

FINANCIAL EDUCATION: BIBLIOMETRIC ANALYSIS FROM 1989 TO 2023

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Abstract

This study applies a comprehensive bibliometric analysis to financial education research published between 1989 and 2023 with the aim of exploring trends, patterns, and key themes in the field. By collecting data from various Scopus databases, totaling 280 documents, the analysis involves the distribution of publications, identification of influential articles and authors, and exploration of citation and co-occurrence relationships. Visualizing the results using mapping techniques helps depict the structure and dynamics of financial education research during the specified period. Key findings include limited collaboration among authors, uneven contributions across countries, and the emergence of various subfields in the literature. The research implications encompass the necessity for increased collaboration among researchers to address collaboration gaps, providing in-depth insights into the global distribution of research contributions, and offering insights for future research and policy in financial education.

Keywords: Financial Education; Bibliometric Analysis; Research Trends; Subfields; Network Visualization

Abstrak

Penelitian ini menerapkan analisis bibliometrik komprehensif terhadap penelitian pendidikan keuangan yang diterbitkan antara tahun 1989 dan 2023 dengan tujuan mengeksplorasi tren, pola, dan tema utama di bidang ini. Dengan mengumpulkan data dari berbagai database Scopus, total 280 dokumen, analisis ini melibatkan distribusi publikasi, identifikasi artikel dan penulis berpengaruh, serta eksplorasi hubungan kutipan dan kejadian bersama. Visualisasi hasil menggunakan teknik pemetaan membantu menggambarkan struktur dan dinamika penelitian pendidikan keuangan selama periode yang ditentukan. Temuan utama mencakup terbatasnya kolaborasi antar penulis, kontribusi yang tidak merata antar negara, dan munculnya berbagai subbidang dalam literatur ini. Implikasi penelitian melibatkan kebutuhan untuk peningkatan kerjasama di antara para peneliti guna mengatasi kesenjangan kolaborasi, memberikan wawasan mendalam tentang distribusi global kontribusi penelitian, dan menawarkan wawasan untuk penelitian dan kebijakan masa depan di bidang pendidikan keuangan.

Kata kunci: Pendidikan Keuangan; Analisis Bibliometrik; Tren Penelitian; Subbidang; Visualisasi Jaringan

Introduction

Financial education has become an increasingly important research area over the past few decades, as financial markets have become more complex, and individuals have been expected to take greater responsibility for their financial well-being (Lusardi, 2019). A growing body of literature has documented the significant impact of financial literacy on various aspects of individuals' financial behavior, such as savings, investment, and debt management (Adiputra et al., 2023; Skimmyhorn, 2016). Despite the increasing interest in financial education, there has been limited research on the overall landscape of this research field, its main trends, and emerging topics (Fernandes et al., 2014). A bibliometric analysis of financial education research from 1989 to 2023 can provide valuable insights into the development of this field and inform future research directions. The rapid growth of financial education research can be partly attributed to several global economic events and policy initiatives that have highlighted the importance of financial literacy. For example, the 2008 financial crisis exposed the vulnerability of many households to financial shocks and revealed a widespread lack of understanding of essential financial concepts (Rodriguez-Raga & Martinez-Camelo, 2022). In response to these concerns, numerous governments, and international organizations, such as the Organization for Economic Co-operation and Development (OECD) and the World Bank, have launched initiatives to promote financial literacy and integrate financial education into national curricula (OECD, 2019).

Despite these efforts, studies have consistently found that financial literacy levels remain relatively low in many countries, with significant gaps among various population subgroups, such as women, low-income individuals, and minorities (Lusardi et al., 2020). This has led researchers to explore various approaches to improving financial literacy, including financial education interventions in schools and workplaces, as well as digital and community-based initiatives (White et al., 2018). However, the effectiveness of these interventions has been mixed, with some studies reporting positive impacts on financial knowledge and behavior, while others finding little or no effect (Cordero et al., 2022). Considering these mixed findings, there has been growing interest in understanding the factors that contribute to the effectiveness of financial education interventions and the role of individual characteristics, such as cognitive abilities, personality traits, and cultural background, in shaping financial literacy and behavior (Lusardi et al., 2020). Moreover, recent technological advancements, such as the rise of fintech and digital financial services, have introduced new challenges and opportunities for financial education research, as individuals are required to navigate an increasingly digital and complex financial landscape (Kaiser & Menkhoff, 2017, 2022). While bibliometric analysis offers insights into the growth, trends, and influence within the field of financial education research, it may not directly address the underlying factors contributing to the mixed findings in this area (Ansari et al., 2022). To overcome this limitation and provide a more comprehensive understanding, additional methodologies such as systematic reviews or meta-analyses could be employed. These approaches synthesize existing research findings to identify patterns, inconsistencies, and areas of agreement or disagreement, thus offering a deeper understanding of the effectiveness of financial education interventions (Kaiser et al., 2022). By conducting a bibliometric analysis of financial education research from 1989 to 2023, this study aims to provide a comprehensive overview of the field's growth and development, identify influential articles and authors, and examine the key themes and emerging trends in the literature. This holistic approach, incorporating bibliometric analysis alongside systematic reviews or meta-analyses, can contribute to a more nuanced understanding of the effectiveness of financial education interventions and inform future research directions (Afjal, 2023). This analysis can help researchers, educators, and policymakers better understand the

state of financial education research and inform future research directions and policy initiatives in this crucial area.

Method

Research Design

This study employed a bibliometric analysis to systematically investigate the trends, patterns, and key themes in financial education research published between 1989 and 2023. This quantitative approach will enable the identification of influential articles, authors, and research topics, as well as the examination of emerging trends and research gaps within the field.

Data Collection

Database Selection: The study collects data from multiple academic databases, including Web of Science, Scopus, and Google Scholar, to ensure comprehensive coverage of financial education literature published during the specified period.

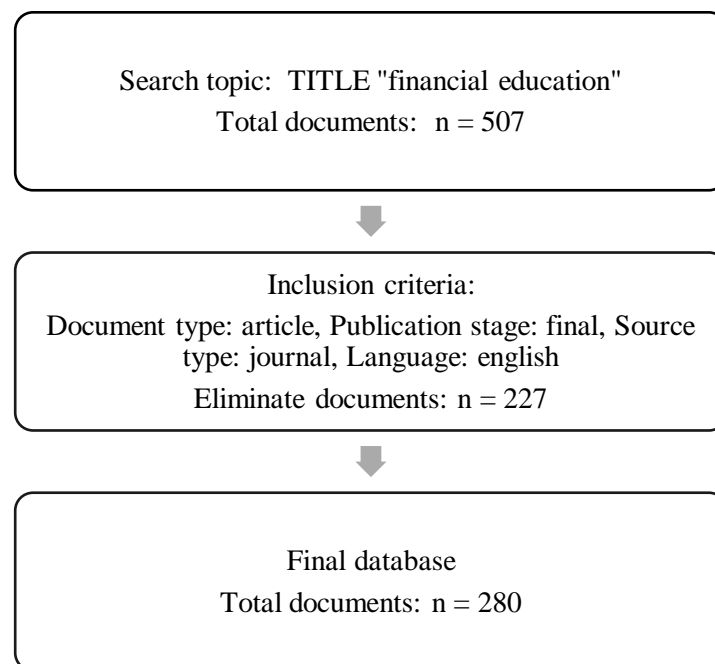


Figure 1. Identification process of financial education documents

Search Strategy: A systematic search strategy will be employed using relevant keywords and phrases, such as "financial education," "financial literacy," "financial behavior," and "financial decision-making." The search will be limited to articles published between 1989 and 2023, with a focus on peer-reviewed journal articles. **Inclusion and Exclusion Criteria:** Articles will be included in the analysis if they meet the following criteria: 1) Published between 1989 and 2023; 2) Focused on financial education, financial literacy, or related topics; 3) Written in English; and 4) Published in a peer-reviewed journal. Articles that do not meet these criteria will be excluded from the analysis, so we got 280 documents.

Upon analysis of Figure 1, it is evident that the co-authorship network exhibits four distinct clusters. The first cluster (red) emerges as the most prominent, boasting 23 authors, among whom Urban C., Collins J. M., and Lusardi A. stand out as dominant contributors (Collins, 2013; Lusardi et al., 2020; Urban et al., 2020). In contrast, the second cluster (green) comprises 15 authors, with Xiao J. J. leading as the dominant figure (Xiao & O'Neill, 2016). Notably, while the third (blue) and fourth (yellow) clusters consist of 12 and 8 authors, respectively, they lack clear dominant figures. These identified patterns of collaboration underscore the significance of co-authorship networks as pivotal indicators of collaborative research efforts (Santos & Santos, 2016). Such collaborative endeavors are crucial for advancing knowledge within the field of financial education and are instrumental in exploring various themes and research questions. Moreover, understanding these patterns of collaboration can shed light on the effectiveness of financial education interventions. For instance, collaborative efforts among authors within specific clusters may signify a concerted focus on particular themes or methodologies, thereby contributing to the consolidation of knowledge and the development of effective intervention strategies. Additionally, by aligning these collaboration patterns with existing research findings, it becomes possible to identify areas of consensus or divergence within the literature, thus informing future research directions and policy initiatives aimed at enhancing financial literacy and behavior. In summary, delving into the identified patterns of collaboration not only enriches our understanding of the dynamics within the financial education research community but also provides valuable insights into the effectiveness of interventions and their alignment with existing research findings.

Co-authorship analysis by countries

From 1989 to 2023, 66 countries were involved in research on financial education. The countries with the highest publication relevance are the United States (USA) with 132 articles, Netherlands with 12 articles, Germany with 12 articles, and Italy with 11 articles.

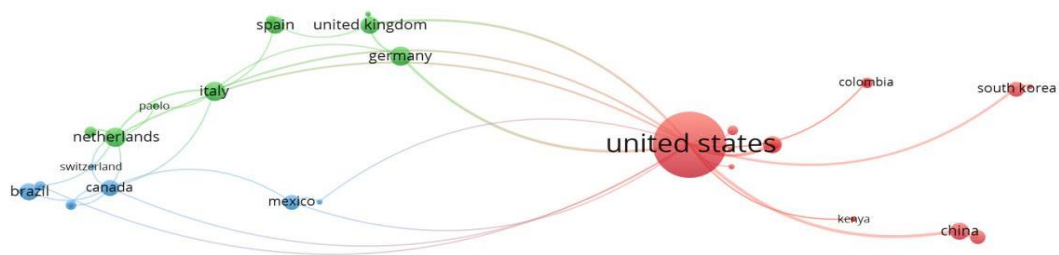


Figure 2. Co-authorship networks by countries that publish articles on financial education.

The analysis employed a threshold of at least one published article per country and at least one citation to conduct a network analysis of cooperation among countries. Subsequently, 66 countries were selected, resulting in a cooperative relations map comprising 32 links. In this map, nodes represent countries based on the multiplicity of publications, as depicted in Figure 2. Interconnections between nodes signify cooperative relationships among nations, delineating three distinct clusters. The first cluster (red) encompasses leading countries such as the United States, China, South Korea, Colombia, and Kenya, indicating robust collaborative efforts among these nations in the realm of financial education (Choi & Kim, 2023; Kraitzek et al., 2022; López-Rodríguez & López-Ordoñez, 2022; Zhou et al., 2024). Similarly, the second cluster (green) comprises countries like Germany, Italy, Spain, the United Kingdom, and the Netherlands, reflecting a cohesive network of cooperation within Europe (Amagir et al., 2022; Grzesiuk & Korczak, 2019; Korczak, 2019). Meanwhile, the third cluster (blue) includes Brazil, Mexico, Canada, and Switzerland, suggesting collaborative endeavors among countries from diverse regions (De Oliveira Orth et al., 2023; Engel et al., 2023; Lawrence, 2020; Mungaray et al., 2021). Notably, the United States emerges as a prominent node with the largest diameter, underscoring its leadership role in financial education research. Understanding these patterns of collaboration among countries offers valuable insights into the global landscape of financial education initiatives and their effectiveness. For instance, collaborative efforts within clusters may facilitate the exchange of best practices and the development of innovative intervention strategies, thereby enhancing the efficacy of financial education programs on a global scale. Moreover, aligning these collaborative patterns with existing research findings can elucidate common themes and challenges faced by countries in their efforts to promote financial literacy and behavior. By identifying areas of alignment or contradiction with existing research, policymakers and practitioners can refine their approaches and tailor interventions to better address the diverse needs of populations worldwide. In essence, analyzing cooperative relationships among countries in financial education research provides a holistic understanding of the global efforts to improve financial literacy and behavior, ultimately contributing to more effective intervention strategies and policy formulation.

Co-occurrence analysis

Keywords embody the central substance of the literature, and high-frequency keywords effectively convey research focal points in the field (Zhu et al., 2022). Co-occurrence analysis is used to examine the structure and evolution of scientific literature (Chen et al., 2019). As depicted in Figure 3, each keyword is represented by a node, with its size proportional to its frequency. A higher number of links signifies a keyword appearing more often. The thickness of the connection represents the strength of the relationship. A network analysis of keywords with a minimum threshold of four published articles per keyword resulted in 95 selected keywords out of 613.

The most occurrence of keywords, namely: financial education, financial literacy, financial knowledge, financial behaviour, financial capability, education, savings, adolescents, financial inclusion, financial socialization, children, national financial capability study, saving, youth, money management, personal finance, and randomized controlled trial. Other keywords only have occurrences below 4. The total link strength in VOSviewer refers to the total linkage value between two or more items in the analysed dataset. In the context of citation analysis of scientific articles, total link strength describes how strong the relationship between articles citing one another is. Total link strength can be calculated by adding weight values or linkage scores between each pair of articles. Linkage weight is usually calculated based on the number of times an article cites another article or the quality rating of the cited article. By calculating

the total link strength, VOSviewer can help users identify the most critical articles in a field of study and visualize the knowledge network formed between related articles (N. J. Van Eck & Waltman, 2010).

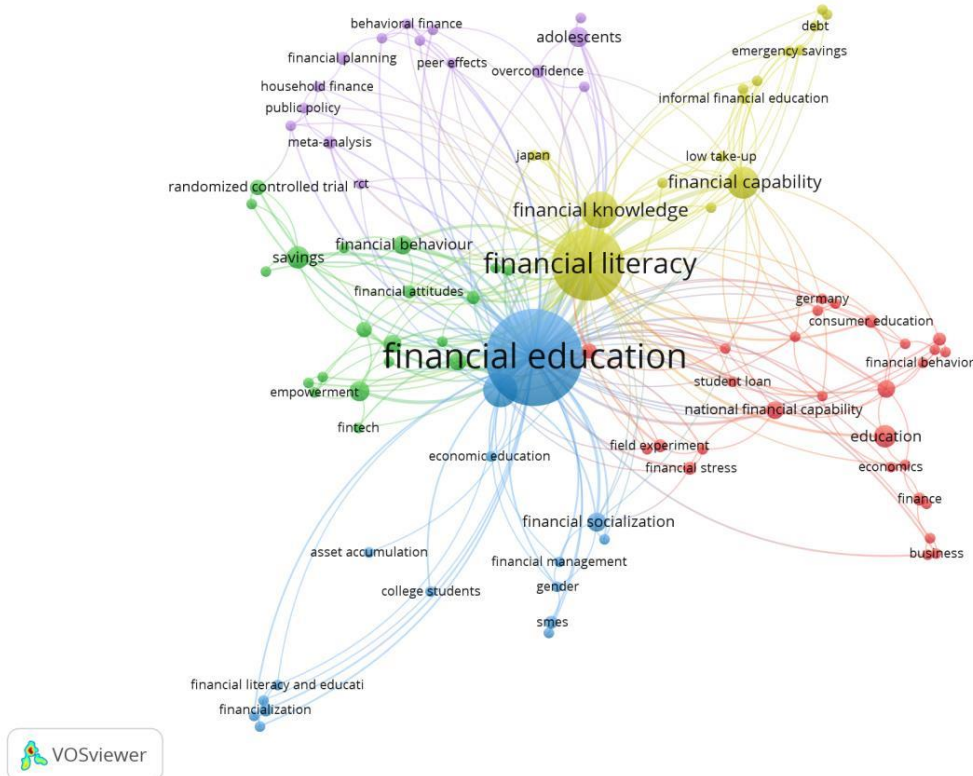


Figure 3. Keywords network visualization of financial education (threshold 2 occurrences, display 95 keywords)

The visualization of keyword networks for financial education reveals a complex landscape consisting of five distinct clusters, each representing a unique subfield within the scientific analysis of financial education. Cluster 1 (red) presents a comprehensive exploration of 28 keywords, unveiling the intricate correlations between financial education and various dimensions such as financial behavior, saving, and financial capability. This cluster draws insights from a multitude of studies, including those conducted by Liu & Lin and Marley-Payne et al., among others, underscoring the multifaceted nature of these relationships (Liu & Lin, 2021; Marley-Payne et al., 2022). In Cluster 2 (green), the focus shifts towards the dynamic interplay between financial education and emerging trends such as financial technology, financial attitude, and the empowerment of micro, small, and medium-sized enterprises. Through the lens of studies conducted by Locatelli & Tanda, Bhattacharya & Gill, and Sahela et al., this cluster offers a holistic understanding of how financial education intersects with contemporary issues shaping the financial landscape (Bhattacharya & Gill, 2020; Locatelli & Tanda, 2021; Sahela et al., 2021). Cluster 3 (blue) delves into the intricate relationship between financial education and fundamental aspects such as financial management, financial literacy, and financial socialization. With insights derived from research by Bakar & Bakar, Estelami &

Estelami, and others, this cluster provides a nuanced exploration of the educational interventions aimed at fostering financial competence and awareness (Bakar & Bakar, 2020; Estelami & Estelami, 2023). Meanwhile, Cluster 4 (yellow) delves into the correlation between financial education and foundational knowledge domains such as financial knowledge and debt management. Drawing from studies conducted by Kaiser et al., Salas-Velasco, and Zhang & Fan, this cluster sheds light on the educational pathways geared towards enhancing financial literacy and alleviating debt burdens (Kaiser et al., 2022; Salas-Velasco, 2022; Zhang & Fan, 2022). Lastly, Cluster 5 (purple) explores the intersectionality between financial education and human behavior, particularly among consumer demographics and adolescents. Through studies conducted by Rebelo & Pereira, Berg & Zia, and Jariwala, this cluster offers valuable insights into the behavioral dynamics underlying financial decision-making processes (Berg & Zia, 2017; Jariwala, 2022; Rebelo & Pereira, 2022). To deepen our understanding, we will embark on a comprehensive analysis of the intricate relationships between keywords within each cluster. By unraveling the interconnectedness and synergies among these keywords, we aim to provide a holistic interpretation of how they collectively contribute to advancing knowledge within their respective subfields. This multifaceted analysis will enrich our discussion, offering profound insights into the implications of the keyword network visualization for the evolving landscape of financial education research.

Examination of Highly Cited Literature

Arranging articles by citation count is a traditional bibliometric approach for uncovering the most impactful articles in a given field (Zhu et al., 2022). The document citation network in a scientific analysis of financial education from 1989 to 2023 revealed that there were 280 documents with a threshold of 20 citations of documents, and only 50 documents met the criteria and mapped visually in figure 4 because some of them are not related to each other.

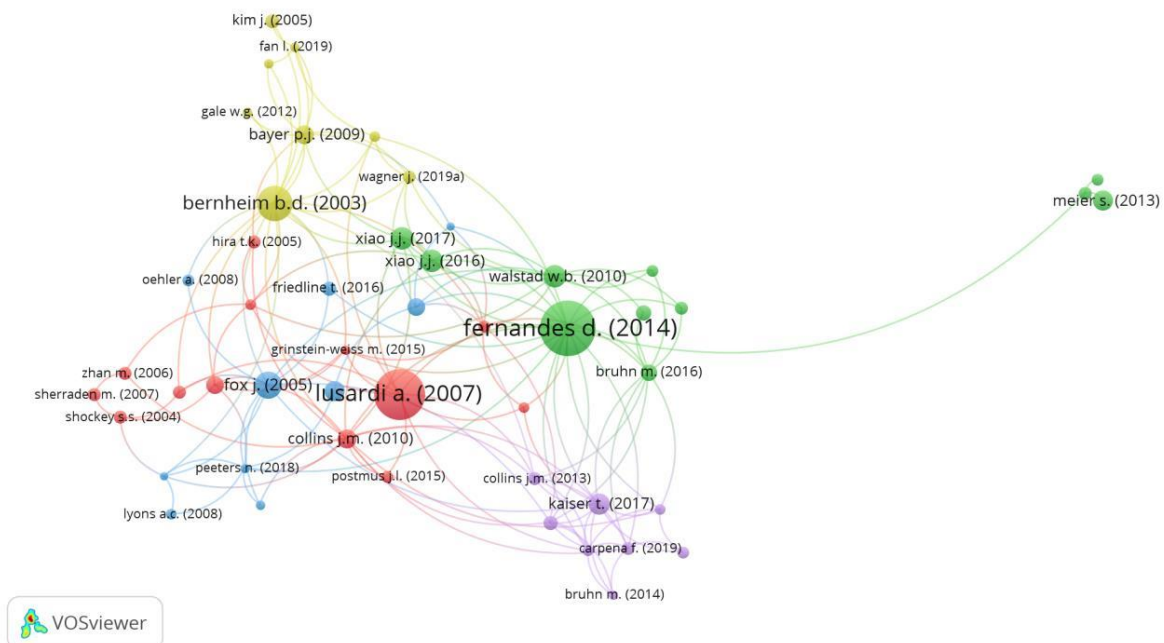


Figure 4. Documents co-citation map of financial education, 1989–2023 (threshold 20 citations, display 50 documents).

The most frequently cited first rank article, "Financial Literacy, Financial Education, and Downstream Financial Behaviours" totals 787 citations. This article provides a correlational studies measuring financial literacy show stronger associations with financial behaviours. However, when controlling for psychological traits or using an instrument for financial literacy, the effects of financial literacy diminish. This indicates that financial education has limitations that have been concealed by larger effects in correlational studies. The study proposes a reduced role for financial education unless it is elaborated upon or acted upon soon after. A more focused role for "just-in-time" financial education, which is linked to specific behaviours, is recommended. The paper concludes with a discussion on the characteristics of behaviours that could influence policy makers' choice of financial education, choice architecture, and regulation as tools to aid consumer financial behaviour (Fernandes, 2021). The second most frequently cited ranking is entitled "Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education", totalling 673 citations. This article provides lack of financial literacy among many households has led economists to investigate its causes and consequences, particularly in relation to retirement planning and wealth accumulation. A significant number of households lack basic economic knowledge required for making informed saving and investment decisions. Financial illiteracy is a widespread issue affecting both young and older people in the United States and other countries, with serious implications for various financial decisions, including saving, retirement planning, and mortgages. To address this issue, governments and non-profit organizations have initiated programs to enhance financial literacy. The experiences of other countries, such as Japan's saving campaign and Sweden's pension privatization program, provide valuable insights into potential roles for financial literacy and saving initiatives. It is crucial to continue exploring and implementing effective strategies to improve financial literacy and promote better financial decision-making among households (Lusardi & Mitchell, 2007). The third most cited article is entitled "The effects of financial education in the workplace: evidence from a survey of households", with 316 citations. This article provides a unique household survey was utilized to examine the impact of employer-based financial education on personal saving. By analysing cross-sectional relationships between the availability of employer-based financial education and different measures of asset accumulation, the study considered potential confounding factors. The findings support the hypothesis that employer-based financial education encourages saving, both generally and specifically for retirement purposes. This highlights the importance of providing financial education in the workplace to promote better financial decision-making and long-term financial security among employees (Bernheim & Garrett, 2003). Links in VOSviewer citations refer to the relationship between the scientific article cited and the article citing it. In this context, links refer to the influence and linkages between articles citing one another (Van Eck & Waltman, 2011).

Implications

Collaborative Relationships Between Authors: The identified patterns of collaboration among authors underscore the significance of cooperative research efforts in advancing knowledge within the financial education field. Understanding these collaborative dynamics offers valuable insights into the effectiveness of financial education interventions. Collaborative efforts among authors within specific clusters may signify a concerted focus on particular themes or methodologies, contributing to the consolidation of knowledge and the development of effective intervention strategies. Aligning these collaboration patterns with existing research findings can inform future research directions and policy initiatives aimed at enhancing financial literacy and behavior.

Co-authorship Analysis by Countries: The analysis of co-authorship networks among countries provides insights into global collaborative efforts in

financial education research. Understanding these patterns of collaboration offers valuable insights into the global landscape of financial education initiatives and their effectiveness. Collaborative efforts within clusters may facilitate the exchange of best practices and the development of innovative intervention strategies, thereby enhancing the efficacy of financial education programs on a global scale. By identifying areas of alignment or contradiction with existing research, policymakers and practitioners can refine their approaches and tailor interventions to better address the diverse needs of populations worldwide.

Co-occurrence Analysis of Keywords: The visualization of keyword networks reveals a complex landscape representing various subfields within financial education research. This analysis enriches our understanding of the multifaceted nature of financial education and its intersections with contemporary issues. By unraveling the interconnectedness among keywords within each cluster, we gain insights into how they collectively contribute to advancing knowledge within their respective subfields. This multifaceted analysis provides profound insights into the implications of the keyword network visualization for the evolving landscape of financial education research.

Examination of Highly Cited Literature: The examination of highly cited literature identifies key articles that have significantly influenced the field of financial education. These articles offer valuable insights into the causes and consequences of financial illiteracy, as well as effective strategies to promote financial literacy and behavior. Understanding the impact of these influential works can guide future research efforts and policy initiatives aimed at addressing the challenges posed by financial illiteracy. Overall, the findings of this study have important implications for advancing research, policy, and practice in the field of financial education. By understanding the collaborative dynamics among authors, countries, and keywords, stakeholders can better address the complex challenges associated with financial literacy and behavior on both a local and global scale.

Conclusion

In conclusion, our analysis of collaborative relationships between authors, co-authorship analysis by countries, co-occurrence analysis of keywords, and examination of highly cited literature in the field of financial education research has provided valuable insights into the dynamics and trends shaping this domain from 1989 to 2023. The co-authorship network analysis revealed four distinct clusters, indicating varying degrees of collaboration among authors. While certain clusters demonstrated clear dominant figures and cohesive collaboration, others lacked a central authority, suggesting potential areas for fostering stronger research partnerships. These patterns of collaboration underscore the importance of cooperative efforts in advancing knowledge within the field of financial education. Furthermore, the analysis of co-authorship by countries delineated three clusters of collaborative relationships, highlighting the global nature of financial education research. Understanding these patterns of cooperation among nations offers valuable insights into the collective efforts aimed at promoting financial literacy and behavior worldwide. The co-occurrence analysis of keywords unveiled five clusters, each representing a unique subfield within financial education research. By elucidating the interconnectedness between keywords within each cluster, we gained a deeper understanding of the multifaceted nature of financial education and its implications for various aspects of financial behavior and decision-making. Lastly, the examination of highly cited literature provided critical insights into seminal works shaping the discourse on financial education. These studies underscored the complexities and nuances inherent in addressing financial literacy and behavior, urging for more targeted and impactful interventions.

Building upon these findings, it is imperative for future research to adopt a more focused approach towards addressing the identified limitations and further exploring the implications of

our findings. Specifically, researchers should: 1) Foster Collaborative Partnerships: Encourage collaborative efforts among authors and institutions, particularly within clusters lacking clear dominant figures. Facilitate knowledge exchange and interdisciplinary collaboration to address complex research questions in financial education effectively. 2) Enhance Global Cooperation: Strengthen international collaboration and knowledge-sharing initiatives to address common challenges and leverage best practices in financial education. Foster partnerships between countries and regions to develop contextually relevant interventions and policies. 3) Deepen Research into Specific Subfields: Conduct in-depth investigations into specific subfields identified through keyword analysis, such as financial behavior, financial technology, and financial literacy. Explore emerging trends and innovative approaches to inform evidence-based interventions and educational programs. 4) Address Methodological Gaps: Address methodological limitations identified in the co-occurrence analysis, such as the inclusion of keywords with low occurrences. Employ robust methodologies and standardized frameworks to ensure the validity and reliability of research findings. 5) Translate Research into Practice: Bridge the gap between research and practice by translating findings from academic studies into actionable strategies and policies. Collaborate with policymakers, educators, and financial institutions to implement evidence-based interventions that promote financial literacy and behavior among diverse populations. By adopting these recommendations, researchers can contribute to advancing knowledge, informing policy decisions, and ultimately fostering positive changes in financial literacy and behavior worldwide.

References

- Adiputra, I. G. A., Ruslim, H., & Sumadinata, R. (2023). Determine of Demographic Factor, Financial Literacy, And Internal Locus of Control on The Investment Decision Of Individual Investor. *Jurnal Akuntansi Manado (JAIM)*, 356–366. <https://doi.org/10.53682/jaim.vi.6336>
- Afjal, M. (2023). Bridging the financial divide: A bibliometric analysis on the role of digital financial services within FinTech in enhancing financial inclusion and economic development. *Humanities and Social Sciences Communications*, 10(1), 645. <https://doi.org/10.1057/s41599-023-02086-y>
- Amagir, A., van den Brink, H. M., Groot, W., & Wilschut, A. (2022). SaveWise: The impact of a real-life financial education program for ninth grade students in the Netherlands. *Journal of Behavioral and Experimental Finance*, 33. <https://doi.org/10.1016/j.jbef.2021.100605>
- Ansari, Y., Albarrak, M. S., Sherfudeen, N., & Aman, A. (2022). A Study of Financial Literacy of Investors—A Bibliometric Analysis. *International Journal of Financial Studies*, 10(2), 36. <https://doi.org/10.3390/ijfs10020036>
- Bakar, M. Z. A., & Bakar, S. A. (2020). Prudent financial management practices among Malaysian youth: The moderating roles of financial education. *Journal of Asian Finance, Economics and Business*, 7(6), 525–535. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO6.525>
- Berg, G., & Zia, B. (2017). Harnessing emotional connections to improve financial decisions: Evaluating the impact of financial education in mainstream media. *Journal of the European Economic Association*, 15(5), 1025–1055. <https://doi.org/10.1093/jeea/jvw021>
- Bernheim, B. D., & Garrett, D. M. (2003). The effects of financial education in the workplace: Evidence from a survey of households. *Journal of Public Economics*, 87(7–8), 1487–1519. [https://doi.org/10.1016/S0047-2727\(01\)00184-0](https://doi.org/10.1016/S0047-2727(01)00184-0)
- Bhattacharya, R., & Gill, A. (2020). Financial Education and Financial Attitudes: Evidence From a High School Experiment. *Journal of Financial Counseling and Planning*, 31(2), 251–266. <https://doi.org/10.1891/JFCP-19-00034>

- Chen, C.-Y., Su, X.-Q., Chen, C.-M., & Chen, M.-S. (2019). Managerial Financial Education and the Valuation Effects of Seasoned Equity Offerings: Evidence from Taiwan. *Asia-Pacific Journal of Financial Studies*, 48(6), 844–868. <https://doi.org/10.1111/ajfs.12281>
- Choi, I., & Kim, W. C. (2023). Enhancing financial literacy in South Korea: Integrating AI and data visualization to understand financial instruments' interdependencies. *Societal Impacts*, 1(1–2), 100024. <https://doi.org/10.1016/j.socimp.2023.100024>
- Collins, J. M. (2013). The impacts of mandatory financial education: Evidence from a randomized field study. *Journal of Economic Behavior and Organization*, 95, 146–158. <https://doi.org/10.1016/j.jebo.2012.08.011>
- Cordero, J. M., Gil-Izquierdo, M., & Pedraja-Chaparro, F. (2022). Financial education and student financial literacy: A cross-country analysis using PISA 2012 data. *Social Science Journal*, 59(1), 15–33. <https://doi.org/10.1016/j.soscij.2019.07.011>
- De Oliveira Orth, C., Macagnan, C. B., & Rossetto, R. M. (2023). Family Office as a Financial Education Mechanism in Brazil. *The Journal of Wealth Management*, 25(4), 93–116. <https://doi.org/10.3905/jwm.2023.1.195>
- Engel, L., Rampling, T., Brautigan, E. J., Bazin, T., Dilts, K., Williams, T., Dyck, T. M., Jack, E. M., & Colquhoun, H. (2023). Review and Consultations of Canadian Financial Education Programs for Individuals with Disabilities. *Canadian Journal of Occupational Therapy*, 90(3), 257–268. <https://doi.org/10.1177/00084174221129947>
- Estelami, H., & Estelami, N. N. (2023). The differential impact of cognitive style on the relationship between financial education and financial literacy. *Journal of Financial Services Marketing*. <https://doi.org/10.1057/s41264-022-00204-6>
- Fernandes, D., Lynch Jr., J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science*, 60(8), 1861–1883. <https://doi.org/10.1287/mnsc.2013.1849>
- Fernandes, V. (2021). From Education To Nudge E: Behavior AI Sciences In Financial Education Programs. *Sociologia e Antropologia*, 11(1), 307–322. <https://doi.org/10.1590/2238-38752021V11112>
- Grzesiuk, A., & Korczak, D. (2019). Financial education in Poland and Germany. In B. Swiecka, A. Grzesiuk, D. Korczak, & O. Wyszowska-Kaniewska, *Financial Literacy and Financial Education* (pp. 93–105). De Gruyter. <https://doi.org/10.1515/9783110636956-006>
- Jariwala, H. V. (2022). Do financial education workshops enhance parent–adolescent communication about money? *Managerial Finance*. <https://doi.org/10.1108/MF-09-2021-0469>
- Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*, 145(2), 255–272. <https://doi.org/10.1016/j.jfineco.2021.09.022>
- Kaiser, T., & Menkhoff, L. (2017). Does financial education impact financial literacy and financial behavior, and if so, when? *World Bank Economic Review*, 31(3), 611–630. <https://doi.org/10.1093/wber/lhx018>
- Kaiser, T., & Menkhoff, L. (2022). Active learning improves financial education: Experimental evidence from Uganda. *Journal of Development Economics*, 157. <https://doi.org/10.1016/j.jdeveco.2022.102870>
- Korczak, D. (2019). Financial education and financial literacy in Germany: An Overview. In B. Swiecka, A. Grzesiuk, D. Korczak, & O. Wyszowska-Kaniewska, *Financial Literacy and Financial Education* (pp. 53–64). De Gruyter. <https://doi.org/10.1515/9783110636956-004>
- Kraitzek, A., Förster, M., & Walstad, W. B. (2022). Comparison of financial education and knowledge in the United States and Germany: Curriculum and assessment. *Research in*

- Comparative and International Education*, 17(2), 153–173. <https://doi.org/10.1177/17454999221081333>
- Lawrence, N. (2020). Components of a financial education technology for micro-entrepreneurs in Brazil. *Journal of Social Science Education*, 19(3), 40–65. <https://doi.org/10.4119/jsse-1197>
- Liu, H.-C., & Lin, J.-S. (2021). Impact of Internet Integrated Financial Education on Students' Financial Awareness and Financial Behavior. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.751709>
- Locatelli, R., & Tanda, A. (2021). Financial education in times of digitalization and FinTech (r)evolution. In *Financial Education and Risk Literacy* (pp. 60–74). <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85117599381&partnerID=40&md5=52c50048abe48330b9ecda418316f15f>
- López-Rodríguez, C. E., & López-Ordoñez, D. A. (2022). Financial Education in Colombia: Challenges From The Perception Of Its Population With Socioeconomic Vulnerability. *Economics and Sociology*, 15(1), 193–204. <https://doi.org/10.14254/2071-789X.2022/15-1/12>
- Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. *Swiss Journal of Economics and Statistics*, 155(1). <https://doi.org/10.1186/s41937-019-0027-5>
- Lusardi, A., Michaud, P.-C., & Mitchell, O. S. (2020). Assessing the impact of financial education programs: A quantitative model. *Economics of Education Review*, 78. <https://doi.org/10.1016/j.econedurev.2019.05.006>
- Lusardi, A., & Mitchell, O. (2007). Financial literacy and retirement preparedness: Evidence and implications for financial education. *Business Economics*, 42(1), 35–44. <https://doi.org/10.2145/20070104>
- Marley-Payne, J., Dituri, P., & Davidson, A. (2022). Financial Education, Mathematical Confidence, and Financial Behavior. *Journal of Financial Counseling and Planning*, 33(2), 194–204. <https://doi.org/10.1891/JFCP-2021-0060>
- Mungaray, A., Gonzalez Arzabal, N., & Osorio Novela, G. (2021). Educación financiera y su efecto en el ingreso en México. *Problemas Del Desarrollo. Revista Latinoamericana de Economía*, 52(205). <https://doi.org/10.22201/iiiec.20078951e.2021.205.69709>
- OECD. (2019). *Education at a Glance 2019: OECD Indicators*. OECD Publishing. <https://doi.org/10.1787/f8d7880d-en>
- Rebelo, F., & Pereira, I. P. (2022). Online consumer behaviour, financial education and over-indebtedness: First thoughts on the Proposal for a Directive on Consumer Credit COM/2021/347final. *Revista Juridica Portucalense*, 32, 86–109. [https://doi.org/10.34625/issn.2183-2705\(32\)2022.ic-04](https://doi.org/10.34625/issn.2183-2705(32)2022.ic-04)
- Rodriguez-Raga, S., & Martinez-Camelo, N. (2022). Game, guide or website for financial education improvement: Evidence from an experiment in Colombian schools. *Journal of Behavioral and Experimental Finance*, 33. <https://doi.org/10.1016/j.jbef.2021.100606>
- Sahela, K. Z., Susanti, R., & Adjie, A. R. (2021). The Influence of Government Dimension on Financial Education and Empowerment of Micro-, Small and Medium-Sized Enterprises in Indonesia. *Journal of Asian Finance, Economics and Business*, 8(3), 637–643. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0637>
- Salas-Velasco, M. (2022). Causal Effects of Financial Education Intervention Aimed at University Students on Financial Knowledge and Financial Self-Efficacy. *Journal of Risk and Financial Management*, 15(7). <https://doi.org/10.3390/jrfm15070284>
- Skimmyhorn, W. (2016). Assessing financial education: Evidence from boot camp. *American Economic Journal: Economic Policy*, 8(2), 322–343. <https://doi.org/10.1257/pol.20140283>

- Urban, C., Schmeiser, M., Collins, J. M., & Brown, A. (2020). The effects of high school personal financial education policies on financial behavior. *Economics of Education Review*, 78. <https://doi.org/10.1016/j.econedurev.2018.03.006>
- Van Eck, N. J. V., & Waltman, L. (2011). Text mining and visualization using VOSviewer. *ISSI Newsletter*, 7(3), 50–54. <https://doi.org/10.1201/b19007>
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- White, N. D., Packard, K. A., Flecky, K. A., Kalkowski, J. C., Furze, J. A., Ryan-Haddad, A. M., Black, L. L., Rusch, L. M., & Qi, Y. (2018). Two year sustainability of the effect of a financial education program on the health and wellbeing of single, low-income women. *Journal of Financial Counseling and Planning*, 29(1), 68–74. <https://doi.org/10.1891/1052-3073.29.1.68>
- Xiao, J. J., & O'Neill, B. (2016). Consumer financial education and financial capability. *International Journal of Consumer Studies*, 40(6), 712–721. <https://doi.org/10.1111/ijcs.12285>
- Zhang, Y., & Fan, L. (2022). Financial Capability, Financial Education, and Student Loan Debt: Expected and Unexpected Results. *Journal of Financial Counseling and Planning*, 33(3), 324–343. <https://doi.org/10.1891/JFCP-2021-0039>
- Zhou, J., Feng, S., Wu, L., & Wang, S. (2024). The Impact of Financial Education for Children: Evidence from an Experiment in China. *The Asia-Pacific Education Researcher*, 33(1), 157–169. <https://doi.org/10.1007/s40299-023-00716-2>
- Zhu, Z., Yao, X., Qin, Y., Lu, Z., Ma, Q., Zhao, X., & Liu, L. (2022). Visualization and mapping of literature on the scientific analysis of wall paintings: A bibliometric analysis from 2011 to 2021. *Heritage Science*, 1–13. <https://doi.org/10.1186/s40494-022-00735-0>