




Article

Bibliometric Mapping of Research Trends on Financial Behavior for Sustainability

Tania López-Medina ¹, Isabel Mendoza-Ávila ², Nicolás Contreras-Barraza ³ , Guido Salazar-Sepúlveda ⁴ 
and Alejandro Vega-Muñoz ^{5,*} 

¹ Facultad de Postgrado, Universidad Tecnológica Centroamericana, Tegucigalpa 11101, Honduras; tlopezm@unitec.edu

² Facultad de Ciencias Económicas Administrativas y Contables, Universidad Nacional Autónoma de Honduras, Tegucigalpa 11101, Honduras; isabel.mendoza@unah.edu.hn

³ Facultad de Economía y Negocios, Universidad Andres Bello, Vina del Mar 2531015, Chile; nicolas.contreras@unab.cl

⁴ Departamento de Ingeniería Industrial, Facultad de Ingeniería, Universidad Católica de la Santísima Concepción, Concepción 4090541, Chile; gsalazar@ucsc.cl

⁵ Public Policy Observatory, Universidad Autónoma de Chile, Santiago 7500912, Chile

* Correspondence: alejandro.vega@uautonoma.cl

Abstract: This article presents a global empirical overview of studies on financial behavior in relation to education, money-saving, and consumption, contributing to research on the Sustainable Development Goals (SDGs) related to social equity in the quality education (4th Sustainable Development Goal) and inequality reduction (10th Sustainable Development Goal) areas. Thus, the data and metadata of 492 articles registered between 1992 and August 2021 were extracted from the Web of Science (Journal Citation Report, JCR) and analyzed with a bibliometric approach, using classical methodological laws and the specialized software VOSviewer. Among the results, we highlight the exponential scientific production growth in the last decades, the concentration in only twelve specific journals indexed in the Journal Citation Report, the global hegemony of US universities in institutional co-authorship networks, and the thematic and temporal segregation of the concepts of financial behavior. We conclude an evolution of two decades in the relevant topics and a concentration in three large blocks: (1) financial education; (2) savings and consumption decisions; (3) financial literacy and investments, which are a temporal evolution that gives for the irruption of diverse visions in the relationship between the evolution of individual financial behavior and the global market. Given it is necessary to know the impact of financial education and financial literacy on personal savings, consumption, and investment behaviors, a larger study on financial behavior could be conducted with this research and an assessment of these results.

Keywords: financial behavior; savings; literacy; consumption; bibliometrics



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1. Introduction

For many years, traditional financial theory has based its principles on profit maximization, taking only the rationality of investment and borrowing [1–3]. However, the literature has been evolving to consider the emotional aspects as part of the decision process, either biasing, mediating or playing a role in the psychological process in investment and credit decision making [4–6]. An example of this is when credit options are considered as part of current income by making impulsive purchases with risky debt behaviors [7].

The latter, in some cases, is directly related to financial literacy. While it is not the only factor in financial decision making [8], there are studies of methodological, cultural, economic, and theoretical moderation effects between financial literacy and investment decisions [9]. This lack of financial literacy is often made up for by financial advisors, who help to ensure a better return on investments and take out loans [10–12].

On the other hand, to understand the behavior of both investment and credit decisions, the theory of planned behavior (TPB) presents an explanatory construct on variables of the intention to take credit or investment decisions, under the aspects of subjective norm, perceived control, and attitude [1,13]. Given the importance of and challenges for governments improving the environmental, economic, and social sustainability balance, it is imperative to know the scientific production on the behavior of financial education, savings, and consumption.

This article seeks to present an empirical vision of the studies of financial behavior in relation to education, savings, and consumption around the world, in a systematic way since 1992, which allows us to relate the research with the Sustainable Development Goals (SDG) associated to social equity in the areas of quality education (SDG 4) and reduction of inequalities (SDG 10) [14]. For this, we will present a bibliometric analysis that allows us to show the main constructions of knowledge in financial education and savings and consumption decisions, which will facilitate applying the proposed methodology.

1.1. Knowledge in Financial Education

Financial education socialization processes are related to the facilitation of financial learning, financial attitudes, and, subsequently, financial behavior [15]. In turn, financial literacy contributes to the sustainable development of individuals, families, businesses, and economies [16], so countries should consider that within their policies and regulation services that help household financial empowerment [17]. Puri and Robinson [18] point out that if they learn about financial education, they will have positive results to influence their financial attitudes and behaviors in the future [19–21]. This can be associated with a desired performance on the part of the state in the pursuit of compliance with the SDGs on education (SDG 4) and the search for social equity (SDG 10). In turn, developing this behavior was related to the search for better wellbeing [22,23]. Financial wellbeing is having the financial independence to maintain the current and desired standard of living [24], it is multidimensional as it affects multiple financial behaviors [25] and incorporates all aspects of a person's financial situation by becoming aware of their financial situation, and their ability to undertake and achieve goals [26,27]. There is a direct relationship between financial education and wealth accumulation in households [28], due to better investment decisions in savings [29,30], the stock market [13], retirement funds [31], debt management [32], achieving greater financial inclusion [33,34] and greater risk tolerance [35].

Financial satisfaction contributes to life satisfaction resulting in the positive financial behavior of individuals [36], and the association between self-esteem and financial behavior can explain psychological aspects and differences [37]. A positive association was identified between perceived (subjective) financial capability and financial satisfaction, suggesting that desirable financial behavior increases while risky financial behavior decreases financial satisfaction [38]. The association between prior knowledge and subsequent financial behaviors differs according to the type of subjective versus objective knowledge, with a stronger effect of subjective knowledge, around payment behaviors and risky lending [39]. Millennials have lower levels of objective financial knowledge, with consistent results showing that financial knowledge is positively associated with positive short- and long-term financial behaviors [40]. In young adulthood, the acquisition of financial capability, i.e., competent financial management skills and responsibilities, is key [41]. Students who take out loans and complete their studies have higher scores on indicators of financial capability than those who drop out [42]. Subjective knowledge has a stronger relationship with financial wellbeing, prompting those responsible for developing national financial education strategies to address this knowledge in society [43].

Economic factors such as income, assets, employment status [44], and education level of young adults [45], are positively associated with financial independence. Equally, psychological factors, such as economic self-efficacy [46], money management skills, problem-solving, family economic factors, stock ownership, and financial assistance, decrease the level of financial independence of young adults, so educational programs should be devel-

oped for them according to their level [47,48]. Financial education in high school, college, and the workplace showed positive associations with financial capability indicators with a positive impact on consumers [49].

1.2. Savings and Consumption Decisions

Research on financial literacy has been across its different dimensions [50]. In the case of knowledge, there is the experience of college graduates who are more likely to engage in positive financial behaviors than college students and dropouts [51]. Once they graduate, their financial independence is no longer influenced by their family's income level as it was in adolescence [52].

Regarding behavior, this is only effective when the teaching is objective to financial issues [13]; for example, in family businesses, the variables that explain financial behavior have different levels of importance, depending on the size of the business and the life cycle of the company [53]. Regarding gender, men use financial market products and services with greater continuity; for example, a debit card or investing funds in stocks or bonds. In addition, they are more willing to take risks compared to women [54].

On experience and competence [55], they are more likely to participate in the stock market [13], as financial inclusion is an essential component of people's financial capability index [56].

Regarding future life wellbeing [57], people with higher financial literacy have better retirement planning [34] and are more likely to have formal as well as informal savings than those with lower financial literacy [58]. Research in Ukraine points to the positive impact of savings on the development of the local financial market. Ukrainian households tend to accumulate savings with the intention of creating a financial safety net for future economic receivables [59]. Moreover, savings can be used for a variety of purposes and, in the case of home renovations, were positively correlated with consumer confidence [60].

Given this, having better financial skills and having the emotional support provided by the family leads to greater financial confidence, a more optimistic outlook for the future, and better financial behavior [24,61].

The importance of financial behavior, for example, in the Danish case, would explain the differences in financial problems and in those cases that do not [62]. Nonparametric evidence shows that the default propensity is more than four times higher for people with parents in default compared to people with parents who are not in default [60]. In the case of Chile, a significant portion of indebted households have credit in the informal sector, even though they were able to save regularly and should, therefore, seek credit in the formal market. Educational debt seems to be equally present among the different socioeconomic groups. [60]. Therefore, consumer confidence plays an important role in household decision-making processes, mainly in household saving and borrowing behavior [63].

Financial behavior requires a systemic approach by the national authority [64] to cover basic needs, maintain financial security, and the standard of living within the family [65]. Therefore, adopting the strengths of objective indicators (economic elements) and subjective indicators (consumer confidence) is key to improving household financial forecasting [63]. Therefore, financial education, consumption and saving behaviors, the level of indebtedness, and consumer confidence in the market are important elements to consider in achieving the objectives of SDG 4 and 10 [34,65].

2. Materials and Methods

We used a set of articles as a homogeneous basis for citation, including the main collection of Web of Science (WoS), by selecting articles published in WoS-indexed journals in the Science Citation Index (WoS-SCI), and Social Science Citation Index (WoS-SSCI), based on a search vector [66] about financial and behavior, TS = (financial NEAR/0 behavior), discounting articles without abstract and without restricted time parameters, performing the extraction on 25 August 2021.

The resulting set of articles was analyzed bibliometrically, a meta-analytic method previously used in financials and sustainable journals [67–88] in terms of their exponential growth, to ensure a critical mass of documented scientific production that ensures interest in the international scientific community and gives meaning to the subsequent analysis [89,90], determining the time median and its contemporary and obsolete periods. In terms of concentrations, Bradford’s law of concentrations was applied to the journals, fragmented into thirds of articles, avoiding the exponential decrease in decreasing performance by expanding the search of references in scientific journals peripheral to the topic under study [91–95]. Lotka’s law about authors was applied to identify the most prolific group of authors and study them in isolation from the other authors with a smaller number of articles based on the unequally distributed scientific production among authors [96]. The Hirsch index or was used for articles based on the set of articles most cited by the scientific community and the citations they have received in other publications of the WoS core collection, established as the “n” documents cited “n” times or more [97,98]. Zipf’s law on words was applied to empirically determine words with the highest frequency of occurrence in the set of articles studied (author keywords, keywords plus, or key terms in titles or the abstract) [99]. Information processing and the visualization of spatiality, co-authorship, and co-occurrence [100–102] were processed with VOSviewer Software, using fragmentation analysis with thematic and time trend visualization outputs [103,104].

3. Results

The recovered article total is 492 documents between 1992 and 2021, including early access publications (year non-data, assigned to the year of early access). Figure 1 presents publications between 1997 and 2020. It is possible to check the adjustment to exponential growth (in this case, 96%), with a total of 426 articles in this period.

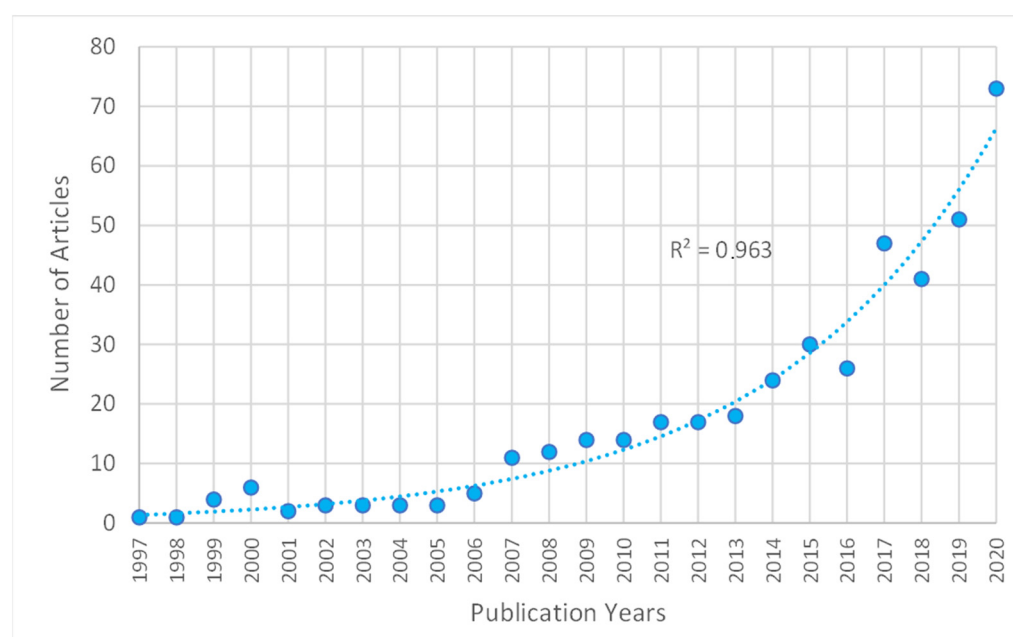


Figure 1. Publications trend on financial behavior (1997–2020).

The % fit (R^2) at 96% is interpreted as a high level of fit to the data. When dividing the number of articles with the median into two halves, half of the contemporary articles are located between 2017 and 2020, making previous articles obsolete or, if they have a high citation, classic articles (1997–2016).

The 492 articles were published in 272 journals, of which 196 have only published 1 article on the subject. On the other hand, the 12 journals with over 5 articles published on the subject under study stand out (See Table 1).

Table 1. Principal journals in financial behavior.

Source Title	Total, in Articles	WoS Categories	Journal Impact Factor (JIF)	Best JIF Quartile
Journal of Family and Economic Issues	24	Economics; Family Studies	Not Available	Not Available
Journal of Consumer Affairs	23	Business; Economics	2.131	Q2
International Journal of Consumer Studies	21	Business	3.864	Q3
International Journal of Bank Marketing	16	Business	4.412	Q2
Journal of Economic Psychology	11	Economics; Psychology, Multidisciplinary Family Studies;	2.037	Q2
Emerging Adulthood	8	Psychology, Developmental; Psychology, Social	1.560	Q4
Journal of Behavioral and Experimental Economics	7	Economics	1.382	Q3
Frontiers in Psychology	7	Psychology, Multidisciplinary	2.988	Q2
European Journal of Finance	6	Business, Finance	1.809	Q3
Sustainability	6	Environmental Studies; Environmental Sciences; Green & Sustainable Science & Technology	3.251	Q2
Journal of Behavioral Finance	6	Business, Finance; Economics	0.314	Q3
Social Indicators Research	6	Social Sciences, Interdisciplinary; Sociology	2.614	Q2
Total, Articles =	141			Q2

In these 12 journals, detailed in Table 1, are 141 published articles out of the 492 (28.66%), achieving this level of concentration in only 4.41% of the 272 journals. It is also noteworthy that the specific journals of the Web of Science category “Business, Finance” are scarce in this set (European Journal of Finance and Journal of Behavioral Finance), meaning 50% of the journals where the discussion on “Financial Behavior” is concentrated are only indexed or parallel indexed to topics in Psychology (3), Family (2), Environment (1), and Sociology (1). Finally, with journal impact factors (JIF) ranging from 0.314 to 4.412, the journals in which the “Financial Behavior” topic is studied in depth achieve their best impact quartile between Q4 and Q2.

As for the levels of co-authorship, after identifying a total of 1182 authors and 112 authors with two or more published articles, VOSviewer was able to establish a consistent connection of 55 authors (See Figure 2).

The graph (Figure 3) shows a high publication level of the authors Serido J./Univ Minnesota (16 articles), Shim, J./Univ Wisconsin (17 articles), and Xiao, J. (16 articles), highlighting the prominence of this last author who achieves an average citation of close to 60 articles ($921/16 = 58$).

Figure 4 represents the relational graph of citations between the set of six articles; the size and color of the spheres indicate the number of total citations received by these papers in the Core Collection of the Web of Science.

Finally, according to Zipf’s Law, three thematic clusters are identified that evince semantic differences. As represented in Figure 5, they are: (1) education, literacy, socialization, college students, income, behavior, and impact (red color); (2) investment, management, decision making, and credit (green color); (3) consumption, decisions, scale, and savings (blue color).



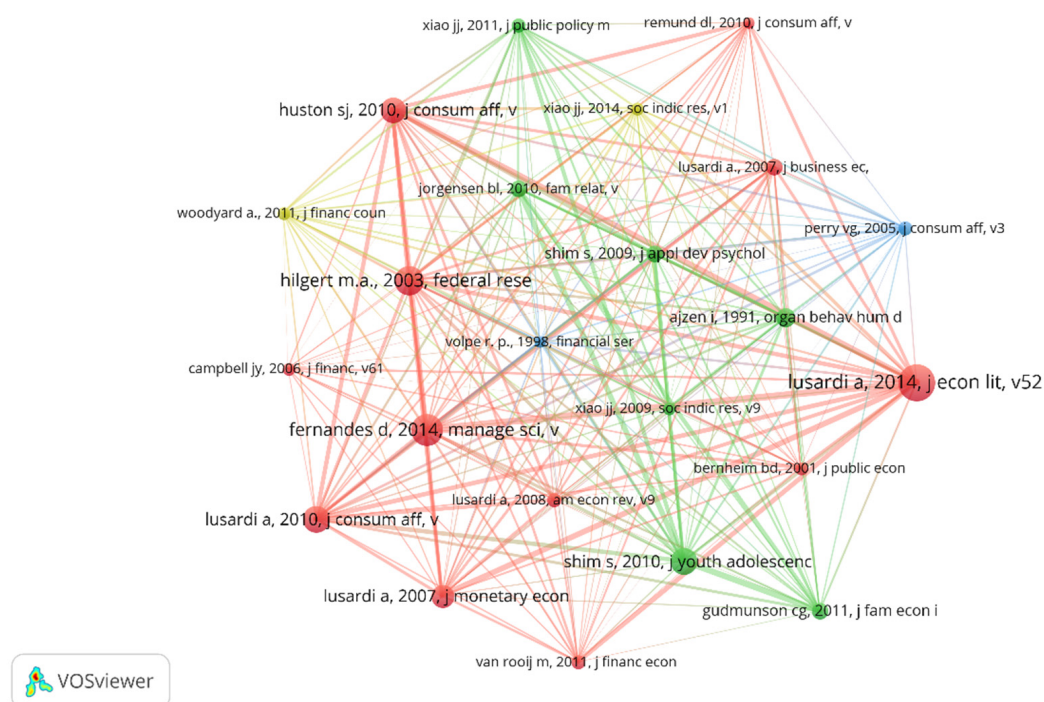


Figure 4. Outstanding references map in financial behavior.

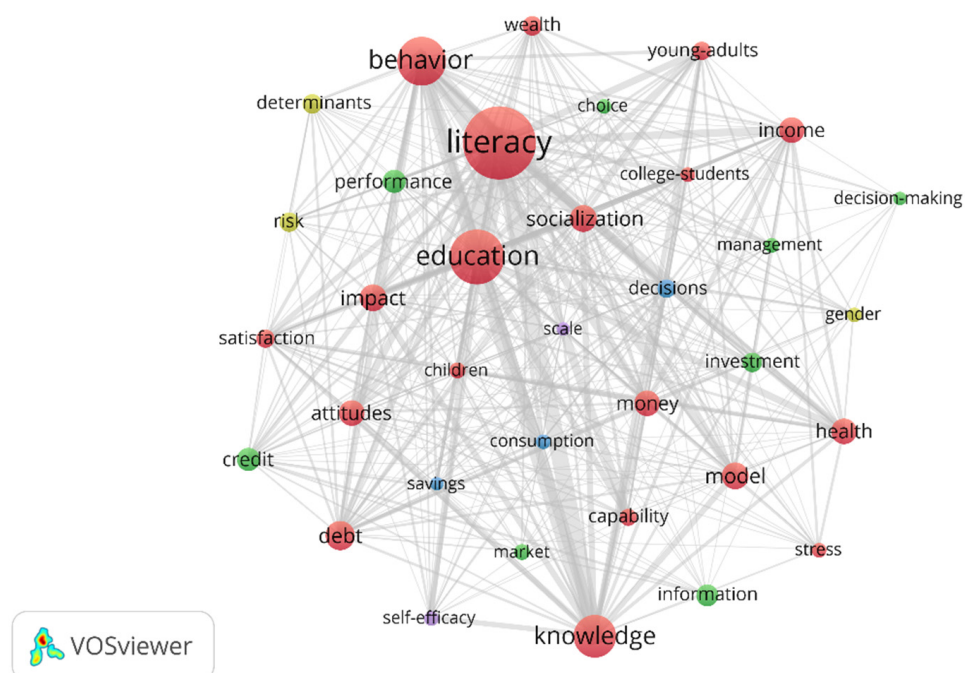


Figure 5. Outstanding keywords plus map in financial behavior.

4. Discussion

Among the topics identified in this study, financial education seems to be a central axis as a differentiating and necessary element to maintain personal finances. As indicated in SDG 4, education enables upward socioeconomic mobility and is key to escape poverty; therefore, financial education should be a vital component in education systems [16,36]. However, higher levels of financial education induce people to incorporate risky behaviors, sometimes excessive, to get into excessive debt and maintain innocent financial attitudes, altering the desirable patterns of savings and consumption [34]. On the other hand, this

reduction in the financial knowledge gap should stimulate participation behavior in global investment. However, financial education is not enough, given the other limitations of access to financial service markets that restrict investment behavior [105], limiting the inequality reduction (SDG 10).

As for financial satisfaction, it is not predicted satisfactorily by financial knowledge, although it is recognized that men have higher financial satisfaction than women [106]. In addition, financial policies and financial education try to encourage money-saving. However, many people maintain a behavior where they keep a large amount of cash outside the banking system [59]. Results make it necessary to investigate even more about the impact of education and financial literacy, such as institutional management of personal financial behavior in matters of savings, consumption, and investment.

Finally, to further reduce inequality, it is necessary to strengthen research into financial education and support to allow the debate on its real effects, incidence, and impacts to be broadened. However, according to our results, none of the journals that concentrate on studies of financial behavior is in the first quartile of impact by citations received in the economics, psychology, sociology, or environment categories (among others, revisit Table 1). In short, it is a topic that has not yet managed to rise to greater prestige in the international scientific community. Even the journals associated with the WoS category “Business, Finance” are only in the third quartile. Therefore, we are facing an emerging issue that, for now, is advancing from the knowledge peripheral [107], a question that is necessary to improve in favor of better social sustainability conditions [108].

5. Conclusions

This article aims to relate studies of financial behavior (financial education, saving money, and consumption of goods and services) at the global level to the Sustainable Development Goals (SDGs) on quality education (SDG 4) and reducing inequalities (SDG 10). To establish these conceptual relationships, we used bibliometric analysis based on network theory using VOSviewer software, in addition to preliminary analyses based on the fundamental bibliometric laws previously mentioned (Price, Bradford, Lotka, Hirsch, and Zipf). We considered studies indexed in the Web of Science core collection (Science Citation Index and Social Science Citation Index).

The exponential growth of the studies of financial behavior is evidenced in relation to the period 1992–2020, based on the 492 articles, thus showing a growing interest in the scientific community in the study of this topic, and determining a contemporary period of publications between 2017 and 2020, which concentrates half of the articles published in the study period. In terms of reference sources, out of a total of 272 journals, the following 5 are concentrated in 95 articles, equivalent to 19% of publications: Journal of Family and Economic Issues, Journal of Consumer Affairs, International Journal of Consumer Studies, International Journal of Bank Marketing, and Journal of Economic Psychology. None of these journals belongs to the WoS category on Business Finance.

At the level of authors out of 1182, only 55 have a relational link with other authors of publications on the subject under study, showing a high fragmentation at the individual and institutional level, which sets a precedent of competitive interaction (by structural equivalence). The USA is a true hegemony of scientific production in this subject, contributing 58% of the articles.

In his speech, the marketing of financial services will be boosted by research on financial applications applied through smartphones, which will enable consumers to become financially literate. Within the new methodologies, there is the need to strengthen financial wellbeing and savings behavior, especially for those new generations with less experience and a high risk of financial vulnerability.

The research results on the main journal thematic areas where financial behavior is published (Table 1) and the main topics addressed by the 492 articles under study (see Figure 5) allow us to define sustainable financial behavior as the behaviors that a person or organization has with respect to the management of financial decisions regarding savings,

consumption, and investment, safeguarding the balance between economic, social, and environmental aspects.

Finally, the relationship between social factors, adaptation, and changes in the macroeconomic environment are elements to be considered in future research, which must be increased and achieve a space of greater preponderance between the scientific community to further advance the discipline finance role in sustainable development.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/su14010117/s1>, Table S1: Financial_behavior-GS.txt.

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