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FINANCIAL LITERACY TO IMPROVE SUSTAINABILITY: A BIBLIOMETRIC ANALYSIS

AHMAD Idris
Universitas Muhammadiyah Yogyakarta, Indonesia

ALNI Rahmawati
Universitas Muhammadiyah Yogyakarta, Indonesia

ARNI Surwanti
Universitas Muhammadiyah Yogyakarta, Indonesia

MAMDUH M. Hanafi
Universitas Gadjah Mada, Indonesia

Abstract:

The study of financial literacy and sustainability has attracted much interest recently and is expanding quickly. This paper offers a trustworthly, consistent, and current financial literacy and sustainability analysis following bibliometric analysis and systematic literature review. Concerning 127 documents published between 2008 and October 2022, we specifically examined the co-occurrence of author keywords, co-citation analysis of cited references, and subsequent in-depth analysis. Results show that the following topics have received the most attention in analyzing financial literacy and sustainability research: (1) financial inclusion; (2) financial behaviour; (3) financial systems; and (4) decision-making. The trick-down growth and development theory, the consumption function theory, the resource-based view theory, and the theory of entrepreneurship are the theoretical pillars supporting this study's structure. Next, we create an integrative framework as the foundation for additional research. As a result, this review provides a thorough overview of financial literacy and sustainability research.

Key words: *Financial literacy, sustainability, bibliometric analysis, scopus*

1. Introduction

Integrating financial literacy with sustainable development is currently one of the most pressing challenges. Poor financial literacy is one of the most significant obstacles to sustainable development (Ye & Kulathunga, 2019). By increasing financial inclusion, financial literacy can support sustainable development and global economic growth (Kandpal, 2020). Financial inclusion is commonly cited as a driver of other development

goals in the Sustainable Development Goals (SDGs) for 2030, which target eight of seventeen goals (Tay et al., 2022).

Financial literacy includes frameworks for making ethical, moral, and social decisions in addition to knowledge of financial concepts (Warner & Agnello, 2012). An increase in bank interest rates in 2008 led to the global economic crisis (Faulkner, 2015). In 2020, Covid-19 brought about an economic downturn (Kurowski, 2021). The global economic crisis can be avoided by increasing people's financial literacy (Rahmandoust et al., 2011). Financial literacy prepares individuals to face economic crises (Klapper et al., 2013). It indicates that maintaining economic life in the future depends critically on financial literacy.

Despite being around for thirty years, the definition of financial literacy is still being developed and debated. We offer several definitions of financial literacy. The ability to make wise judgments and decisions about how to use and manage money is known as financial literacy (Noctor et al., 1992). Noctor's definition is still more general because it only discusses money management, but it begins to draw readers' interest in further discussion. Financial literacy is a tool to measure the ability to understand and apply information about personal finances (Huston, 2010). Only individual and family financial literacy, which has improved through financial education programs, is the focus of this definition. Huston (2010) starts to make a point of separating financial literacy from financial literacy instruction. Financial literacy is knowledge of basic financial principles and the capacity to perform basic calculations (A Lusardi & Mitchell, 2011). A combination of Atkinson & Messy (2012) financial literacy measurement is used in the OECD's working paper to assess financial literacy in almost every nation, including Albania, Armenia, Germany, Ireland, Malaysia, Norway, Peru, Poland, South Africa, the United Kingdom, and the British Virgin Islands. Financial literacy is described as having "knowledge and understanding of financial concepts and risks, as well as the skills, motivation, and confidence to apply this knowledge and understanding to make effective decisions in various financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life," (OECD, 2014). The definitions are believed to be quite comprehensive and can be used in research.

Sustainability relates to the ideas that combine social, environmental, and economic performance for recent and future interests (Ranjbari et al., 2021). Sustainability is complicated and applies to various disciplines (Warner & Agnello, 2012). According to the literature, Elkington (1998), who popularized the triple bottom line (TBL)—social, environmental, and economic—was the first to use "sustainability." Here, it is necessary to stress the distinction between sustainability and sustainable development. The difference is that while sustainable development involves several processes and ways to achieve it, sustainability is a long-term objective. Current research topics include the 2030 agenda for sustainable development and the Sustainable Development Goals (SDGs) of 2015 (Bryant, 2013; Muñoz-Céspedes et al., 2021; Tay et al., 2022). According to the United Nations (1987), "sustainable development is the development that satisfies present needs without compromising the capacity of future generations to satisfy their own needs". Financial literacy is essential to sustainable development (Bryant, 2013). Because it highlights the significance of financial literacy for sustainable development, numerous international

institutions, including the OECD and the European Commission, regularly assess financial literacy (Krechovská, 2015). It is crucial to be aware of scientific publications on financial literature given the significance and for the government to improve the balance of environmental, economic, and social sustainability (López-Medina et al., 2022).

The subject of research concerning financial literacy and sustainability is increasing and developing. Creating a literature review of this study is crucial to compile and organise the expanding and heterogeneous literature. This study is seen as a crucial step in financial literacy and sustainability research because it maps, analyses, and integrates the literature currently available in this area of study. However, there are not as many works as those of López-Medina et al. (2022) that are appropriate for this use.

We offer some summaries of the completed bibliometric analyses. To create a bibliometric analysis of financial literacy, Goyal & Kumar (2021) looked at 502 articles that were published between 2000 and 2019. The authors categorize their findings into five main themes: financial capability, financial inclusion, gender gap, tax & insurance literacy, and digital financial education. With a focus on financial literacy in the financial planning stage of retirement, Gallego-Losada et al. (2022) conducted a bibliometric analysis of 242 documents published between 1990 and 2019 to support this goal. The authors propose using financial literacy to create one's retirement strategy. A recent systematic review and bibliometric analysis of SMEs' financial literacy was conducted by Molina-García et al. (2022) using 88 documents covering the years 2005 and 2020. The authors highlighted five areas of SME financial literacy: performance, access to finance, innovation, risk attitude and entrepreneurship, owner-manager and residual contribution. The authors of López-Medina et al. (2022) attempted to connect behavioural finance to the Sustainable Development Goals (SDGs) related to social justice in the areas of quality education (SDG 4) and reducing inequality by studying 492 documents spanning the years 1992 and 2021 and conducting a bibliometric analysis on financial behaviour for sustainability (SDG 10).

This article's structure is as follows. The first presents a concise summary of the current state of the art. The second section outlines the methodology (Section 2). The third is the review's findings then presented (in Section 3). The conclusion is provided last (Section 4).

2. Research methodology

2.1. Bibliometric

Bibliometric analysis is considered more useful to analyse the development of a published theme. One of the first articles to use the bibliometric method was written by Billings (1881) to review the development of medical science. Billing was one of the first researchers to use the bibliometric method to review the medical science literature. Initially, the bibliometric method was carried out using the application of mathematics and statistics for the study of literature in libraries (Nicholas & Ritchie, 1978; Pritchard, 1969). The bibliometric method was used to calculate the number of publications, the number of citations, and research groupings (Moed et al., 1985). Bibliometric research is generally used in quantitative studies of articles, journals, books, or other types of written

communication (Heersmink et al., 2011). This study followed a methodological approach similar to that of Bedi et al. (2019), Ingale & Paluri (2020), Goyal & Kumar (2021), and Gallego-Losada et al. (2022).

2.2. Sample selection

Bibliometric analysis should identify the documents to be sampled. So, for our bridge, we established a search and filter strategy that includes three stages: database search, data filtering, and unrelated document filtering (see Figure 1). Stage 1 is database searching. First, we choose a database from which to look for documents. We only used the Scopus database. Second, we developed a suitable keyword search strategy that included all financial literacy and sustainability literature.

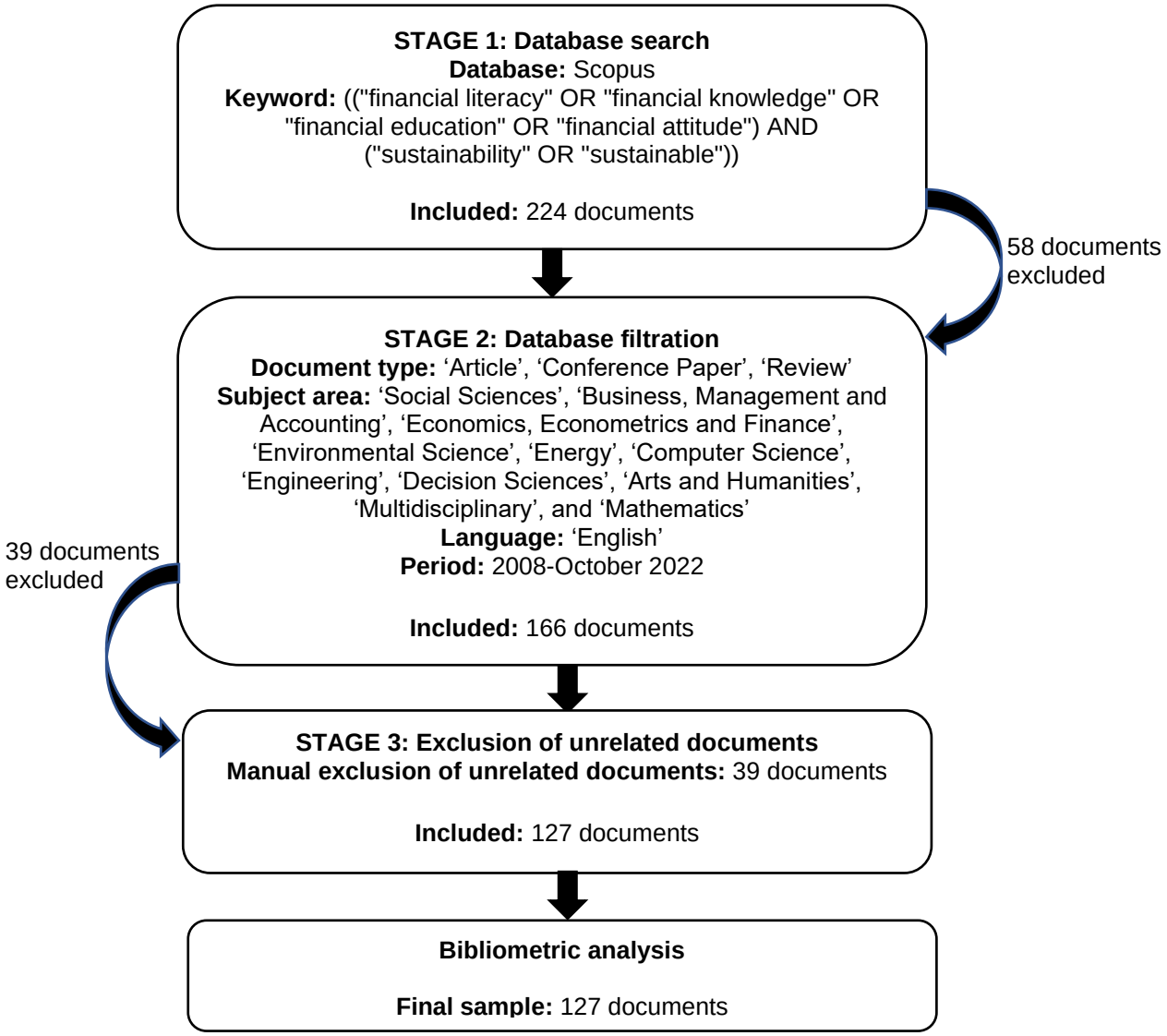
The document may be abandoned or taken into consideration as a result of the inclusion or exclusion of keywords, which could render the conclusion invalid. The various definitions of financial literacy and sustainability, including the ideas covered in the preceding section, must not be disregarded. Therefore, the researchers decided to include the keywords "financial literacy", "financial knowledge", "financial education", "financial attitude", "sustainability", and "sustainable." The authors discuss which synonyms are typically used to refer to financial literacy and sustainability based on prior literature, following the advice of Molina-García et al. (2022). We use a Boolean search of title, abstract, and keywords, combining the four keywords commonly used to refer to financial literacy (financial literacy" OR "financial knowledge" OR "financial education" OR "financial attitude" AND "sustainability" OR "sustainable"). The first 224 documents from the database search are displayed.

Then match the inclusions specified by the query. TITLE-ABS-KEY(("financial literacy" OR "financial knowledge" OR "financial education" OR "financial attitude") AND ("sustainability" OR "sustainable")) AND (LIMIT-TO (PUBYEAR,2022) OR LIMIT-TO (PUBYEAR,2021) OR LIMIT-TO (PUBYEAR,2020) OR LIMIT-TO (PUBYEAR,2019) OR LIMIT-TO (PUBYEAR,2018) OR LIMIT-TO (PUBYEAR,2017) OR LIMIT-TO (PUBYEAR,2016) OR LIMIT-TO (PUBYEAR,2015) OR LIMIT-TO (PUBYEAR,2014) OR LIMIT-TO (PUBYEAR,2013) OR LIMIT-TO (PUBYEAR,2012) OR LIMIT-TO (PUBYEAR,2011) OR LIMIT-TO (PUBYEAR,2010) OR LIMIT-TO (PUBYEAR,2009) OR LIMIT-TO (PUBYEAR,2008)) AND (LIMIT-TO (SUBJAREA,"SOCI") OR LIMIT-TO (SUBJAREA,"BUSI") OR LIMIT-TO (SUBJAREA,"ECON") OR LIMIT-TO (SUBJAREA,"ENVI") OR LIMIT-TO (SUBJAREA,"ENER") OR LIMIT-TO (SUBJAREA,"COMP") OR LIMIT-TO (SUBJAREA,"ENGI") OR LIMIT-TO (SUBJAREA,"DECI") OR LIMIT-TO (SUBJAREA,"ARTS") OR LIMIT-TO (SUBJAREA,"MULT") OR LIMIT-TO (SUBJAREA,"MATH")) AND (LIMIT-TO (PUBSTAGE,"final")) AND (LIMIT-TO (DOCTYPE,"ar") OR LIMIT-TO (DOCTYPE,"cp") OR LIMIT-TO (DOCTYPE,"re")) AND (LIMIT-TO (LANGUAGE,"English")) AND (LIMIT-TO (SRCTYPE,"j") OR LIMIT-TO (SRCTYPE,"p")).

Stage two is database filtration. On top of the initial search, several inclusion and exclusion filters are used. First, since only "article," "conference paper," and "review" are included in the search, we decided to exclude all other terms. It is because those terms are

subject to rigorous peer review and are judged on their novelty. Second, we selected "social sciences," "business, management and accounting," "economics, econometrics and finance," "environmental science," "energy," "computer science," "engineering," "decision sciences," "arts and humanities," "multidisciplinary," and "mathematics" for the research domain because we are aware that many publications on financial literacy and sustainability have been made in these fields. Third, we decided to include records created between October 2008 and October 2022. This database filtering process excluded 58 documents.

Figure 1 – Sample selection



Excluding unrelated documents is stage three. We conducted independent and manual evaluations of the documents to exclude studies that did not match the criteria for inclusion in this bibliometric analysis and systematic review. Thus, this stage excludes 39 contributions that have nothing to do with sustainability and financial literacy. There were a

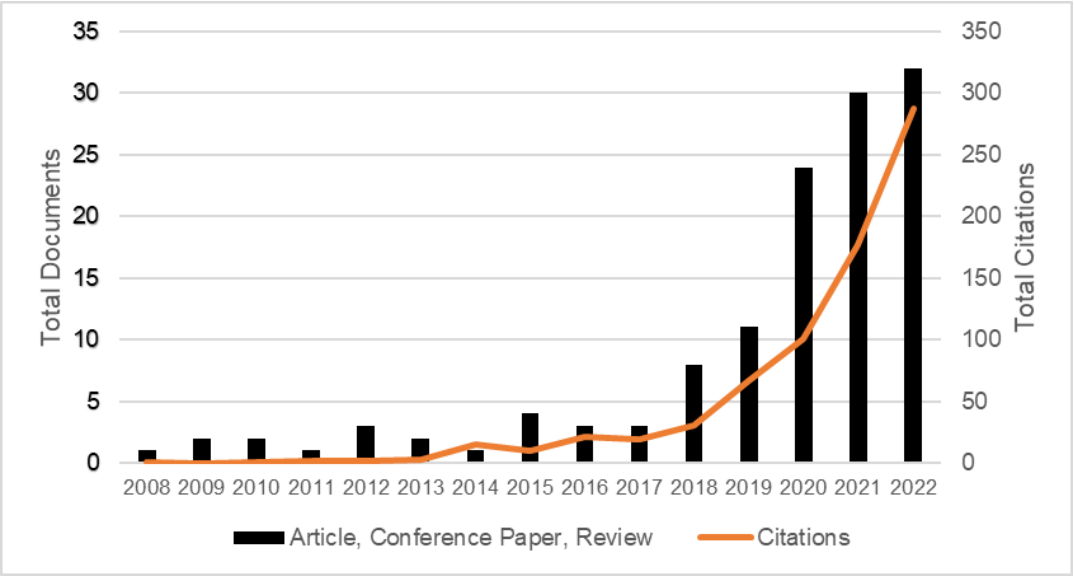
total of 97 documents released. The remaining 127 documents were processed for bibliometric analysis and systematic literature review.

3. Findings

3.1. Number of publications

While analyzing financial literacy and sustainability literature, we found the annual number of published documents and citation patterns. It demonstrates that most papers were published during the past ten years and that the number of studies has expanded significantly over the past five years. The years 2022 (32 documents), 2021 (30 documents), 2020 (24 documents), 2019 (11 documents), and 2018 are the most productive (8 documents). Similar to how publication levels have changed, citation trends have as well. It is predicted that this growth rate will continue in 2023 and 2024, as it has been established that study on financial literacy and sustainability is a topic of great interest to business academics.

Figure 2 – Number of documents per year and citation trend



We found the most influential documents according to their total number of citations. Hira (2012) is the most cited document in Scopus (66 citations). According to Hira's research, financial education is successful when individuals engage in the following financial behaviours. According to this study, achieving financial sustainability means managing household and personal finances to ensure there are always enough resources available to cover short- and long-term expenses and adapt to changing economic conditions. Ying et al. (2019) is the most cited document in Scopus (51 citations). Intangible resources such as intellectual capital, financial literacy, and business expertise owned by managers determine the acquisition of resources and the maintenance of competitive performance. Ye & Kulathunga (2019) (35 citations), Dholakia et al. (2016) (33 citations), Kumar & Prakash (2019) (28 citations), Swiecka et al. (2020) (26 citations), Martins et al.

(2020) (24 citations), Kostov et al. (2015) (24 citations), Lagoarde-Segot & Paranque (2018) (22 citations), and Mahendru (2021) (20 citations).

Table 1: The most influential documents

Document title	Author(s)	Citations
Promoting sustainable financial behaviour: Implications for education and research	Hira (2012)	66
The role of a manager's intangible capabilities in resource acquisition and sustainable competitive performance	Ying et al. (2019)	51
How does financial literacy promote sustainability in SMEs? A developing country perspective	Ye & Kulathunga (2019)	35
The ant and the grasshopper: Understanding personal saving orientation of consumers	Dholakia et al. (2016)	33
Developing a framework for assessing sustainable banking performance of the Indian banking sector	Kumar & Prakash (2019)	28
Financial literacy: The case of Poland	Swiecka et al. (2020)	26
Energy literacy: What is out there to know?	Martins et al. (2020)	24
Access to financial services: The case of the 'Mzansi' account in South Africa	Kostov et al. (2015)	24
Finance and sustainability: From ideology to utopia	Lagoarde-Segot & Paranque (2018)	22
Financial well-being for a sustainable society: a road less travelled	Mahendru (2021)	20

We found the most significant sources based on the total number of citations. Switzerland's Sustainability takes the top source with 215 citations and 24 documents. Journal of Consumer Research (33 citations), International Journal of Accounting and Information Management (36 citations), International Journal of Consumer Studies (66 citations), and Social Responsibility Journal were listed in that order (28 citations). However, aside from Sustainability (Switzerland), the Journal of Security and Sustainability Issues, SpringerPlus, PLoS ONE, and the rest each published just one paper on the topic. The Journal of Consumer Research and the International Review of Financial Analysis are among the high-quality publications with an SJR of more than one interest in financial literacy and sustainability research. We anticipate a rise in the scientific output of this emerging study topic due to the academic attention this research will generate.

Table 2: The most influential sources

Source	TC	TD	Year (n)	SJR*
Sustainability (Switzerland)	215	24	2018 (1) 2019 (5) 2020 (4) 2021 (7) 2022 (7)	0.66
International Journal of Consumer Studies	66	1	2012 (1)	0.99
International Journal of Accounting and Information Management	36	1	2011 (1)	0.52
Journal of Consumer Research	33	1	2016 (1)	7.12
Social Responsibility Journal	28	1	2019 (1)	0.63
Energy Reports	24	1	2020 (1)	0.89
Review of Development Finance	24	1	2015 (1)	0.59
International Review of Financial Analysis	22	1	2018 (1)	1.83

SpringerPlus	22	2	2015 (2)	-
Qualitative Research in Organizations and Management	20	1	2021 (1)	0.47
Entrepreneurship and Sustainability Issues	19	1	2019 (1)	-
Journal of Financial Services Marketing	18	1	2013 (1)	0.51
Journal of International Development	17	1	2018 (1)	0.60
Pacific Accounting Review	16	1	2018 (1)	0.40
Journal of Open Innovation: Technology, Market, and Complexity	10	1	2021 (1)	0.59
Journal of Security and Sustainability Issues	10	3	2016 (1) 2018 (1) 2019 (1)	-
Rangeland Journal	10	1	2015 (1)	0.45
Environment and Development Economics	9	1	2020 (1)	0.81
Environmental Science and Pollution Research	9	1	2022 (1)	0.83
PLoS ONE	9	2	2020 (1) 2021 (1)	0.85
International Journal of Environmental Research and Public Health	8	1	2021 (1)	0.81

TC=Total Citations, TD=Total Documents

We found United States (186 citations) is the most influential country regarding the number of citations, China (116 citations), and Australia (95 citations). Indonesia (17 documents) is the most productive country producing documents, United States (14 documents), and Malaysia (13 documents). The most cited universities in terms of institutions are Iowa State University (66 citations), Sichuan University (51 citations), and Hamdard University (51 citations).

Table 3: Top 10 most countries and institutions

Country	**TC**	**TD**	**Institution**	**TC**	**TD**
United States	186	14	Iowa State University, United States	66	1
China	116	11	Sichuan University, China	51	1
Australia	95	9	Hamdard University, Pakistan	51	1
Pakistan	63	8	University of South Florida, United States	36	1
India	57	11	Purdue University, United States	36	1
Portugal	34	5	Michigan Technological University, United States	36	1
Malaysia	33	13	University of California, United States	36	1
Indonesia	28	17	Uva Wellassa University, Sri Lanka	36	1
Italy	26	6	Wuhan University of Technology, China	36	1
Spain	25	5	Rice University, United States	33	1

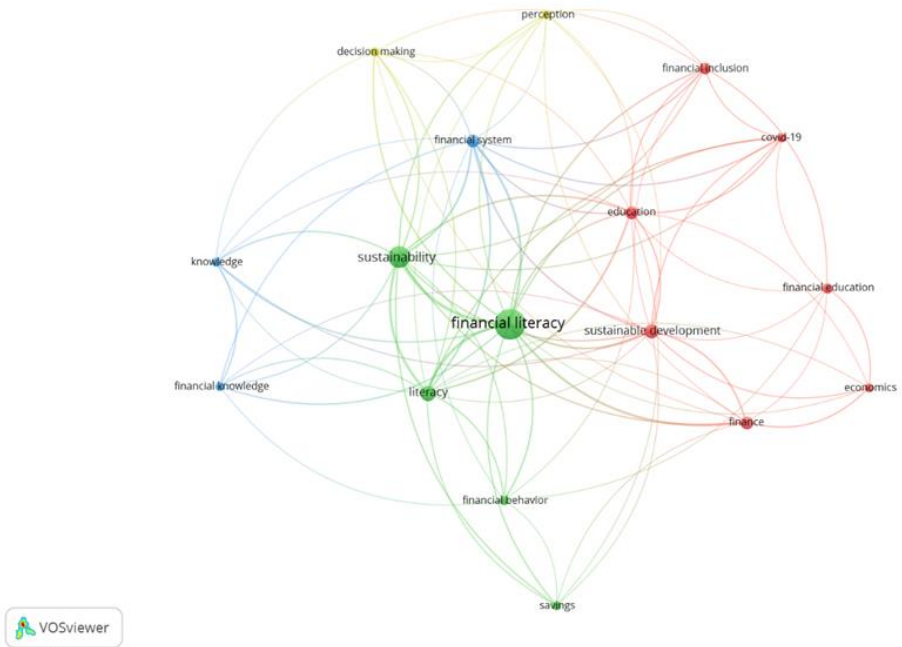
3.2. Analysis co-occurrence

The largest nodes are "financial literacy" and "sustainability", which have the highest keyword co-occurrence rates. Considering 17 keywords with a minimum of 5 events found in our 127 documents, VOSviewer reports four thematic clusters: (1) The red clusters include economics, covid-19, education, financial inclusion, finance, and sustainable development. (2) The green cluster, which includes financial behavior, sustainability, literacy, and savings. (3) The financial system, knowledge, and financial knowledge are

represented by the blue cluster. (4) Yellow cluster, which includes perception and decision-making. We determined that each cluster had a specific place in the literature, necessitating the need for its own analysis as though it were a group.

The Sustainable Development Goals (SDGs) are a set of objectives with which the red cluster associated with "sustainable development" and "financial inclusion" is particularly concerned, namely the reduction of poverty by enhancing financial inclusion for those with low incomes. Academics are evaluating the financial inclusion of developing and developed countries in achieving the SDGs as a result of this theme. The "financial behavior" green cluster indicates that research on financial behavior has emphasized the significance of financial literacy in influencing financial decisions. The "financial system" blue cluster reveals the contribution made by a nation's financial system to achieving financial inclusion and economic growth. One of the major forces influencing how inclusive the current financial system is Fintech. The yellow cluster is related to "decision making," with a particular emphasis on raising financial literacy levels both within households and in terms of making financial decisions to ensure financial well-being.

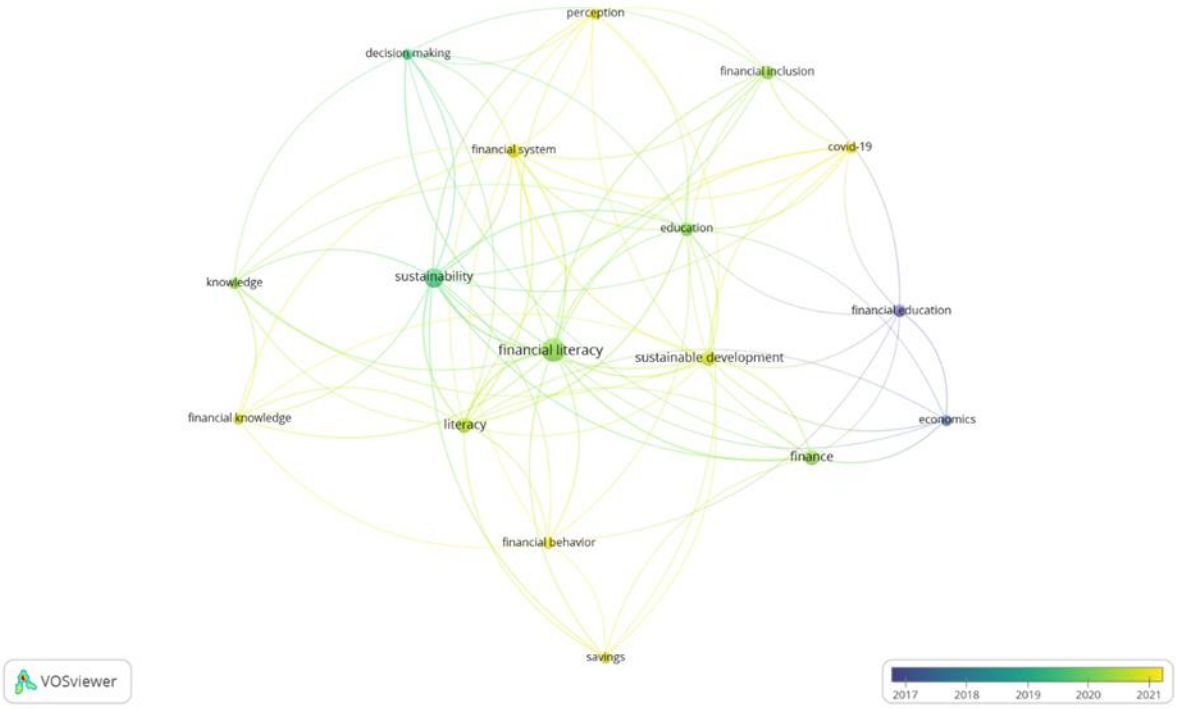
Figure 3 – Network visualization of keyword co-occurrence analysis



We can put the developments in financial literacy and sustainability research in chronological order thanks to the temporal mapping of the highlighted subjects. The average publication time for each of the topics covered is shown in Figure 4. Consequently, the growth of financial literacy and sustainability research, depending on the moment in which each recognised topic is produced, is as follows: first, financial education (around 2017); second, decision-making (around 2019); third, literacy and financial knowledge and financial inclusion (around 2020); fourth, sustainable development and financial system (between 2020 and 2021); and fifth, financial behavior (around 2021).

The structure of each of the subjects covered in this part will be explored in further detail at a later date. The clusters identified by the keyword co-occurrence analysis were submitted to a domain-specific literature assessment for this reason.

Figure 4 – Overlay visualization of keyword co-occurrence analysis



3.3. Analysis co-citation

Using VOSviewer 1.6.17, co-citation analysis of cited references was done (van Eck & Waltman, 2010). (see Figure 5). Using clusters generated by similarities across contributions, the analysis tries to identify the theoretical foundations of a field of research (Randhawa et al., 2016). Hence, co-citation happens when two documents are cited in the reference list of the same document (Setyaningsih et al., 2018). This exposes the knowledge foundations of this new subject of inquiry (Donthu et al., 2021). Five thematic clusters, which include various theoretical perspectives on explaining the results of financial literacy and sustainability, are reported by VOSviewer of the 7,039 references cited by our 127 documents with a minimum number of citations from the cited references of three. These thematic clusters will be thoroughly examined in the following sections: red cluster, green cluster, blue cluster, yellow cluster, purple cluster, and so on.

The red cluster consists of 26 articles published between 2010 and 2020 in the Journal of African Business, Journal of Financial Intermediation, Journal of Sustainable Finance & Investment, International Journal of Bank Marketing, Cogent Economics and Finance, International Journal of Sociology and Social Policy, Brookings Papers on

Economy Activity, World Development, Journal of Public Affairs, Journal of Political Economy, and International Journal of Social Economics. The primary contribution is made by Abor et al. (2018).

The green cluster consists of 17 articles that were published in the following journals between 2009 and 2021: Quantitative Finance, Journal of Pension Economics and Finance, Finance Research Letters, Economics Letters, Journal of Consumer Affairs, Journal of Banking and Finance, European Journal of Finance, Economic Policy, Journal of Economic Psychology, and Journal of Banking and Finance. The main contributors are Lusardi & Mitchell (2014) and Abreu & Mendes (2010).

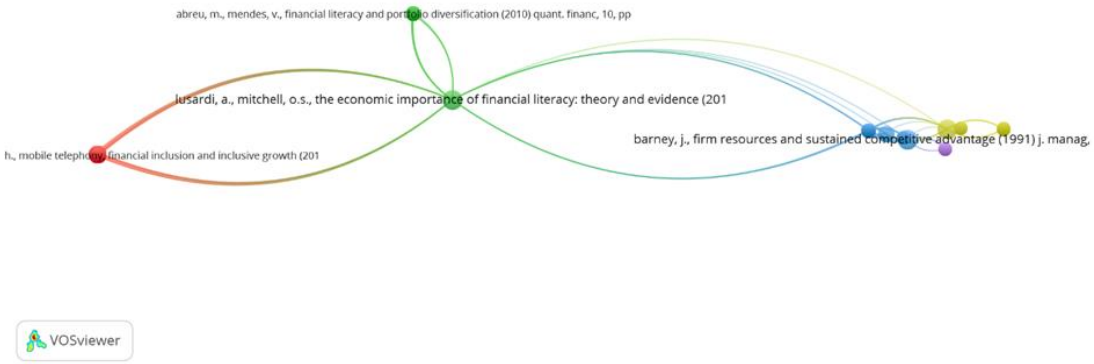
The blue cluster contains 17 articles that appeared in Cogent Economics and Finance, Pacific Economic Review, Journal of Management, American Economic Review, International Journal of Sociology and Social Policy, Global Business Review, Sustainability, Journal of Banking and Finance, Journal of Small Business and Enterprise Development, Southern African Journal of Entrepreneurship and Small Business Management, and Journal of Enterprising Communities between 1991 and 2020. Barney (1991), Barney & Arikan (2005), and Hussain et al. (2018) are credited with the most contributions.

Ten articles from the Education Sciences, Sustainability, Frontiers in Psychology, Journal of Banking and Finance, Journal of Financial Counseling and Planning, and Equilibrium Quarterly Journal of Economics and Economic Policy are represented in the yellow cluster and were published between 1993 and 2020. Jappelli & Padula (2013), Abad-Segura & González-Zamar (2019), and Bascopé et al., (2019) all made significant contributions.

Six articles from the purple cluster were published between 2000 and 2020 in the Journal of Management, Administrative Sciences, Consumption Markets & Culture, and PalArch's Journal of Archeology of Egypt/Egyptology. Das & Teng (2000) and Al-Tit et al. (2019) have contributed the most.

Although clusters are discussed in this section, it is challenging to determine which theory or theories explain the relationship between financial literacy and sustainability. The theory that was employed in the majority of the documents is generally implied within a theoretical framework rather than being mentioned explicitly. This study did a theory-based literature evaluation by analysing the clusters derived from the analysis of cited references to explain the many theoretical mechanisms that could explain the results of financial literacy with sustainability.

Figure 5 – Network visualization of co-citation analysis



3.4. The Theoretical Foundation of Financial Literacy and Sustainability

The identification of the theoretical foundations of financial literacy and sustainability was made possible by co-citation analysis and a thorough literature research based on the theories of the numerous referenced groups. On the basis of this paradigm, this section identifies the major ideas and mechanisms that explain financial literacy and sustainability.

First, the trickle-down theory of growth and development, which holds that greater financial inclusion can reduce poverty, is the central tenet of the red cluster (Aghion & Bolton, 1997). Here, financial inclusion will assist decision-makers in developing and putting into action policies that will increase access to financial services, reduce poverty, and promote income equality (Park & Mercado, 2015). Financial inclusion becomes a reality if several organizations band together and work towards developing the same goals with sustainable efforts so that everyone in a country can become financially independent (Kandpal, 2020). Without a doubt, banks and regulators are crucial to financial inclusion (Joshi, 2014). Therefore, expanding financial inclusion may help people earn more money and stay out of poverty.

Second, the green cluster primarily relies on the theory of the consumption function, which states that an intelligent person will save money to be used for consumption when their income declines, such as after retirement, and consume less of their income when it is high (Friedman, 1957). Here, financial literacy influences retirement planning through the growth of savings and wealth (Alessie et al., 2011; Bucher-koenen & Lusardi, 2011; Engels et al., 2020; Lusardi & Mitchell, 2017). Financial literacy increases one's likelihood of making stock market investments, which enables one to take advantage of the equity premium (Rooij et al., 2012). Whether there are gender differences in financial literacy and whether women are perceived as having a higher level of financial literacy than men is a concern (Bannier & Neubert, 2016; Aristei & Gallo, 2021). It is a finding that women live longer than men, requiring women to prepare for retirement (Bucher-koenen et al., 2017). However, other findings show a discrepancy in financial literacy among respondents with less education, among the elderly, and women (di Salvatore et al., 2018). The financial literacy approach based on human capital reveals variations in financial literacy and economic behavior (Lusardi & Mitchell, 2014).

Third, blue clusters primarily rely on the resource-based view theory, which holds that valuable, unique, and non-replaceable resources can boost business performance and give organizations a competitive edge (Barney, 1991). The financial literacy level of SME managers has an impact on company performance (Eniola & Entebang, 2017). According to other research, a positive correlation between artistic orientation, entrepreneurial orientation, financial literacy, and entrepreneurial performance has also been found (Purnomo, 2019). In addition, how do business experience, financial literacy, and intellectual capital affect resource acquisition and competitive performance? (Ying et al., 2019). Studies on the performance of SMEs as seen from the financial literacy factor frequently use the RBV theory.

Fourth, the yellow cluster primarily relies on the entrepreneurship theory, which claims that people with entrepreneurial intentions will help the economy grow and reduce the unemployment rate (Baumol, 1968, 1993). Using entrepreneurship as a vehicle, one can translate institutional influence on outcomes beyond financial ones, such as sustainability and social change (Aparicio et al., 2020).

3.5. Integrative Framework of Financial Literacy and Sustainability

This section examines the relationships between the clusters identified by the co-occurrence analysis of emerging terms and the co-citation analysis. Our objective is to combine the organisational structure of financial literacy and sustainability research with its theoretical foundation in order to develop an integrative framework (see Figure 6) for future research pathway suggestions.

The first group resulted from the close connection between the trickle-down theory and the subject of financial inclusion. The trick-down theory argues that an increase in economic growth with an increase in income will increase investment after which a new trickle-down mechanism works with subsidies to the poor to improve people's living standards and welfare (Aghion & Bolton, 1997). The development of the nation's economy depends on financial inclusion (Aduda & Kalunda, 2012). Financial inclusion is the provision of financial services at a reasonable price to communities that, up until now, have not had access to banking services, particularly for those who are low-income and disadvantaged (Gwalani & Parkhi, 2014). There is a consensus that financial inclusion will lessen poverty and income inequality (Park & Mercado, 2015). Online banking, knowledge of banking services, and financial literacy are just a few things that can promote financial inclusion in economic development (Rastogi & Ragabiruntha, 2018). If a nation has a complete financial system, one of which is by realizing financial inclusion, then sustainable growth, economic development, and economic progress are achieved (Kandpal, 2020). Based on national, financial, and institutional characteristics, raising financial literacy is beneficial for raising financial inclusion (Grohmann et al., 2018). Financial literacy fosters financial inclusion, which can lower income inequality and poverty.

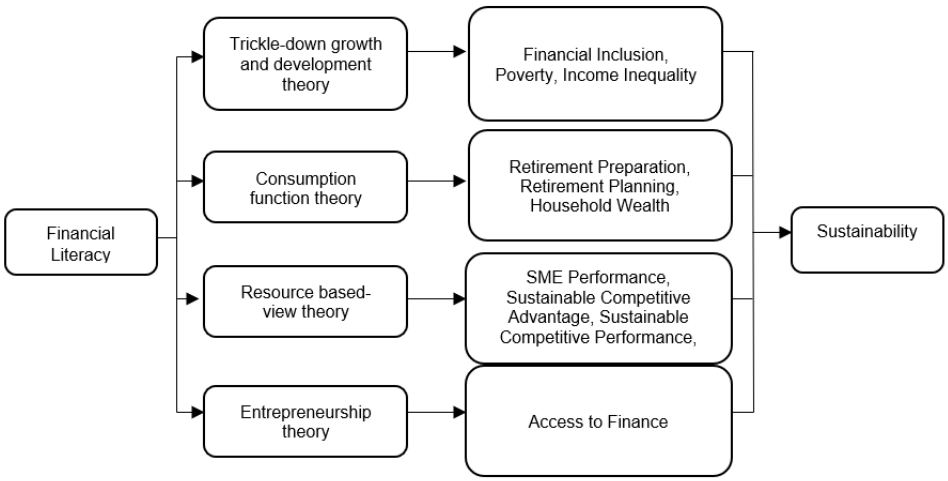
The second group, which discusses retirement planning, heavily draws from consumption function theory. According to Friedman (1957) consumption function theory, financial literacy is typically linked to retirement planning and creating savings plans to increase wealth. According to the research, people with advanced financial literacy are

more prepared for retirement (Lusardi & Mitchell, 2017). A person's ability to participate in pension fund programs, how much they contribute, and how they invest their wealth are all positively impacted by their financial literacy (Fornero & Monticone, 2011; Bucher-Koenen & Lusardi, 2011; Alessie et al., 2011). An increase in financial literacy determines an increase in household financial assets (Fort et al., 2016). Low levels of financial literacy across households indicate that they are at risk of making financial decisions that are not optimal (Calcagno & Monticone, 2015). Additionally, the findings show that gender differences exist as a result of women's longer life expectancies than men, which is crucial for assisting them in planning for retirement and enhancing their financial security (Bucher-koenen et al., 2017; Bannier & Neubert, 2016; Aristei & Gallo, 2021). Finally, according to the consumption functions theory, financial literacy aids in retirement planning; and there are gender differences in this area.

The third group on the performance subject heavily draws from the resource-based view theory. According to Barney (1991) resource-based view theory, organizations need both tangible and intangible resources to increase performance (Ying et al., 2019). A company can acquire and manage other distinctive resources thanks to the special intangible resource known as financial literacy, which leads to improved performance and maximum revenue (Eniola & Entebang, 2017). According to another finding, culture also mediates the link between financial literacy and business performance (Agyei, 2018). Financial literacy increases business growth from a financial, strategic, and structural point of view (Eresia-Eke & Raath, 2013). There is a connection between an entrepreneurial mindset, an artistic mindset, financial literacy, and successful entrepreneurship (Purnomo, 2019). In conclusion, financial literacy is a unique intangible asset that business owners possess that helps them run their companies more effectively and avoid the consequences of financial mismanagement.

The fourth group's discussion of financial access relies heavily on entrepreneurship theory. According to the entrepreneurship theory put forth by Baumol (1968), each society is given the ability to play the role of an entrepreneur depending on the institutions - the game's rules - that are present in that society. The contribution of entrepreneurship to social change, economic growth, and sustainability (Aparicio et al., 2020). Global research trends on how financial literacy and education affect individual entrepreneurial creativity (Abad-Segura & González-Zamar, 2019). One of the key obstacles facing small and medium-sized businesses is the global financial crisis (Ardic et al., 2012). Financial literacy has a role in increasing access to finance and promoting small- and medium-sized businesses' potential for growth (Hussain et al., 2018). Entrepreneurs effectively utilize financial access to achieve business growth during economic downturns. Last but not least, the reader should be aware that the subjects of financial literacy and sustainability have nothing, in particular, to do with any particular theories. Every document examined assesses financial literacy and sustainability.

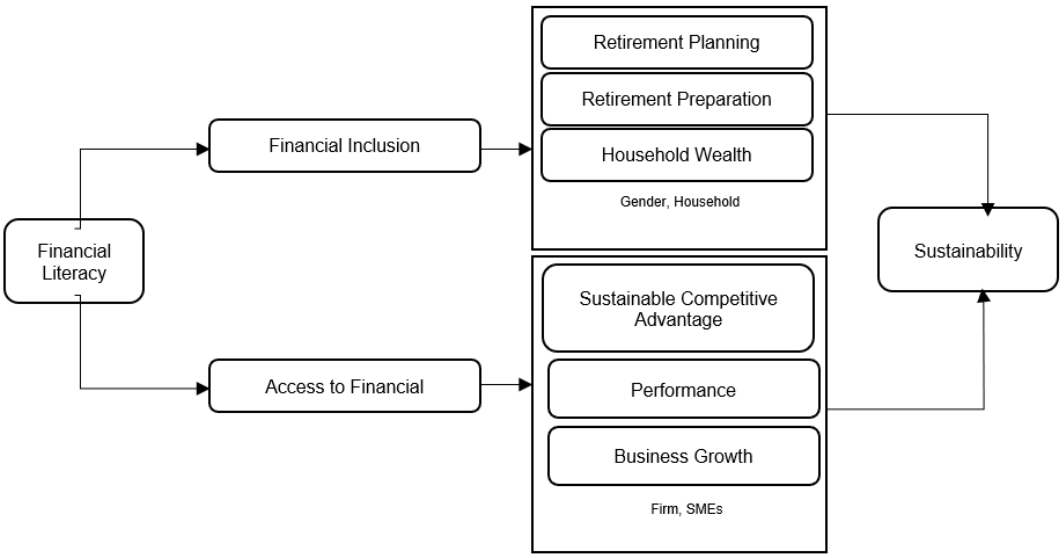
Figure 6 – Financial literacy and sustainability integrative framework



This section provides essential recommendations for future research areas to further this burgeoning field of study (see figure 7). We proceed by recommending potential future research directions. According to the literature, financial inclusion and access to capital are crucial components of sustainability (Kandpal, 2020). Economic actors can make long-term purchases and investments engage in productive activities, and weather unforeseen short-term shocks thanks to financial inclusion and access to capital (Park & Mercado, 2015). Infrastructure issues have been resolved and financial accessibility has increased thanks to innovations in financial services and mobile banking (Allen et al., 2014). Along with issues about social and sustainable development, the use of digital technology as a tool to promote financial inclusion (Abor et al., 2018). Analysis of financial inclusion factors (online banking, understanding of banking services, and financial literacy) leads to economic development (Rastogi & Ragabiruntha, 2018). Financial literacy has also been shown to increase wealth and is positively related to retirement planning (Rooij et al., 2012). There is still much to learn about financial behavior and retirement planning, and financial literacy is crucial to society (Nguyen et al., 2019; Gallego-Losada et al., 2022).

On the one hand, research demonstrates the significance of sustainable business, the concept of balancing economic, social, and environmental values (Aparicio et al., 2020; Di Fabio, 2017). A company's intangible asset that contributes significantly to sustained competitive performance is financial literacy (Ying et al., 2019). First, during the global financial crisis, access to finance became a source of funding for SMEs (Ardic et al., 2012). Second, we emphasize how having access to the internet can help businesses with their financing challenges by reducing information asymmetry and agency costs, which can help these businesses develop sustainably (Chen et al., 2018). As a result, we suggest examining the mediating effect of access to finance on the relationship between financial literacy and performance. Finally, we offer suggestions for future research and take the chance to challenge or reformulate individual viewpoints. These recommendations will focus on theories that are frequently applied in the context of financial literacy and sustainability.

Figure 7 – The Future Path of Research on Financial Literacy and Sustainability



4. Concluding remarks

This paper is the first to provide a credible, consistent, and up-to-date summary of financial literacy and sustainability research bibliometric analysis. To be more precise, we conducted a co-occurrence analysis of author keywords and a co-citation analysis of cited references, followed by a comprehensive examination of 127 papers produced between 2008 and October 2022. Hence, this review gives a comprehensive and exhaustive assessment of emerging research domains. It accomplishes this by identifying significant research subjects and their theoretical basis and by developing an integrative framework upon which to create essential future research lines. In the examination of financial literacy-sustainability research, the following topics have attracted the greatest attention: (1) financial inclusion, (2) financial behaviour, (3) financial systems, and (4) decision-making. This study's structure is supported by the trickle-down growth and development theory, the consumption function theory, the resource-based view theory, and the entrepreneurship theory.

This review makes three new insights. First, our research offers a categorized collection of expanding and varied studies on financial literacy and sustainability. Second, to get around the drawbacks of using method bibliometric analysis. Thirdly, we provide an integrative framework for financial literacy and sustainability research that lays the stage for future research possibilities by connecting the researched problems with their theoretical foundations.

Until now, this effort is not without flaws. First, although the use of bibliometric tools significantly minimises subjectivity, we cannot overlook the fact that an in-depth assessment of the data is susceptible to author interpretation. Second, despite our efforts to analyse every potential combination, the analytic approach might be enhanced by include additional sustainability and financial literacy keywords. Finally, while numerous other databases might contain intriguing documents, we only use the Scopus database.

Scopus, however, has the largest coverage of journals of any database (such as WoS, Proquest, and DOAJ). These restrictions can serve as a benchmark for improving future reviews of related literature studies.

Therefore, our study provides ideas on the most exciting aspects, the research design, and the theoretical foundations for researchers who intend to do research in the area of financial literacy and sustainability. With this work, we intend to encourage scholars to pursue new research ideas while also contributing to the development of this new field of study.

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