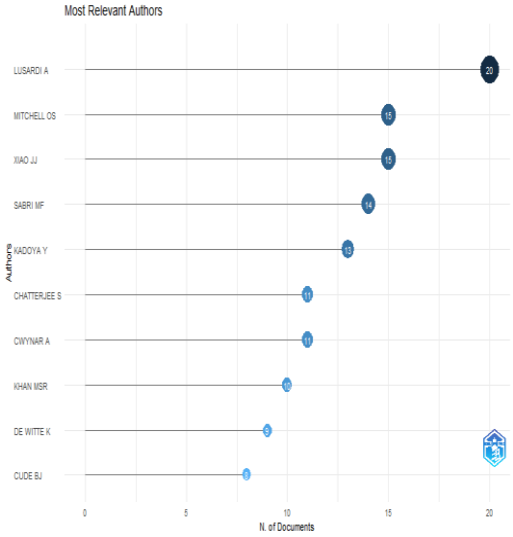


Fig 5 showing most relevant sources & Source impact

5.4 Authors



Country-wise Contribution

region	Frequency
USA	990
INDONESIA	377
MALAYSIA	312
INDIA	271
CHINA	252
AUSTRALIA	216
GERMANY	163
UK	145
ITALY	109
SPAIN	85

Fig 6 showing most relevant authors

In the above graph 20 articles, or 8.75 per authorship, have been written by LUSARDI A. With an average of 5.42 articles per authorship, MITCHELL OS has authored 15 articles. With an average of 5.06 articles per authorship, XIAO JJ has authored 15 papers. Other writers on the list have produced a range of articles, with corresponding fractionalized averages.

5.5 Country-wise Contribution

The average amount of academic production of paper in various nations is shown in the figure. The USA produces the most scientific publications, at 990 every year.Following the United States, Indonesia (377), Malaysia (312), India (271), and China (252) have the next-highest frequencies. In decreasing order of occurrence are Australia (216), Germany (163), the United Kingdom (145), Italy (109), and Spain (85). Higher frequencies imply a higher output of scientific research, and these values represent the proportionate scientific production of publications in each nation.

Most Cited Countries

Country	Total Citations
USA	7442
UNITED KINGDOM	1230
GERMANY	1196
AUSTRALIA	953
CHINA	935
MALAYSIA	716
NETHERLANDS	606
INDIA	540
ITALY	502
SWEDEN	425

It displays the overall number of citations that scientific works from various nations have earned. With 7442 total citations, the United States has the most, demonstrating the great impact and influence of scientific works from that country. Following closely behind with 1230 total citations is the United Kingdom, whose research output and impact are both rather significant. demonstrating how they've contributed to the scientific community, Germany, Australia, and China also have impressive total citation counts of 1196, 953, and 935, respectively. The Netherlands (606), India (540), Italy (502), Sweden (425), Malaysia (716), and other nations are given in decreasing order of the total number of citations. These figures emphasise each nation's research output and influence within the academic world by showing the overall citation effect of its scientific works.

5.6 Documents

With a total of 926 citations, "LUSARDI A, 2007, J MONET ECON" is the most widely cited paper. It receives a normalised citation count of 2.70 and an average of 54.47 each year, both of which point to a substantial impact over time. With a total of 821 citations, "FERNANDES D, 2014, MANAGE SCI" is closely behind. With a high average citation rate of 82.1 per year and a normalised citation count of 18.91, it is clearly well-known and influential in the field. With 263 citations, "LUSARDI A, 2011, J PENSION ECON FINANC" is the most often mentioned local work. It has 666 global citations, which is a comparatively high number and suggests popularity beyond the local level. Its relevance within its particular context is highlighted by the ratio of local to global citations, which is 39.49, and the normalised local citation count, which is 7.91. These articles and publications have received a lot of attention and citations overall, both internationally and within their own local settings, demonstrating their influence and significance to their specific areas of study.

5.7 Keywords

With a count of 189, "literacy" is mentioned the most often, highlighting its importance in the topic under study. With 98 occurrences, "finance" is the second most frequent term, indicating a heavy emphasis on financial issues. The relatively high frequency of the words "human" (61), "education," and "financial system" (56) also suggests their applicability in the setting under study. The words "female" (52) and "male" (49) denote that gender-related considerations were given to the text. A number of other phrases, including "adult" (45), "article" (43), "decision making" (43), and "retirement" (36) also show up frequently.

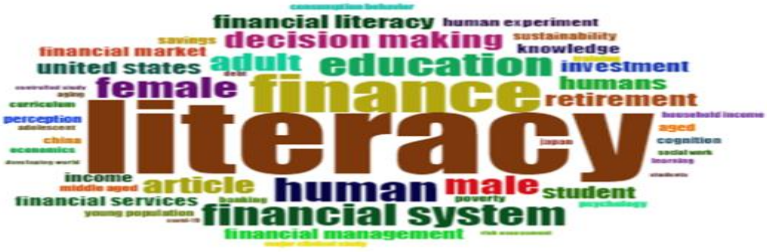


Fig 7 showing most relevant keywords

5.8 Data Visualisation

The topic of financial literacy and resilience has received more attention recently and has become the subject of more studies. The field's thematic development is shown in this section. In order to figure out the total amount of clusters that form, the quantity of occurrences and interactions across various levels on evaluation, aggregate linkage strengths, & the number of citations, data visualisation applies network analysis (Low and Siegel, 2019). A variety of techniques based on different analysis components, such as documents, authors, and keywords, are utilised to extract the networks. These networks are constructed of nodes connected by connections. It uses statistical analysis to determine several network metrics on the generated maps (Ariaa and Cuccurullo, 2017). Three different forms of knowledge structures are produced by the scientific mapping carried out by network analysis: conceptual structure, intellectual structure, and social structure.

5.8.1 Conceptual structure

Conceptual structure illustrates a connection between themes, subjects, including trends using co-occurrence network analysis. It is the sole tactic that uses content from research papers. The unit of study is therefore an idea, or even more usually, a concept used in phrase or a common subject found in a system (Li et al., 2018). The Bibliometrix programme developed this conceptual framework for the study area using numerous correspondence analysis (MCA). Multivariate nominal data may be subjected to numerical and graphical analysis using MCA (Greenacre and Blasius, 2006).

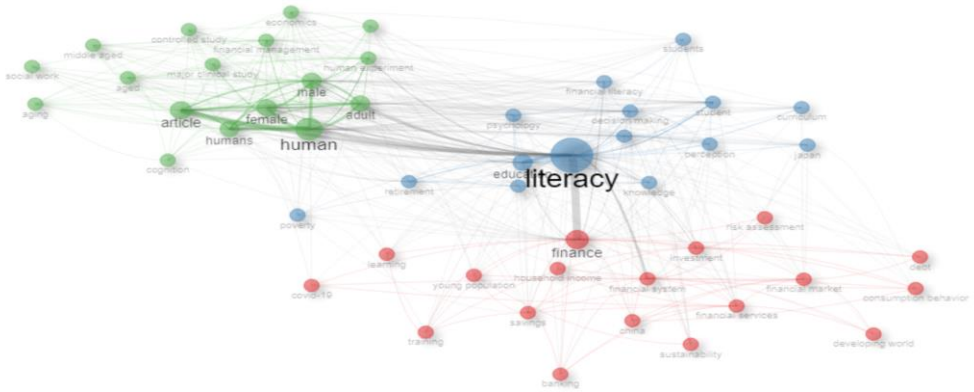


Fig 8 showing conceptual structure

Cluster 1 encompasses nodes related to money, the financial system, investments, financial services, savings, sustainability, China, youth, banking, education, and COVID-19, among others, demonstrating high betweenness centrality and significant network influence. Cluster 2 includes nodes such as the United States, student knowledge, income, poverty, curriculum, Japan, and financial literacy, playing a moderate connecting role. Cluster 3 focuses on people-related nodes like gender, age groups, financial management, human experiments,

cognition, social work, and controlled studies, emphasizing human factors and health studies.

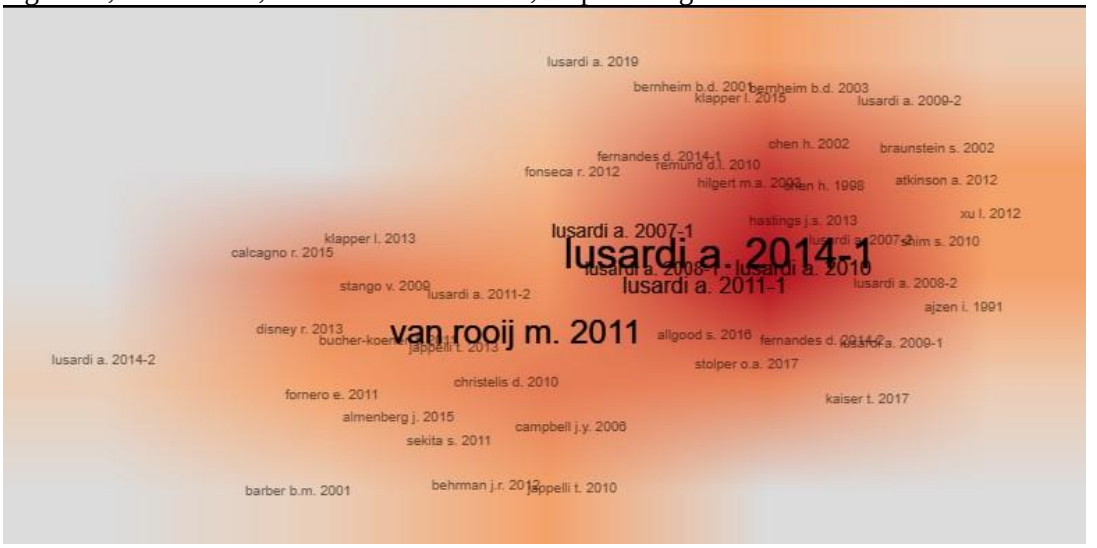
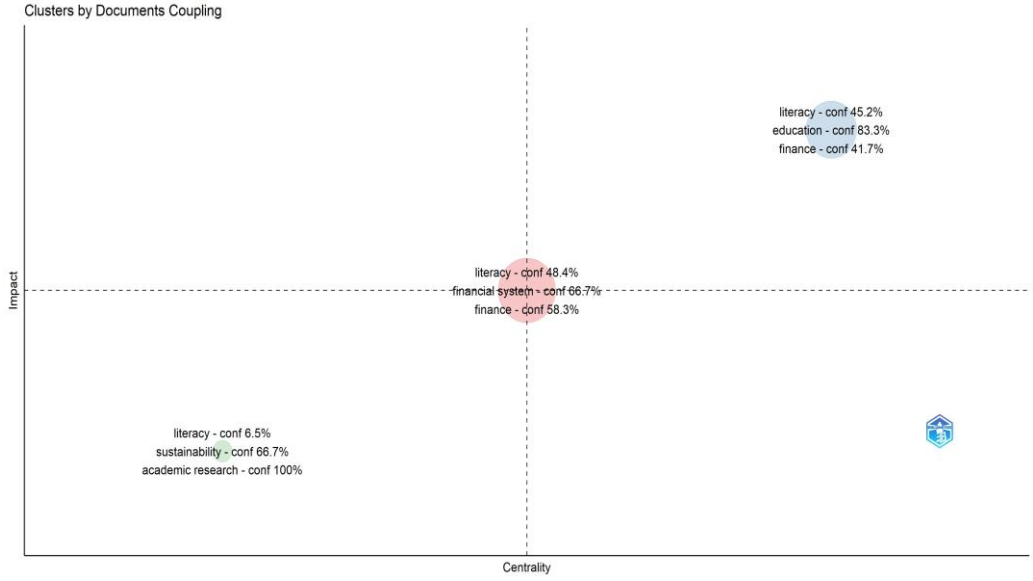


Fig 9 showing conceptual structure

5.8.2 Thematic Map

Thematic maps use graphical elements like colours, symbols, and patterns to depict data and qualities linked to the theme(Cobo et al., 2011). They show a certain theme or topic tied to geographic locations or regions. They are able to depict a variety of regional characteristics, including density of population, land use, weather trends, financial indicators, political lines, and social variables.



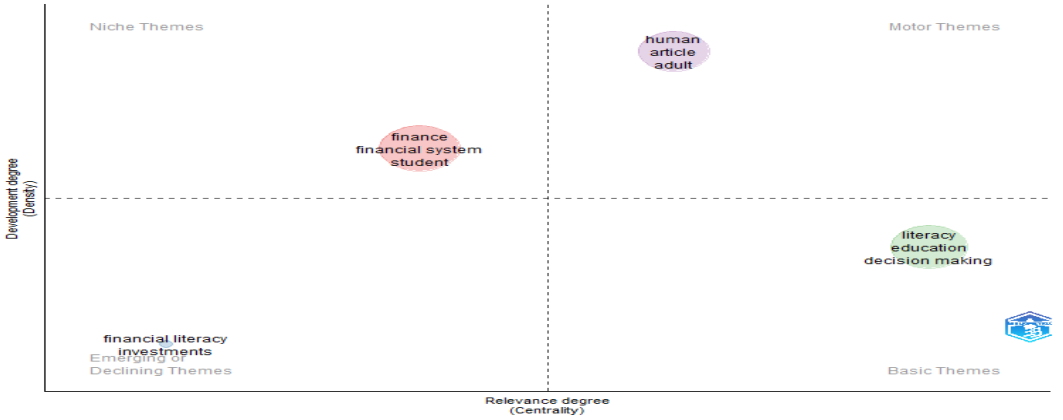


Fig 10 showing Thematic Map analysis

Words associated with finance, financial systems, investment, financial markets, financial services, savings, sustainability, China, young population, banking, training, consumption behaviour, household income, debt, learning, developing world, risk assessment, and COVID-19 are all included in the "finance" cluster. The cluster_label column displays the thematic label, whereas the occurrences column displays the frequency of each word in the dataset. The importance of the word and its impact on other words are shown by the betweenness centrality and closeness centrality measurements. With significantly lower occurrences and centrality values, other terms relating to demographics, such as the young population, and focused subjects, such as risk assessment and COVID-19, are also present.

5.8.3 Intellectual Structure

Intellectual structure comments on how varied writers influence the scientific community by examining relationships between authors and nations. It demonstrates the level of cooperation between research groups and the research fraternity as well as their connections to other organisations (Cobo et al., 2011; Mendes et al., 2017). The referencing and co-citation analysis revealed the various opinions and schools of thought that have developed over time.

5.8.4 Citation Analysis and Co-citation analysis

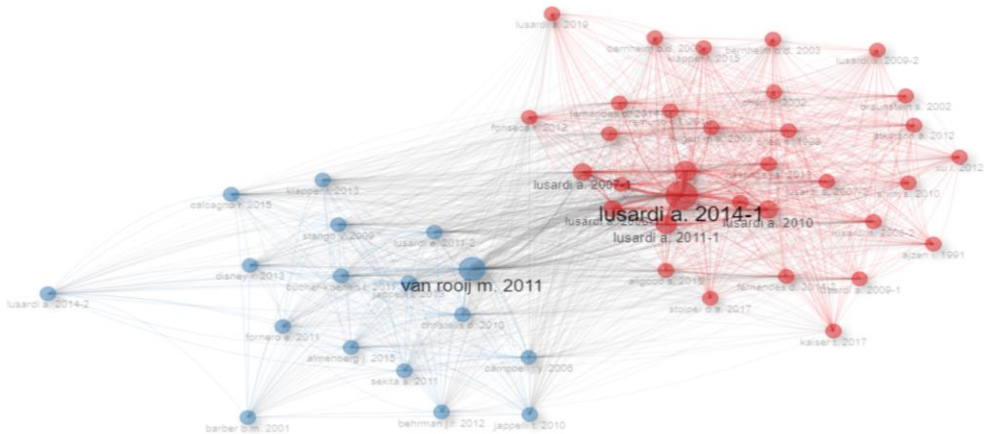


Fig 11 showing Citation Analysis and Co-citation analysis

This co-citation analysis examines the data of financial nodes, including cluster assignments, betweenness centrality, closeness centrality, and PageRank centrality. Except for "van rooij m. 2011" and "lusardi a. 2011-2," most nodes in Cluster 1 are interconnected, forming a cohesive group. High betweenness centrality ratings indicate nodes that facilitate information flow. Closeness centrality measures a node's proximity to others, reflecting high interconnection and collaboration. PageRank centrality assigns relevance scores based on the significance of linked nodes. These nodes in Cluster 1 are likely respected authorities in finance, with significant interaction and PageRank centrality roles in the network.

5.8.5 Collaboration Network Analysis

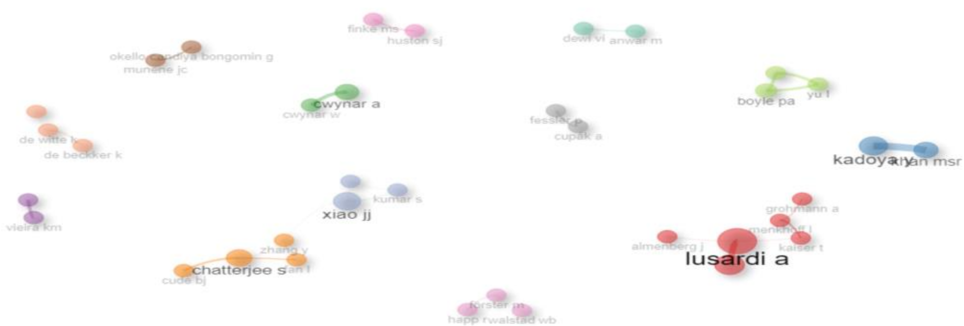


Fig 12 showing Collaboration Network Analysis

The analysis's main focus is on a network of author collaborations, looking at the connections between authors and their partnerships. The Walktrap method was used to identify author clusters, which are displayed in the network visualisation. Author relevance and impact within the network are revealed by the centrality metrics (Betweenness, Closeness, and PageRank). The study identifies prominent writers in each cluster with various centrality ratings, such as "lusardi a" in Cluster 1 and "chatterjee s" in Cluster 5. The analysis's inputs include labelling, scaling, edge visualisation, and data preprocessing options.

5.9 Social Network Analysis

A methodological approach called social network analysis (SNA) examines connections between people or other entities in a network to study social structures and interconnections. Insights into social dynamics, communication patterns, and information dispersion are provided through its examination of interaction patterns, information flow, and influence among network nodes (Low and Siege,2019). It assists in locating communities, locating key players, detecting hidden links, and analysing information flow. SNA techniques aid researchers and analysts in comprehending social structures, locating communication bottlenecks, examining patterns of collaboration, forecasting the transmission of information, and assessing the effects of interventions or changes in policy(Ariaa and Cuccurullo,2017).

5.10 Country’s Collaboration world Map

The information indicates developments and patterns in international cooperation between nations in many different fields. Major trading, research, and other partners include Australia, China, Malaysia, the United States, and Europe. The data also demonstrates how interdependent nations are and how crucial cooperation is to attaining shared objectives. Collaborations between nations from various continents, such as those between China and Germany and India and Australia, show the diversity of regional cooperation. Policymakers, researchers, and corporations can use this information to gain insight into the changing nature of international cooperation, find potential partners, and solidify already-existing links.

6. Conclusions

The study focuses on conducting a comprehensive bibliometric analysis of research on financial literacy and financial resilience. It aims to identify key concepts, patterns, and future directions in this field. The dataset used for the study consists of 1,691 documents from 649 sources, including books and journals, spanning the years 2002 to 2023. The dataset provides a diverse compilation of research data from various publications and covers a wide range of themes. The number of publications on financial literacy and financial resilience has been steadily increasing over time, with a significant rise between 2015 and 2019. However, there is a slight decrease in scientific output projected for 2023 compared to 2022. The most relevant sources in terms of article count include journals such as "Journal of Financial Counselling and Planning," "Sustainability (Switzerland)," "International Journal of Bank Marketing," "International Journal of Consumer Studies," and "Journal of Pension Economics and Finance." The United States has the highest contribution in terms of scientific publications, followed by Indonesia, Malaysia, India, and China. The United States also has the highest number of total citations, indicating its significant impact and influence in the field. The most

cited papers in the field of financial literacy and resilience include works by authors such as LUSARDI A, FERNANDES D, and others. These papers have received substantial attention and citations, demonstrating their influence and significance. The word frequency analysis reveals that terms like "literacy," "finance," "human," "education," and "financial system" are frequently mentioned in the research papers, indicating their relevance and importance in the field. The data visualization techniques, such as network analysis and co-occurrence analysis, provide insights into the conceptual structure and intellectual structure of the field. It shows the connections between different themes, authors, and organizations, highlighting the interrelationships and influential nodes. The thematic map identifies key clusters related to finance, financial systems, investment, savings, sustainability, China, banking, education, risk assessment, and COVID-19. These clusters represent important thematic areas within the field of financial literacy and resilience. Overall, the study provides a comprehensive analysis of the research landscape in financial literacy and resilience, highlighting important trends, influential authors, and significant concepts. It offers valuable insights for further research and identifies areas where additional work is needed.

7. Future Research Directions

Studies conducted over a long period of time examine how interventions in financial literacy affect people's financial behaviour and outcomes. Financial literacy as well as resilience are influenced by cultural characteristics, according to cross-cultural studies. The intersection of factors including gender, age, socioeconomic class, and ethnicity with financial literacy & resilience is the subject of intersectionality and inclusion research. Behavioural therapies help people overcome biases and make better financial decisions. It is important to emphasise the resilience of finances in vulnerable communities, and the teaching of finance in schools is evaluated. The development of successful interventions and methods for a variety of populations is made possible by these research directions, which help to understand and enhance financial literacy and resilience.

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