FINANCIAL EDUCATION EVALUATION MODEL IN EMERGING MARKET. A QUALITATIVE COMPARATIVE ANALYSIS BY GENDER IN COLOMBIA

Abril-Teatin, Jheisson Andres[1]
Enlace ORCID: https://orcid.org/0000-0002-4868-6561

Blanco-Mesa, Fabio[2]
Enlace ORCID: https://orcid.org/0000-0002-9462-6498

Romero-Muñoz, Jorge[3]
Enlace ORCID: https://orcid.org/0000-0003-4952-2435

ABSTRACT:

The objective of this research is to determine the variables for a financial education evaluation model in emerging market applied to a gender comparison. This study uses principal component analysis (PCA) and comparative qualitative fuzzy set analysis to determine the correlational of financial literacy variables and identify their patterns through their causal relationships. For this, the data set used has been collected through the application of 2499 questionnaires to the adult population of the departments of central Colombia. Using PCA is found 7 latent variables that al-lows to the generation of different scenarios that highlight the importance of the financial education variables analysed. Using fsQCA analysis is carried out six rounds to evaluate the causal conditions necessary for the occurrence of savings, credit and investment for the community identified in the male and female gender This information is useful for the different organizations in charge of the legislation and implementation of the FE. Results confirms the existence of different perceptions and skills in FE among the subjects analysed. Likewise, these differences underscore the importance of gender-specific FE and how it influences their financial decisions.

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[1] Magister en Administración de Organizaciones, (Universidad Pedagógica y Tecnológica de Colombia), Colombia, Universidad pedagógica y tecnológica de Colombia, Joven Investigador, Jheisson.abril@uptc.edu.co

[2] Doctor Internacional en Empresa (Universidad de Barcelona), Colombia, Universidad Pedagógica y Tecnológica de Colombia, Director Escuela de Posgrados Ciencias Económicas y Administrativas, fabio.blanco01@uptc.edu.co

[3] Magister en Administración de Empresas, (Universidad Externado de Colombia), Colombia, Universidad Pedagógica y Tecnológica de Colombia, Director Maestría en Finanzas, jorge.romero@uptc.edu.co

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MODELO DE EVALUACIÓN DE LA EDUCACIÓN FINANCIERA EN MERCADOS EMERGENTES. UN ANÁLISIS CUALITATIVO COMPARATIVO POR GÉNERO EN COLOMBIA

Resumen:

El objetivo de esta investigación es determinar las variables para un modelo de evaluación de educación financiera en mercados emergentes aplicado a una comparación de género. Este estudio utiliza análisis de componentes principales (PCA) y análisis cualitativo comparativo de conjuntos difusos para determinar la correlación de las variables de educación financiera e identificar sus patrones a través de sus relaciones causales. Para ello, el conjunto de datos utilizado ha sido recolectado mediante la aplicación de 2499 cuestionarios a la población adulta de los departamentos del centro de Colombia. Utilizando PCA se encuentran 7 variables latentes que permiten generar diferentes escenarios que resaltan la importancia de las variables de educación financiera analizadas. Mediante el análisis fsQCA se realizan seis rondas para evaluar las condiciones causales necesarias para la ocurrencia de ahorro, crédito e inversión para la comunidad identificada en el género masculino y femenino. Esta información es de utilidad para las diferentes organizaciones encargadas de la legislación e implementación del FE. Los resultados confirman la existencia de diferentes percepciones y habilidades en FE entre los sujetos analizados. Asimismo, estas diferencias subrayan la importancia de la FE específica de género y cómo influye en sus decisiones financieras.
Palabras clave. Educación financiera, Mercados emergentes, género, análisis de componentes principales, fsQCA.

MODELO DE AVALIAÇÃO DA EDUCAÇÃO FINANCEIRA EM MERCADOS EMERGENTES. UN ANÁLISIS CUALITATIVO COMPARATIVO POR GÉNERO EN COLOMBIA

Resumo:

O objetivo desta pesquisa é determinar as variáveis para um modelo de avaliação de educação financeira em mercados emergentes aplicado a uma comparação de gênero. Este estudo utiliza análise de componentes principais (PCA) e análise qualitativa comparativa de conjuntos difusos para determinar a correlação das variáveis de alfabetização financeira e identificar seus padrões por meio de suas relações causais. Para isso, o conjunto de dados utilizado foi coletado através da aplicação de 2.499 questionários à população adulta dos departamentos da região central da Colômbia. Utilizando a PCA são encontradas 7 variáveis latentes que permitem a geração de diferentes cenários que destacam a importância das variáveis de educação financeira analisadas. Utilizando a análise fsQCA são realizadas seis rodadas para avaliar as condições causais necessárias para a ocorrência de poupança, crédito e investimento para a comunidade identificadas no gênero masculino e feminino. Esta informação é útil para as diferentes organizações responsáveis pela legislação e implementação do FE. Os resultados confirmam a existência de diferentes perceções e competências em FE entre os sujeitos analisados. Da mesma forma, estas diferenças sublinham a importância da FE específica de género e como esta influencia as suas decisões financeiras.
Palavras chave. Educação financeira, mercado emergente, género, análise de componentes principais, fsQCA..

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1. INTRODUCTION:

Financial Education (FE) is the process of providing information and knowledge, as well as developing the skills necessary to evaluate options and make the best finan-cial decisions, enabling individuals to understand how money works and providing the tools necessary to properly manage personal finances (Abril Teatin et al., 2022; Lusardi & Messy, 2023; Yuesti et al., 2020). Since an important element for the development of the economy of any country is the proper functioning of its financial system, a tool that promotes such system in an efficient way is the FE of its population. Society needs to be involved in economic and financial aspects, for this it is necessary that they have the knowledge and basic tools that allow them to plan, manage and save more, which will result in higher levels of investment and growth of both personal and national econo-my (Bazán et al., 2021). Based on the above, it is necessary to generate research that addresses how have been the processes of approaching the FE, in different territories of the terrestrial sphere, therefore it is necessary to generate research that documents the state of progress of the FE, in a given territory, allowing the analysis of particular con-ditions of the populations under study (Bilal et al., 2021; Fu, 2020; A Lusardi, 2015; Steinert et al., 2018; Thomas & Spataro, 2018).

The main aim is to determine the variables for a financial education evaluation model in emerging market applied to a gender comparison. A theoretical review of the different approaches to FE was carried out to detaill review of the different variables on FE, as well as its main definitions, importance, and key concepts. Methodology two methods are used to determine the variables and observe their causal relationships. First, principal component analysis (PCA) is used, which allows minimizing the num-ber of variables analyzed (Lozares & López-Roldán, 1991; Terrádez, 2018). Second, fuzzy set qualitative comparative analysis (fsQCA) is performed, which is a different approach that consider multiple levels of explanation and different causal paths that are satisfactory for the occurrence of a particular outcome (Pappas & Woodside, 2021; Ragin, 1987, 2000). Findings show that 7 latent variables, which are used to establish causal conditions necessary for the occurrence in savings, credit and investment com-paring male and female gender in Colombia. On the one hand, women tend to focus on aspects such as investments, interest, and retirement planning with the aim of reach-ing ideal levels in savings, credit, and investments. In the other hand, men require a broader and deeper understanding of different financial aspects, such as insurance and regulations of the financial system, to achieve optimal levels of savings. Results con-firms the existence of different perceptions and skills in FE among the subjects ana-lysed.

This article is organized as follows: Section 2 reviews the concepts about the FE. Section 3 presents the methodological processes of the research. Section 4 presents the results of the analyses. Finally, Section 5 presents the conclusions.

2. LITERATURE REVIEW:

One of the fundamental challenges since the dawn of humanity has been education, mainly teaching people to write and read so that they can communicate with each other. Education continues to be fundamental throughout the world, where new challenges arise as to how to teach in more developed environments and with increasingly complex tasks. Within these aspects of complexity is related to the development of skills, abilities, and knowledge in the use of financial goods and services (Ba-ez-Palencia et al., 2019). The development of these skills requires a cognitive and educational process in the short, medium, and long term, and financial literacy can con-tribute to their acquisition. The following is a brief presentation of key financial litera-cy concepts.

Financial Literacy.

Financial education (FE) has aroused interest due to the perceived need for people to acquire advanced

skills in accessing financial products and services, generating trust and guarantees among the different economic agents involved in financial intermedia-tion processes and activities (Gómez-Soto, 2009). There are different approaches to FE that attempt to provide clarity on what is meant. For example, Noctor et al., (1992) state that the FE is "the ability to make informed judgments and effective decisions re-garding the use and management of money" (p.4), where the main act is identified as the ability of people to make the right decisions. For Vitt et al., (2000) FE should take another perspective given that FE is: "The ability to read, analyze, manage and communicate about personal financial conditions that affect material well-being" (p.12) who were more emphatic in considering the skills and abilities needed in FE.

According to the OCDE and CAF, (2020), FE is defined as the process in which financial consumers improve their understanding of financial products, concepts and risks through information, impartial advice, and education, enabling them to develop skills and confidence to become more aware of financial risks and opportunities, know where to turn for help, and take any effective and efficient action to improve their financial well-being. Indeed, FE goes beyond the simple provision of information and financial advice, which should be regulated, as is often already the case, for the protection of financial consumers (García et al., 2013). According to Romero-Muñoz et al., (2021b) FE has different interpretations, which has sparked a discussion on what a FE should include. The understanding of FE can consider the knowledge of financial concepts, the ability to understand these concepts and the skills to make financial decisions, which would contribute significantly to social formation in the financial environment.

Currently, there are several educational programs in FE for businesspeople, for pensioners and for members of companies. However, FE is not implemented at the curricular level at the secondary and professional levels, because there is a need for the general population to study FE in greater depth so that they will be more competent when dealing with the products and services of the financial sector (Céspedes, 2018). The importance of FE derives from economics, since it establishes vital aspects for adequate decision making in daily life by incorporating three fundamental aspects a) gaining and understanding knowledge about finance, b) developing financial compe-tencies, and c) having financial responsibility (Pangestu & Karnadi, 2020). Likewise, the importance for the welfare of the financial system, since it allows all the actors of this system to be more apt and competent, avoiding information asymmetry in financial products and services (Schuster de Hart, 2018). To this end, the promotion of financial literacy is essential, as it should be considered a fundamental skill in human life, and the population should be educated at an early age.

The new generations will have to be exposed to increasingly complex financial markets and products, and the FE will enable them to greatly reduce financial risks due to lack of knowledge of these products (Villagómez, 2014). According to Instituto Santalucía (2021) for the effective promotion of the FE at an early age, 5 pillars must be developed: 1) if one has an adequate FE from a young age, one will be able to effectively manage the personal economy; 2) the FE will allow the understanding of how money works; 3) the FE provides knowledge for a correct financial decision making; 4) the new communication and information technologies have allowed and will be an important ally when analyzing and requesting financial products and services; 5) the FE allows the objective of reaching a financial stability.

Financial knowledge.

Financial knowledge involves understanding key financial concepts, based on people's ability and capacity to develop them in their daily lives. According to Potrich et al., (2015) financial knowledge is defined as the intellectual capital acquired from the experience of managing income, savings and expenses that occur during a person's lifetime. Endogenization of financial knowledge has important welfare implications as policies aimed at improving the levels of financial

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literacy in the general population (Gavurova et al.,2019). Financial knowledge can also be determined as the confidence and skills one has about the different terms and basic knowledge of finance that are of utmost importance for an adequate performance in the management of financial re-sources (Aydin & Akben Selcuk, 2019; Kalmi & Ruuskanen, 2019). According to Romero & Ramírez (2018) financial knowledge can be defined as the knowledge of a person, and that this in turn understands the close relationship between personal and business finances making assertive decisions. The importance of financial knowledge for a local or national economy lies in the fact that entrepreneurs will be able to better assume the financial responsibilities involved in each economic activity or cycle (Memarista, 2016).

For Nguyen et al. (2017) Financial knowledge is an elementary component of the FE, since it allows the adequate interpretation and analysis of financial concepts, products and instruments. Financial knowledge is an intangible asset, which allows the adequate and efficient processing of economic information and decision making on credit, pensions, savings, investments, interest rates, and planning of other variables on financial products and services (Zorrilla et al., 2021). According to Cordero & Ped-raja (2016) The low level of financial literacy in the population may be considered as one of the main factors in the complications of a financial crisis that may become international in nature. For this reason, more and more international organizations and countries are implementing activities in their territories for the implementation of FE at increasingly younger ages in the population. Promoting financial literacy in the population contributes to the empowerment of the financial consumer, people will be able to protect their rights and demand the effective fulfillment of the duties of financial organizations (Rubiano, 2014).

Financial conceptualization.

Financial conceptualization allows people to acquire knowledge and skills when interacting with different financial services and products, allowing them to develop the necessary skills to make better decisions in the financial market. Some factors of relevance to financial education are identified, namely: savings, credit, investment, di-vision of money, time value of money, inflation, risk diversification, interest calcula-tion, profitability, budgeting, interest, insurance, retirement, and financial system standards. Economic theory defines savings as the difference between disposable income, consumption, and investment, given at the individual, family, and societal levels (Melo-Becerra et al., 2006). This concept was practiced in ancient peoples because these civilizations saved seeds to be used later in the sowing of subsequent cycles. Also, part of what was saved could be used to be exchanged for products of allied peoples, generating the economic system known as barter (Oberst, 2014).

Credit: A bank credit is the permission given by a financial institution to a specific client, through a contract, so that the client can obtain certain financial resources, which may or may not be made available immediately or partially (Peña Pupo, 2012).

Investment: An investment is any financial instrument in which funds are deposited with the expectation that it will generate positive income by generating an in-crease in its value. The yields or returns on an investment are received in two basic forms, increase in value and current income. Money invested in a savings account generates current income through periodic payments of the agreed interest (Gitman & Joehnk, 2009; Valencia Nuñez et al., 2020). Likewise, sophisticated investment strategies will allow the investor(s) to massively increase the financial returns on their products. naïve diversification strategies do not allow to obtain good financial returns and even increase the financial risk of these strategies due to a lack of knowledge of the behavior and particular conditions of the financial investment products to be accessed (Benartzi & Thaler, 2001).

Interest rate: The interest rate denotes the cost incurred or earned per unit of time for every unit of capital invested, alternatively, it can be expressed as

the yield on a unit of money over a specific time or the yield on a unit of capital within a given timeframe. The interest rate is expressed as a percentage and represents the balance between the risk and potential gain of using a fund in each situation and at a given time (Carrizo, 1977).

Inflation: Inflation is a phenomenon observed in a country's economy and is re-lated to the disorderly increase in the prices of most goods and services traded in its market over a short or long period of time. When the economy experiences inflation, it is difficult to allocate our income, plan trips, pay off debts or invest in profitable things, because prices are distorted as a reference to allocate our funds in the best way (Moreno-Brid et al., 2014).

Retirement pension: The pension is understood as the amount of money received by the worker to replace the normal payment of the salary, which has ceased to be received due to having reached the pension age, because of the termination of the labor activity. However, reaching a certain age is not the only scenario that must occur to obtain a pension, since it can occur due to an illness or permanent disability, among other particular situations (Casañas Lorenzo, 2018).

Budget: A budget is a plan that shows how resources will be acquired and used over a specified interval (Romero & Vega, 2015). While operations are in process, the budget serves as a basis for comparison, and facilitates the control process (Jiménez & Espinoza, 2007).

Financial system: Financial system is the set of organizations which have been authorized by the State to capture, manage and invest the money of individuals and legal entities that carry out economic activities in the country (Dueñas, 2008). Additionally, the term financial system also includes the grouping of instruments, rules and regulations which are related to the relationship between the client and the financial entity (Quispe et al., 2022).

Profitability: Profitability turns out to be the biggest and most important motivation for people who invest in financial products and services, which offer them some kind of fixed or variable income in a certain period. This implies that the person must analyze and understand adequately if a certain type of investment is useful according to the particular needs of this person (Martins & Rialp, 2013; Morillo, 2001).

Insurance: The purpose of insurance is to transfer the risk of possible losses due to the occurrence of a specific event, through the payment of an amount established as a premium by a third-party entity, which is essentially the Insurance Company. In short, insurance is the financing of a risk and its cost is the premium (Valero, 1991).

3. METHODOLOGY :

This study uses a fuzzy set qualitative comparative analysis (fsQCA) to examine the relationship between 7 variables of FE (Ragin, 2000). which is the result of a principal components analysis (PCA), where initially there have been 14 variables, whose data set has been compiled through the application of 2499 questionnaires to the adult population of the departments of the central Colombian zone. The population of the departments of the central region of Colombia was analyzed, which in economic terms is recognized as the most important region in the country, comprising the departments of Meta, Tolima, Boyaca and Cundinamarca, together with Bogotá Capital District. These territories comprise a population of approximately 14.633.137 inhabitants (DANE, 2019). The people included are the adult population of these departments and are financial consumers from different social groups, such as businessmen, university students, salaried employees, pensioners and, in general, common people linked to the financial system, who previously accepted to participate in this study. Given this in-formation, a stratified probabilistic sample is made, to find the sample for Bogota and each department determined, with a confidence level of 95% and a margin of error of 5%, obtaining a sample of 2.499 people out of a population of 10.931.036 inhabitants who belong to Bogota and the departments listed in Table 1.

For the collection of information, an evaluation questionnaire is designed based on the theoretical analysis and literature review, including fourteen financial categories that make up the FE (Appendix A), which was applied to the sample population established in each of the departments. This evaluation includes simple and clear questions to identify the knowledge of the participants. The evaluation questions are classified into 14 variables.

Table 1.

Adult population by department and Bogotá.

Department	Adult population	Sample
Bogota	5.967.518	1.364
Boyaca	995.970	228
Cundinamarca	2.070.075	473
Meta	780.856	179
Tolima	1.116.617	255
Total	10.931.036	2.499

Source: Data of Abril Teatin et al., (2022).

As an analysis strategy and support technique, principal component analysis (PCA) is used, which is a statistical technique for the synthesis of information, or re-duction of the number of variables (Navarro et al., 2010). Since, given a certain amount of data with many variables, the objective of this will be to reduce them to a smaller number by losing as little information as possible. The new principal compo-nents or factors will be a linear combination of the original variables, and they will also be independent of each other. A key aspect in PCA is the interpretation of the factors, since this is not given a priori, but will be deduced after observing the relationship of the factors with the initial variables (Terrádez, 2018). The PCA analysis was carried out using R software, which is a statistical and graphical analysis system. It is distributed free of charge and is quite friendly to the researcher since this system has a relatively simple programming language and the add-ons that may be needed are also free (Cwynar et al., 2019; The R Foundation, 2017).

With the results found in the PCA, the fuzzy methodology will be applied to them using the FsQCA 3.0 program. Since this program uses the theory of fuzzy sets together with Boolean algebra, to comprehensively analyze the degree to which certain combinations or factors are present or absent in relation to the occurrence or non-occurrence of a given phenomenon of interest (Ragin, 1987, 2000; Surco

Guillen, 2021; Zadeh, 1965). An important process is the calibration of variables. The calibration of variables in fsQCA is direct, indicating three qualitative breakpoints: 10% indicating that the result is outside the set, 50% intermediate and 90% completely inside. The causal conditions for the savings, investment and credit variables are related, in addition to generating two categories for each variable where the results are analyzed according to the gender of the people participating in the research (Pappas & Woodside, 2021).

4. RESULTS:

Being aware of the importance of the FE and its various effects on daily life, this section unfolds the results of the research concerning the characterization and under-standing of the 14 variable questions posed for the purpose of knowledge. One of the first stages in the process of conducting the PCA and fsQCA involved the initial evaluation of the data distribution and the validation of the scale used in the survey. For this, Cronbach's Alpha coefficient is used on a sample of 2499 study participants, without applying any exclusion criteria. This coefficient was calculated considering the 14 variables present in the survey, resulting in a value of 0.889. This result is con-sidered an appropriate indicator of the internal reliability of the survey and suggests a significant level of confidence in the data collected.

Principal Component Analysis Results.

The 14 variables have been analysed through principal component analysis. In Figure 1. Analysis of the principal components, dimension 1 corresponds to capture 41.90% and dimension 2 captures 7.91% and accumulates 49.81% of the information. It is also observed that there are two groups that are related, the first with the variables investment, inflation, interest calculation, division of money, financial system standards, insurance, retirement, savings, and interest. The second with risk diversification, budgeting, time value of money, profitability, credit. These correlations can be ob-served according to the intensity of the colours represented.

Figure 1.

Principal component analysis.
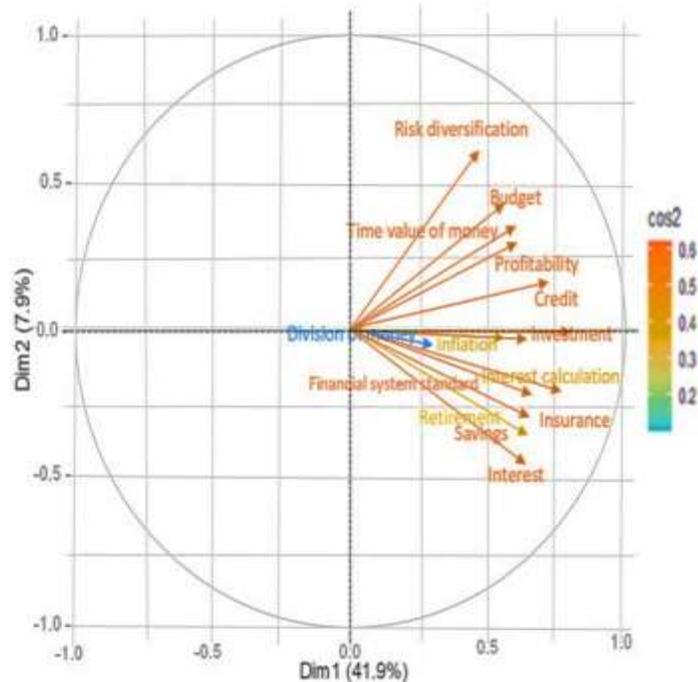
Source: own elaboration with data from R software.

The Pearson diagram (see Table 2 and Table 3), allows to numerically demonstrate the existence of a relationship between two variables, quantifying the intensity of this relationship. This makes it possible to show the relationship between two types of data and to quantify the intensity of this relationship. It is used to find out if there is indeed a correlation between two magnitudes or parameters of a problem and, if so, what type of correlation it is (Abril Teatin et al., 2022). According to the results in Table 3, the correlations of the 14 variables can be observed. The correlation with the highest index is found in financial system standards and investment with 0.6, followed by a correlation of 0.56 between insurance and Retirement. However, the lowest correlation index with 0.11 was found between the variables budget and division of money.

In addition, the largest groupings of correlations between the research variables are shown, in this case the correlations with the highest index have been selected, where the largest correlation group with the highest result is created with the results of the variable financial system standards. This group is composed of 7 variables which are Savings with 0.5, Credit with 0.51, Interest with 0.5, Investment with 0.6, Retirement with 0.54, and insurance with 0.53. A second grouping generated with the in-vestment variable where 6 variables are presented, is composed of Savings with 0.52, Credit with 0.54, Financial system standards with 0.6, Profitability with 0.5, Insurance with 0.52. On the other hand, the grouping of variables with the lowest results is made up of the variable interest, savings, and financial system standards with 0.5 (see Table 2 and Table 3).

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Table 2.

Scatter plot between the 14 variables

Variables	SA	IC	CR	RD	DM	IF	IT	IV	RE	FS	BU	PR	IN	TV
SA	1	0.37	0.39	0.21	0.21	0.37	0.50	0.52	0.44	0.50	0.33	0.40	0.49	0.33
IC		1	0.39	0.30	0.21	0.35	0.45	0.44	0.29	0.45	0.37	0.29	0.38	0.37
CR			1	0.28	0.19	0.35	0.47	0.54	0.43	0.51	0.49	0.44	0.42	0.47
RD				1	0.17	0.21	0.17	0.33	0.25	0.25	0.36	0.39	0.27	0.32
DM					1	0.18	0.19	0.16	0.19	0.21	0.11	0.14	0.16	0.21
IF						1	0.37	0.42	0.30	0.35	0.28	0.30	0.33	0.44
IT							1	0.46	0.39	0.50	0.22	0.30	0.47	0.34
IV								1	0.48	0.60	0.45	0.40	0.52	0.46
RE									1	0.54	0.37	0.36	0.56	0.34
FS										1	0.39	0.43	0.53	0.42
BU											1	0.35	0.38	0.39
PR												1	0.36	0.44
IN													1	0.31
TV														1

Source: Own elaboration, with results of software R. SA: Savings; IC: Interest calcula-tion; CR: Credit; RD: Risk diversification; DM: Division of money; IF: Inflation; IT Inter-est; IV: Investment; RE: Retirement; FS: Financial system standards; BU: Budget; PR: Profitability; IN: Insurance; TV: Time value of money.

According to these PCA results, it is determined that, from the 14 initial study variables, it is generated 7 latent variables: financial system standards, savings, credit, interest, investment, retirement, and insurance (see Table 3).

Table 3.

Scatter plot between the 7 variables.

Variables	SA	CR	IT	IV	RE	FS	IN
Savings	1	0.39	0.50	0.52	0.44	0.50	0.49
Credit		1	0.47	0.54	0.43	0.51	0.42
Interest			1	0.46	0.39	0.50	0.47
Investment				1	0.48	0.60	0.52
Retirement					1	0.54	0.56
Financial system standards						1	0.53
Insurance							1

Source: Own elaboration, with results of software R. See acronyms in table 2.

Fuzzy set qualitative comparative analysis (fsQCA) results.

The variables considered in the analysis with the fsQCA 3.0 program are based on the seven obtained in the PCA, which are: Financial system standards, savings, credit, interest, investment, retirement, and insurance. Six rounds of fsQCA analysis are carried out, evaluating the causal conditions necessary for the

occurrence of savings, cred-it and investment for the community identified in the male and female gender.

Variables analyzed in fsQCA.

The variables of savings, credit and investment are selected since these are fundamental components of an adequate FE. Savings provide financial stability and re-sources for the future (Melo-Becerra et al., 2006; Oberst, 2014), credit facilitates access to financing and consumption (Antonio-Anderson et al., 2020; Mora-Torres, 2017) and investment stimulates economic development and wealth generation (Ahmed & Salleh, 2016; Valencia Nuñez et al., 2020). These variables are interrelated and are crucial both at the individual level and for the development of the economy.

This analysis using fsQCA allows the identification of the key combinations (configurations) of conditions that act as causally sufficient to generate the results of be-longing to each variable in question. Based on the data presented in Table 4, 12 relevant combinations have been identified in relation to the savings variable. These combinations reveal consistency intervals ranging from 0.87302 to 1. In addition, an average range of presence among the study subjects is observed, varying from 0% to 2.825%, along with probabilities of occurrence ranging from 0.00111 to 0.60055.

Table 4.

Conditions necessary for the presence of the savings variable analysis.

Assumptions	Raw Coverage	Unique Coverage	Consistency
IV*~CR*IT*IN	0.09584	0.00831	0.91053
IV*IT*RE*~FS	0.03047	0.00222	0.87302
IV*CR*IN*RE	0.52853	0.00055	0.97248
IV*IT*IN*FS	0.60055	0.00942	0.96613
~IV*~IT*IN*~RE*FS	0.00166	0.00166	1
IV*CR*IT*~IN*~FS	0.01385	0.00720	0.80645
IV*CR*~IT*~IN*FS	0.00111	0.00055	1
IV*~IT*~IN*RE*FS	0.00111	0.00055	1
CR*~IT*~IN*RE*FS	0.00166	0.00111	1
~CR*IT*IN*RE*FS	0.09806	0.02825	0.91237
IV*CR*IT*RE	0.55457	0	0.96902
IV*CR*RE*FS	0.53573	0	0.97284

Source: Own elaboration, with results from FUZZY software. CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

Table 5.

Analysis of the necessary conditions for the presence of the Credit variable.

Assumptions	Raw coverage	Unique coverage	Consistency
CR*~IT*IN*~RE*~FS	0.00142	0.00071	1
SA*CR*IN*RE*FS	0.65790	0.65434	0.93624
~SA*~CR*~IT*IN*~RE*FS	0.00071	0.00071	1
SA*CR*~IT*IN*~FS	0.00142	0	1
SA*CR*~IT*IN*RE	0.00427	0	1

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; RE: Retirement; FS: Financial system standards; IN: Insurance.

Table 6 shows that for the credit variable, 2 combinations can be identified. These combinations reveal coherence intervals that vary between 0.87954 and 1. In addition, average ranges of participation of the study subjects are found, ranging from 0.142% to 65.295%. Also, probabilities of occurrence are observed in the range from 0.00142 to 0.65295.

Table 6.

Analysis of the necessary conditions for the presence of the Credit variable.

Assumptions:	Raw coverage	Unique coverage	Consistency
IV*~IT*~IN*RE*~FS	0.00142	0.00142	1
SA*IV*IT*IN*RE*FS	0.65295	0.65295	0.87954

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; RE: Retirement; FS: Financial system standards; IN: Insurance.

Variables analyzed in fsQCA by gender of the population.

Table 7 shows a total of 13 different combinations, in which variability in the coherence results is observed, ranging from 0.85294 to 1. These results are accompanied by average ranges of participation by the study subjects, ranging from 0.099% to 2.783%. In addition, the probabilities of occurrence range from 0.00099 to 0.70875.

Table 7.

Analysis of the necessary conditions for the presence of savings in the female gender

Assumptions	Raw coverage	Unique coverage	Consistency
IV*IT*RE	0.70179	0.00895	0.97111
IV*~CR*IT*~FS	0.01889	0.00497	0.95000
IV*IN*RE*~FS	0.02187	0.00199	0.95652
CR*IT*IN*FS	0.62724	0.00497	0.97077
IV*CR*RE*FS	0.60934	0.00298	0.97767
IT*IN*RE*FS	0.70875	0.02783	0.96351
~CR*IT*IN*~RE*~FS	0.02883	0.02187	0.85294
~IV*CR*~IT*~IN*RE*~FS	0.00298	0.00298	1
IV*~CR*~IT*~IN*~RE*FS	0.00199	0.00199	1
~IV*CR*~IN*~IN*~RE*FS	0.00099	0.00099	1
~IV*~CR*~IT*IN*~RE*FS	0.00199	0.00199	1
IV*~CR*IT*IN	0.09046	0	0.92857
IV*IT*IN*FS	0.67594	0	0.97143

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

In Table 8, a total of 13 combinations have been identified, which show a diversity in the levels of consistency, ranging from 0.81818 to 1. These results are accompanied by average ranges of participation by the study subjects, ranging from 0.127% to 3.304%. In addition, probabilities of occurrence ranging from 0.00127 to 0.50953 are recorded.

Table 8.

Analysis of the necessary conditions for the presence of savings in the male gender.

Assumptions:	Raw coverage	Unique coverage	Consistency
IV*IT*IN*RE	0.50953	0.01652	0.95933
IV*~IT*IN*~RE*~FS	0.00254	0.00127	1
~CR*IT*IN*RE*FS	0.10419	0.02922	0.91111
IV*CR*IT*IN*FS	0.42440	0.01398	0.96812
IV*CR*IT*RE*FS	0.44346	0.03304	0.96409
IV*CR*IN*RE*FS	0.41423	0.00381	0.96736
IV*CR*IT*~IN*~RE*~FS	0.01017	0.01017	0.88889
IV*CR*~IT*~IN*~RE*FS	0.00127	0.00127	1
~IV*CR*~IT*IN*~RE*FS	0.00127	0.00127	1
IV*~CR*~IT*~IN*RE*FS	0.00127	0.00127	1
~IV*CR*~IT*~IN*RE*FS	0.00254	0.00254	1
IV*~CR*IN*~RE*~FS	0.01144	0	0.81818
IV*~CR*IT*IN*~FS	0.01779	0	0.82353

Source: Own elaboration, with results from FUZZY software. CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

The results presented in Table 7 and Table 8 shed light on the complex relationships and patterns of financial behavior observed in the study. Table 8 highlights a set of 13 unique combinations that reveal a diverse range of coherence levels, varying be-tween 0.85294 and 1. These coherence values capture the strength of the

relationships between the conditions studied, providing detailed insight into the underlying interactions.

The first combination of variables in both tables highlights the influence of financial education on savings-related decision making. In Table 8, it is evident that women achieve a high level of savings by acquiring knowledge in investment, interest, and retirement, while in Table 9, it is established that the male population needs to under-stand investment, interest, insurance, and retirement concepts to achieve an adequate level of savings.

fsQCA results by gender on the investment variable.

Table 9 shows a set of 4 specific combinations that have yielded consistency results ranging from 0.95981 to 1. The average ranges of participation of the study sub-jects in these combinations range from 0.124 to 73.913. Additionally, the probabilities of occurrence recorded in this table range from 0.00124 to 0.74162.

Table 9.
Analysis of the necessary conditions for the presence of investment in the female gen-der.

Assumptions:	Raw Coverage	Unique Coverage	Consistency
SA*CR*~IT*IN*RE	0.00373	0.00124	1
SA*CR*~IT*RE*FS	0.00373	0.00124	1
SA*CR*IN*RE*FS	0.74162	0.73913	0.95981
~SA*CR*~IT*IN*~RE*~FS	0.00124	0.00124	1

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

Table 10 presents a total of 5 specific combinations that yield consistency results ranging from 0.95981 to 1. The average ranges of presence of the study subjects within these combinations range from 0.168% to 54.698%. In addition, the probabilities of occurrence recorded in this table range from 0.00168 to 0.54698.

Table 10.
Analysis of the necessary conditions for the presence of investment in the male gender.

Assumptions:	Raw Coverage	Unique Coverage	Consistency
SA*CR*IN*RE*FS	0.54698	0.54698	0.89560
~SA*~CR*~IT*IN*~RE*FS	0.00168	0.00168	1
SA*CR*~IT*IN*~RE*~FS	0.00168	0.00168	1
SA*CR*~IT*~IN*RE*~FS	0.00168	0.00168	1
SA*~CR*~IT*~IN*RE*FS	0.00168	0.00168	1

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

In the first combination of variables in Table 10, it is concluded that for the fe-male study population to reach an adequate level of investment, it is essential that they acquire knowledge in areas such as Savings and Credit. In addition, the importance of having limited knowledge in Interest, but an appropriate level of understanding in In-surance and Retirement highlights the specificity of the conditions that influence the investment decisions of the female participants.

On the other hand, in the first combination of variables in Table 11, it is established that for the male study population to achieve an adequate level of investment, in-depth knowledge in areas such as Savings, Credit, Insurance, Retirement and Financial system standards is required. This finding underscores the breadth and depth of knowledge necessary for men to make well-informed investment decisions.

fsQCA results by gender on the credit variable.

In Table 11, a total of 6 specific combinations have been identified that have produced consistency scores ranging from 0.81395 to 1. These consistency values reveal the strength of the underlying relationships and reflect the influence of the different conditions in the study. The average ranges of participation of the study subjects in these combinations span from 0.164% to as high as 52.951%. In addition, the probabilities of occurrence recorded in this table range from 0.00164 to 0.57213.

Table 11.
Analysis of the necessary conditions for the presence of credit in the male gender.

Assumptions:	Raw Coverage	Unique Coverage	Consistency
IV*~IT*~IN*RE*~FS	0.00328	0.00164	1
SA*IV*IT*RE*FS	0.57213	0.52951	0.84300
SA*~IV*~IT*IN*~RE*FS	0.00164	0.00164	1
SA*~IV*~IT*~IN*RE*FS	0.00328	0.00328	1
SA*IV*~IN*RE*~FS	0.01639	0	0.83333
SA*IV*IT*~IN*RE	0.05738	0	0.81395

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

Table 12.
Analysis of the necessary conditions for the presence of credit in the female gender.

Assumptions:	Raw Coverage	Unique Coverage	Consistency
~SA*IV*IT*~RE*~FS	0.00634	0.00634	
SA*IV*~IT*~IN*RE*FS	0.00127	0.00127	
SA*IV*IT*IN*RE*FS	0.75412	0.75412	0.90

Source: Own elaboration, with results from FUZZY software. SA: Savings; CR: Credit; IT: Interest; IV: Investments; RE: Retirement; FS: Financial system standards; IN: Insurance.

In Table 12, 3 specific combinations have been identified that have yielded consistency scores ranging from 0.90152 to 1. These consistency values reflect the strength of the relationships observed in the study. The average ranges of presence of the study subjects within these combinations ranged from a modest 0.127% to an outstanding 75.412%. In addition, the probabilities of occurrence recorded in this table range from 0.00127 to 0.75412.

A comparison of the results presented in Table 11 and Table 12 provides insight into the differences in financial behaviour patterns between genders in the study. In the first combination of variables in Table 12, it is concluded that for the male population to achieve an adequate level of credit, it is essential that they acquire knowledge in areas such as investments. Although these participants may have a low level of under-standing in interest and in insurance, it is observed that it is crucial that they have an adequate level in retirement and limited knowledge in financial system standards.

On the other hand, the first combination of variables in Table 12, it is established that for the female population of the study to reach an adequate level of credit, it is fundamental that they acquire knowledge in areas such as investments and interest. Although these participants may show a low level of understanding in insurance, retirement, and financial system standards.

These results underscore the importance of financial education and the complex interactions between the conditions studied in financial decision making. These findings may have significant implications for the formulation of strategies and policies aimed at improving the financial health of different demographic groups.

5. DISCUSSION AND CONCLUSIONS

This research focuses on the adult population of the departments located in the central region of Colombia; an area known for exhibiting outstanding economic indicators. Currently, there is a marked interest on the part of the academic, governmental, and business community in developing continuous efforts to promote the improvement of financial education in the general population. Financial education is a key factor that enables people to acquire the necessary skills and knowledge to make informed decisions regarding future financial planning. It also facilitates the effective management of monetary resources, avoiding the accumulation of unnecessary debt and reducing financial stress, which contributes to both individual and collective economic well-being.

Two methodological tools were used: Principal Component Analysis (PCA) and Comparative Qualitative Analysis (fsQCA). The PCA proved valuable for its ability to identify and visualize the essential information contained in the data collected (Chacón et al., 2021), achieving a reduction from fourteen initial variables to seven, without im-plying a substantial loss of information, with similar results. Subsequently, the results of the fsQCA analysis confirmed the existence of diverse perceptions and competencies in financial education among the subjects analysed. It should be noted that the purpose of the fsQCA method is not to demonstrate a direct causal relationship between two variables, but rather to identify patterns that support the presence of such a causal relationship (Mejía Trejo, 2021).

The results show that women tend to focus on areas such as investments, interest, and retirement to achieve optimal levels of savings, credit, and investment. However, men need broader and deeper knowledge in various financial areas such as insurance and financial system standards to achieve optimal levels of savings. These differences underscore the importance of gender-specific FE and how it influences their financial decisions. Thus, findings emphasize the need for strategies and policies that address the different financial needs of demographic groups, with the goal of improving their financial health.

However, this research has certain limitations, since the population sample is limited to the departments of

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central Colombia and is based on data collected in a specific period. In terms of implications, the findings of this research suggest the im-portance of implementing educational programs that promote financial literacy in the adult population, especially in regions with intermediate economic indicators. Furthermore, it highlights the need to adapt these programs according to the differences in perceptions and competencies identified in the analysis.

As for future lines of research, consideration could be given to exploring how socioeconomic and cultural factors influence the financial education of the population. In addition, it would be valuable to delve deeper into the impact of financial education on concrete decision making, as well as the evaluation of the long-term effectiveness of financial education programs implemented in different contexts. These areas of research could provide additional insights on how to improve the financial management of the population and its implications at the societal and economic levels.

6.   REFERENCES:

Abril Teatin, J. A., Rodrigo Saavedra, N., Blanco Mesa, F., & Muñoz Romero, J. (2022). Índice de evaluación del conocimiento en educación financiera. Cuadernos Del CIMBAGE, 2(24), 1–16. https://ojs.econ.uba.ar/index.php/CIMBAGE/article/view/2526

Ahmed, H., & Salleh, A. M. H. A. P. M. (2016). Inclusive Islamic financial planning: a conceptual framework. International Journal of Islamic and Middle Eastern Finance and Management, 9(2), 170–189. https://doi.org/10.1108/IMEFM-01-2015-0006

Antonio-Anderson, C., Peña-Cárdenas, M. C., & Del Pilar López-Saldaña, C. (2020). Determinantes de la alfabetización financiera. Investigación Administrativa, 2020(125), 1870–6614.

Atkinson, A., & Messy, F. (2012). Measuring financial literacy: Results of the OECD/International network on financial education (INFE) Pilot study. OECD Working Papers on Finance, Insurance and Private Pensions, 15, 1–73. https://doi.org/10.4236/ME.2016.74049

Aydin, A. E., & Akben Selcuk, E. (2019). An investigation of financial literacy, money ethics and time preferences among college students: A structural equation model. International Journal of Bank Marketing, 37(3), 880–900. https://doi.org/10.1108/IJBM-05-2018-0120

Baez-Palencia, D., Olazabal-Lugo, M., & Romero-Muñoz, J. (2019). Toma de decisiones empresariales a través de la media ponderada ordenada. Inquietud Empresarial, 19(2), 11–23.

Bazán, J. E. L., Torres, O. V. D. la T., & Alfaro-Calderón, G. G. (2021). Educación Financiera: Origen, análisis y evolución de las aportaciones científicas utilizando técnicas bibliométricas en la Web of Science. Inquietud Empresarial, 21(2), 35–49. https://doi.org/10.19053/01211048.11475

Benartzi, S., & Thaler, R. H. (2001). Naive diversification strategies in defined contribution saving plans. American Economic Review, 91(1), 79–98. https://doi.org/10.1257/AER.91.1.79

Bilal, M. A., Khan, H. H., Irfan, M., Haq, S. M. N. U., Ali, M., Kakar, A., Ahmed, W., & Rauf, A. (2021). Influence of Financial literacy and educational skills on entrepreneurial intent: empirical evidence from young entrepreneurs of Pakistan. Journal of Asian Finance, Economics and Business, 8(1), 697–710. https://doi.org/10.13106/jafeb.2021.vol8.no1.697

Carrizo, J. F. (1977). La tasa de interés. Revista de Economía y Estadística, 21, 81–118.

Casañas Lorenzo, M. (2018). El sistema de pensiones en España : un avance en la historia desde un enfoque económico [Universidad de La Laguna]. https://riull.ull.es/xmlui/handle/915/10206

Céspedes López, J. B. (2018). Análisis de la necesidad de la educación financiera en la formación

colegial. Pensamiento Crítico, 22(2), 97–126. https://doi.org/10.15381/pc.v22i2.14333

Chen, H., & Volpe, R. P. (1998). An analysis of personal financial literacy among college students. Financial Services Review, 7(2), 107–128.

Civil, R. nacional del estado. (2022). Elecciones de Congreso de la República y consultas populares interpartidistas. https://resultados.registraduria.gov.co/

Cordero Ferrera, J. M., & Pedraja Chaparro, F. M. (2016). La educación financiera y su efecto sobre el conocimiento financiero de los alumnos españoles en PISA 2012. Documentos de Trabajo Funcas, 786.

Cwynar, A., Cwynar, W., & Wais, K. (2019). Debt literacy and debt literacy self-assessment: The case of Poland. Journal of Consumer Affairs, 53(1), 24–57. https://doi.org/10.1111/joca.12190

DANE. (2019). Censo General 2018. https://www.dane.gov.co/files/geoportal-provisional/index.html

Dueñas Prieto, R. (2008). introducción al sistema financiero y bancario . Politécnico Grancolombiano. https://www.yumpu.com/es/document/view/14184816/introduccion-al-sistema-financiero-y-bancario-politecnico

Finke, M. S., Howe, J. S., & Huston, S. J. (2016). Old age and the decline in financial literacy. Management Science, 63(1), 213–230. https://doi.org/10.1287/MNSC.2015.2293

Fu, J. (2020). Ability or opportunity to act: What shapes financial well-being? World Development, 128. https://doi.org/10.1016/j.worlddev.2019.104843

García, N., Grifoni, A., López, J., & Mejía, M. (2013). La educación financiera en América Latina y

el Caribe Situación actual y perspectivas. In Serie Políticas Publicas y Transformación Productiva. https://scioteca.caf.com/handle/123456789/379

Gavurova, B., Kubak, M., Huculova, E., Popadakova, D., & Bilan, S. (2019). Financial literacy and rationality of youth in Slovakia . Transformations in Business and Economics, 18(3), 43–53.

Gitman, L. J., & Joehnk, M. (2009). Fundamentos de Inversiones: Vol. Decima (Pearson Educación (ed.)). Pearson Educación.

Gómez-Soto, F. (2009). Educación financiera : retos y lecciones a partir de experiencias representativas en el mundo. Enbreve, 10. https://www.repositorio.iep.org.pe/handle/IEP/1054

ICFES. (2014). Ejemplo de preguntas Saber 9o educación económica y financiera cuadernillo de prueba.

Instituto Santalucía. (2021). ¿Por qué es importante la Educación Financiera? . Santalucía Seguros. https://institutosantalucia.es/por-que-es-importante-la-educacion-financiera/

Jiménez Boulanger, F., & Espinoza Gutiérrez, C. L. (2007). Costos industriales(Primera Edición). Tecnológica de Costa Rica .

Kalmi, P., & Ruuskanen, O.-P. (2019). Financial literacy and retirement planning in Finland. Journal of Pension Economics and Finance, 17(3), 335–362. https://doi.org/10.1017/S1474747217000270

Lozares Colina, C., & López-Roldán, P. (1991). El análisis de componentes principales : aplicación al análisis de datos secundarios. Papers : Revista de Sociologia, 37(37), 031–063. https://doi.org/10.5565/REV/PAPERS/V37N0.1595

Lusardi, A., & Mitchelli, O. (2007). Financial literacy and retirement preparedness: Evidence and

Face

implications for financial education. Business Economics, 42(1), 35–44. https://doi.org/10.2145/20070104

Lusardi, A. (2015). Risk literacy. Italian Economic Journal, 1(1), 5–23. https://doi.org/10.1007/s40797-015-0011-x

Lusardi, Annamaria, & Messy, F.-A. (2023). The importance of financial literacy and its impact on financial wellbeing. Journal of Financial Literacy and Wellbeing, 1(1), 1–11. https://doi.org/10.1017/FLW.2023.8

Lusardi, Annamaria, & Mitchell, O. S. (2008). Planning and financial literacy: how do women fare? American Economic Review: Papers & Proceedings, 98(2), 1–8. https://doi.org/10.3386/W13750

Martins, I., & Rialp, A. (2013). Entrepreneurial orientation, environmental hostility and sme profitability: A contingency approach. Cuadernos de Gestión, 13(2), 67–88.

Melo-Becerra, L. A., Zárate-Solano, H. M., & Téllez-Corredor, J. P. (2006). El ahorro de los hogares en Colombia. Borradores de Economía, 428. https://doi.org/10.32468/BE.428

Memarista, G. (2016). Measuring the entrepreneur's financial knowledge: evidence from small medium enterprises in surabaya. Jurnal Manajemen Dan Kewirausahaan, 18(2), 132–144. https://doi.org/10.9744/JMK.18.2.132

Mora-Torres, C. J. (2017). Las fuentes de financiamiento a corto plazo como estrategia para el incremento de la productividad empresarial en las PYMEs . Ciencias Económicas y Empresariales, 3, 338–351.

Moreno-Brid, J. C., Rivas, J. C., & Villarreal, F. G. (2014). Inflación y crecimiento económico. Investigación Económica, 73(290), 3–23. https://doi.org/10.1016/S0185-1667(15)30006-0

Morillo, M. (2001). Rentabilidad financiera y reducción de costos. Actualidad Contable Faces, 4(4), 35–48.

Navarro Céspedes, J. M., Casas Cardoso, G. M., & González Rodríguez, E. (2010). Análisis de componentes principales y análisis de regresión para datos categóricos. Aplicación en la hipertensión arterial. Revista de Matemática: Teoría y Aplicaciones, 17(2), 199–230. https://doi.org/10.15517/RMTA.V17I2.2128

Nguyen, T., Rózsa, Z., Belás, J., & Belásová, L. (2017). The effects of perceived and actual financial knowledge on regular personal savings: Case of Vietnam the effects of perceived and actual financial knowledge on regular personal savings: Case of Vietnam The effects of perceived and actual financial knowledge on regular personal savings: Case of Vietnam. Journal of International Studies, 10(2), 278–291. https://doi.org/10.14254/2071-8330.2017/10

Noctor, M., Stoney, S., & Stradling, R. (1992). Financial literacy: a discussion of concepts and competences of financial literacy and opportunities for its introduction into young people's learning. Report Prepared for the National Westminster Bank, National Foundation for Education Research.

Oberst, T. (2014). La importancia del ahorro : teoría, historia y relación con el desarrollo económico. Pontificia Universidad Católica Argentina Facultad de Ciencias Económicas. Escuela de Economía "Francisco Valsecchi". Programa de Desarrollo e Instituciones. http://bibliotecadigital.uca.edu.ar/repositorio/revistas/importancia-ahorro-teoria-historia.pdf

OCDE, & CAF. (2020). Estrategias nacionales de inclusión y educación financiera en América Latina y el Caribe: retos de implementación. https://scioteca.caf.com/handle/123456789/1605

Pappas, I. O., & Woodside, A. G. (2021). Fuzzy-set qualitative comparative analysis (fsQCA): Guidelines for research practice in Information

systems and marketing. International Journal of Information Management, 58. https://doi.org/10.1016/J.IJINFOMGT.2021.102310

Peña Pupo, H. N. (2012). El crédito bancario para personas jurídicas y naturales. Banco Central de Cuba.

Potrich, A. C. G., Vieira, K. M., & Mendes-Da-Silva, W. (2016). Development of a financial literacy model for university students. Management Research Review, 39(3), 356–376. https://doi.org/10.1108/MRR-06-2014-0143

Quispe Mamani, J. C., Flores Turpo, G. A., Velásquez Velásquez, W. L., Quispe Lino, C. N., Choque Alanoca, D. S., & Huarcaya Yana, E. R. (2022). Efecto del riesgo de liquidez en el costo de financiamiento del sistema financiero: un análisis para el caso peruano, periodo 2015-2020. Revista de Ciencias Sociales y Humanidades, 7(31), 1–22.

Ragin, C. C. (1987). The comparative method : moving beyond qualitative and quantitative strategies. In University of California Press. University of California Press.

Ragin, C. C. (2000). Fuzzy-Set Social Science. University of Chicago Press.

Romero-Muñoz, J., Fonseca-Cifuentes, G., & Blanco-Mesa, F. (2021). Análisis de los niveles de conocimiento financiero usando el operador OWA: caso Boyacá, Colombia. Revista Escuela de Administración de Negocios, 91. https://doi.org/10.21158/01208160.N91.2021.3091

Romero Álvarez, Y., & Ramírez Montoya, J. (2018). Relación de la toma de decisiones financieras con el nivel de conocimiento financiero en las mipymes. Suma de Negocios, 9(19), 36–44. https://doi.org/10.14349/SUMNEG/2018.V9.N19.A5

Romero Muñoz, J. E., & Vega Ávila, D. V. (2015). Caracterización del área financiera en el sector industrial del departamento de Boyacá. Inquietud Empresarial, 1, 15–49.

Rubiano Miranda, M. L. (2014). Educación financiera en Colombia. Intellectum Repositorio Universidad de La Sabana. https://intellectum.unisabana.edu.co/handle/10818/10329

Schuster de Hart, D. (2018). Inclusión y educación financiera en Colombia [Colegio de Estudios Superiores de Administración – CESA]. https://repository.cesa.edu.co/handle/10726/2093

Steinert, J. I., Cluver, L. D., Meinck, F., Doubt, J., & Vollmer, S. (2018). Household economic strengthening through financial and psychosocial programming: Evidence from a field experiment in South Africa. Journal of Development Economics, 134, 443–466. https://doi.org/10.1016/j.jdeveco.2018.06.016

Terrádez Gurrea, M. (2018). Análisis de componentes principales.

The R Foundation. (2017). R: The R Project for Statistical Computing. https://www.r-project.org/

Thomas, A., & Spataro, L. (2018). Financial Literacy, human capital and stock market participation in Europe. Journal of Family and Economic Issues, 39(4), 532–550. https://doi.org/10.1007/s10834-018-9576-5

Valencia Nuñez, E. R., Caiza Pastuña, E. C., & Bedoya Jara, M. P. (2020). Decisiones de inversión y rentabilidad bajo la valoración financiera en las empresas industriales grandes de la provincia de Cotopaxi, Ecuador. Revista Universidad y Empresa, 22(39). https://doi.org/10.12804/revistas.urosario.edu.co/empresa/a.8099

Valero Artola, F. J. (1991). Seguros financieros. Boletín de Estudios Económicos, 46(112), 61–69.

Villagómez Amezcua, A. (2014). Alfabetismo financiero en jóvenes mexicanos de 15 a 18 años (Vol. 575). Centro de Investigación y Docencia Económicas, División de Economía.

Face

http://repositorio-
digital.cide.edu/handle/11651/849

Vitt, L. A., Anderson, C., Kent, J., Lyter, D. M., Siegenthaler, J. K., & Ward, J. (2000). Personal finance and the rush to competence: financial literacy education in the U.S (M. Fannie Mae Foundation (ed.)).

Yuesti, A., Rustiarini, N. W., & Suryandari, N. N. A. (2020). Financial literacy in the covid-19 pandemic: Pressure conditions in Indonesia. Entrepreneurship and Sustainability Issues, 8(1), 884–898. https://doi.org/10.9770/jesi.2020.8.1(59)

Zorrilla del Castillo, A. L., Briseño García, A., Arango Herrera, E., & García Mata, O. (2021). Actitud financiera, comportamiento financiero y conocimiento financiero en Mexico. Cuadernos de Economía, 40(83), 431–457.