ARTÍCULO ORIGINAL

Socioeconomic determinants of financial education in the Cusco province, Peru

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Abstract

The objective of the research was to determine and analyze the socioeconomic factors of financial education through the following indicators: household economy index, index of financial attitudes and behaviors and index of financial concepts and knowledge. For data collection, a questionnaire was used to measure financial capabilities based on the methodology used by the Development Bank of Latin America, applied to people between 18 and 80 years of age in the province of Cusco, and after data analysis, the indexes were calculated. For the econometric analysis, a multiple linear regression model was developed with robust statistics to measure the degree of relationship between socioeconomic factors and financial education. The results showed that the level of financial education in the province of Cusco is medium-high, explained by favorable results in two of three indexes (index of financial attitudes and behaviors and the index of financial concepts and knowledge); however, there is room for improvement in the household economy index, due to poor family budget planning. Finally, it was identified that the factors that have the greatest impact on financial education are educational level and income level.

Keywords: financial education, household economics, financial attitudes, financial knowledge

1.   Introduction

Technological advances accelerated the development of the financial system, evidencing the need to improve financial capabilities to ben FEit from innovations in financial products and services offered, being Financial Education (FE) the means to develop competencies and greater financial inclusion to achieve sustained development (Messy and Monticone 2016). Thus, since 2002, the Organization for Economic Co-operation and Development (OECD, 2018) recognized the importance of FE in the welfare of the population and economies in general. Subsequently, in 2008, it created the International Network for Financial Education (INFE) with the objective of designing methodologies and research that lead to the development of policies that improve education and financial well-being.

FE is defined as the process by which financial consumers/investors improve their understanding of financial products, concepts, and risks, and through information, instruction and/or objective advice, develop skills and confidence to become more aware of financial risks and opportunities, make informed decisions, know where to go for help and take any effective action to improve their financial well-being (OECD, 2005).

For research purposes, the FE is a tool that allows the development of financial knowledge, skills, attitudes, and behaviors (OECD, 2018), with the objective of encouraging a behavioral change in

economic agents (Trivelli and Caballero, 2018), encouraging them to make better decisions that contribute to improving their financial wellbeing (Lusardi and Mitchell, 2014). Specifically, the FE makes it possible to demand efficient products and services, promote the optimal management of economic resources and foster a culture of savings, also contributes to improving the competitiveness of financial institutions and favoring the stability and depth of the financial system (García,2012).

The Development Bank of Latin America (CAF, 2016) measures the FE through three indexes: first the household economy index, (IEH) related to financial decision–making in households, second the financial attitudes and behaviors index (IAC), which measures the attitudes and behaviors of individuals in relation to their financial well-being, and third the financial concepts and knowledge index (ICC), which measures the level of knowledge about basic financial concepts and arithmetic operations (Mejía and Rodríguez, 2016).

Studies show that having better financial capabilities depends positively on the educational level achieved; however, only having a good educational level does not guarantee to have appropriate financial knowledge, since it must be accompanied by other factors that influence FE, such as income, savings capacity and others (Lusardi, 2019; Mendes et al., 2019). There is evidence of the relationship between FE and income, maintaining a high positive correlation at all stages of life since having better financial capabilities has an impact on greater wealth accumulation (Mungaray et al.,2021; García et al., 2021).

Having a greater capacity to save is related to better levels of FE, especially if it is done formally, increasing the capacity to save as they acquire sound financial knowledge (Bosch et al., 2015; Valenzuela et al., 2022; Bashaa et al. 2023). Regarding the gender gap, research agrees that women have lower financial capabilities than men, with young women, older women, single women, and widows lagging the furthest behind (Lusardi 2019; Lusardi and Bottazzi, 2020).

The latest results of the OECD's international FE survey show that 39% do not have a basic level of FE; at a disaggregated level, better results were observed in financial knowledge and behaviors, while unfavorable results were reported in attitudes (OECD, 2020). These results show that there is still a high percentage of students who do not have the minimum financial capabilities to face the complexity of the financial system (OECD, 2020; Roa and Mejía, 2018). Reviewing the panorama of developing countries, the results are even lower, specifically Peru is below the international average (61%) with 58% of the population with basic mastery in financial aspects (Zárate et al., 2020).

In the last decade, the Peruvian financial system has developed at an accelerated pace, achieving great progress in terms of access to financial products (Superintendency of Banking and Insurance of Peru, 2022). In the public and private sector, several initiatives were identified in the area of FE that are grouped into two axes, the first related to research elaboration, and design and implementation of FE projects and programs, both with the purpose of having empirical evidence to develop policies based on experience (Feijoo, 2016; Chong and Núñez, 2019), the second encompasses the set of government policies, among which the National Financial Education Plan (PLANEF) and the National Financial Inclusion Strategy (ENIF) stand out, both aimed at strengthening financial capabilities (Comisión Multisectorial de Educación Financiera, 2017).

The objective of the research is to estimate the indexes that measure the FE in Cusco and to analyze the relationship of socioeconomic factors, such as educational level, income, savings, gender, head of household, area of residence, and age. The aim is to prove that these socioeconomic factors determine the level of FE that individuals have.

2.   Materials and methods

The research adopts a quantitative, cross-sectional and correlational method. The study is framed in the province of Cusco, which is one of the main provinces of the country where commerce, tourism, and services are developed in greater magnitude, in addition to concentrating a third of the population of the department (National Institute of Statistics and Informatics, 2020). For the sample, the population between 18 and 80 years old was selected, which amounts to 310016 inhabitants (INEI, 2017), the

sample size was 384 inhabitants, a figure found with the Finite Population Sample Calculation Formula.

$$n = \frac{N * Z^2 * p * q}{e^2 * (N - 1) + Z^2 * p * q} \tag{1}$$

$$n = \frac{310016 * 1.96^2 * 0.5 * 0.5}{0.05^2 * (310016 - 1) + 1.96^2 * 0.5 * 0.5} \tag{2}$$
$$n = 384$$

Where the variables in equation (1) are n: sample size, N: total population, Z: standard deviation, p: probability of success, q: probability of failure, e: sampling error, confidence level 95% and margin of error 5%.

The sampling is stratified probabilistic, by age, gender and district, assigning a proportional sample by stratum. The research was based on the CAF methodology, which measures FE and allows comparing results between countries. The questionnaire used in this research included 35 questions, 15 of them related to general questions and 20 related to FE indicators. The scores of the IEH, IAC, and ICC indices range from 0 to 10 points, totaling a maximum of 30 points for the FE index, and Table 1 classifies the categories according to low, medium–low, medium–high, and high.

Table 1. Matrix of scores, according to categories

Categories	Scores			
	IEF	IEH	IAC	ICC
1 = Low	0 - 7,5	0 - 2,5	0 - 2,5	0 - 2,5
2 = Medium - Low	7,5 - 15	2,5 - 5	2,5 - 5	2,5 - 5
3 = Medium - High	15 - 22,5	5 - 7,5	5 - 7,5	5 - 7,5
4 = High	22,5 - 30	7,5 - 10	7,5 - 10	7,5 - 10

Note: IFE = Financial Education Index.
IEH=Home Economics Index
IAC= Financial Attitudes and Behavior Index
ICC= Index of Financial Concepts and Knowledge.

Source: own elaboration

Based on the data collected, the study variables were first analyzed descriptively and each index that makes up the FE was calculated. Subsequently, a multiple linear regression model was estimated with robust statistics using the Ordinary Least Squares (OLS) estimator to determine the correlation between the FE and the socioeconomic factors; the application of the robust statistics method was aimed at correcting biases in the coefficients and the standard error, as well as making adjustments to the estimates.

3. Results

The average score achieved in the FE index was 19 out of a total of 30 points, considered a good score since it is in the medium–high range, similar to the IAC and the ICC, both with 7 points. However, lower scores were observed for the IEH (5 out of a total of 10 points). Table 2 shows that only 25% have an adequate FE, 42% present attitudes conducive to improving their financial well-being, 32% have an adequate command of basic financial concepts and only 19% plan efficiently the financial affairs of the household.

When the IEH was evaluated in detail, it was observed that 65% are involved in the administration of finances in their household, being mostly men who manage the finances (70%), about half (42%) do not have a family budget; also, the results showed that only 17% of respondents follow an exact plan in household financial planning and 41% always follow what is budgeted in the plan.

Table 2. Cusco: Results of the indices by number of respondents, according to categories.

Categories	IEF		IEH		IAC		ICC	
	N	%	N	%	N	%	N	%
1 = Low	7	2%	161	42%	17	4%	5	1%
2 = Medium - Low	89	23%	41	11%	88	23%	52	14%
3 = Medium - High	191	50%	108	28%	118	31%	205	53%
4 = High	97	25%	74	19%	161	42%	122	32%
TOTAL	384	100%	384	100%	384	100%	384	100%

Note: N = Number of respondents

Source: own elaboration

In the IAC, more than 70% pay their bills on time, consider their ability to pay before making a purchase, have the ability to save and personally monitor their financial affairs; more than 50% plan their finances, are willing to take risks when investing and 36% have long–term financial goals. Regarding gender, the results were similar, as both men and women obtained the highest scores in 4 of 8 components.

Regarding the ICC, men answered correctly in 6 out of 8 components of the index compared to women who only answered in 2 components. Also, nearly all (96%) were able to perform a basic division and determine the interest rate in a given situation, while only 35% adequately solved a more complex operation of compound interest, having women the worst results. In addition, 40% identify the loss of the value of money over time due to inflation.

Table 3. Components of the FE indices, according to sex.

	Indices of the FE Components	Male	Female	Total
IEH	Money maneger	70,10%	60,00%	65,10%
	Have a budget	58,70%	57,50%	58,10%
	Exact budget	15,60%	19,00%	17,30%
	Follow the budget	45,40%	36,40%	40,90%
IAC	IAC Consider the ability to pay	75,50%	77,70%	76,60%
	Pay their debts on time	76,00%	77,20%	76,60%
	Willing to risk	55,00%	58,20%	56,50%
	Keep an eye on their finances personally	75,00%	74,50%	74,70%
	Formulate long-term financial goals	63,50%	66,80%	65,10%
	Do not prefer to live from day to day	70,00%	68,50%	69,30%
	Preference for savings	80,50%	73,90%	77,30%
	Money is not to be spent	68,00%	66,30%	67,20%
ICC	Division	96,70%	98,00%	97,40%
	Money over time	50,50%	37,00%	43,50%
	Interest	94,00%	95,50%	94,80%
	Simple interest	80,40%	75,00%	77,60%
	Compound interest	41,30%	29,50%	35,20%
	Risk-return	89,10%	88,00%	88,50%
	Inflation	87,00%	81,50%	84,10%
	Diversification	67,40%	57,00%	62,00%

Source: own elaboration

The econometric analysis showed that the main variable conditioning the result of the FE index is the educational level, having a positive impact of 2.85 points, especially having higher educational levels such as higher education and graduate studies show positive impacts of 4.12 and 6.48 on the index; that means, a more educated person performs better within the financial system. Regarding the results by index, the educational level has a greater impact on the IEH with a contribution of 1.27 points, followed by the CAI and the CCI with impacts of 0.64 and 0.49 respectively.

The second variable with the greatest impact is the level of income, specifically having a high level of monthly income per person and maintaining a stable income increases the FE index by 1.80 and 1.55 respectively. Specifically, having higher levels of income contributes 0.67 and 0.45, respectively,

in the case of stable income, the contribution for the IEH and the IAC is 0.92 and 0.55, respectively; verifying that people with higher incomes have an adequate FE, compared to those who have lower incomes or have sporadic incomes.

People who have the capacity to save, especially in a formal way, have better levels of FE, making a greater contribution to the FE index (1.61 points), followed by the IEH and the IAC with 0.85 and 0.65 respectively; this variable presents a bidirectional relationship with the FE, so that having better levels of FE contributes to improving the capacity to save and vice versa. Other variables that contribute significantly to the level of FE are being head of household and living in an urban area, which increases the index by 1.24 and 1.68 points. On the other hand, being single has a negative impact of 1.85 points on the general index, since not having family obligations tends to lead to inopportune management of their finances.

Table 4. Results of the regression of the FE index and its components

SOCIOECONOMIC FACTORS	FINANCIAL EDUCATION			
	IEF	IEH	IAC	ICC
Age	0,006	0,000	0,011	0,005
	(0,020)	(0,014)	(0,011)	(0,007)
Sex (1=Male)	0,412	-0,032	0,049	0,493
	(0,462)	(0,308)	(0,262)	(0,174)***
Residence area (1=Urban)	1,676	0,561	0,733	0,382
	(0,834)**	(0,508)	(0,441)*	(0,306)
Head of household status	1,235	0,901	0,119	0,453
	(0,609)**	(0,419)**	(0,343)	(0,220)**
Marital status (1=Single)	-1,850	-1,670	-0,126	-0,054
	(0,718)***	(0,520)***	(0,436)	(0,297)
Number of children	0,023	0,094	0,064	-0,135
	(0,287)	(0,205)	(0,159)	(0,107)
Educational level reaching	2,845	1,271	0,641	0,493
	(0,000)***	(0,339)***	(0,237)***	(0,146)***
Highschool	1,631	0,974	0,599	0,057
	-1,872	-1,394	(0,832)	(0,590)
Higher education	4,123	2,876	0,982	0,266
	(1,867)**	(1,390)**	(0,820)	(0,235)
Posgraduate	6,484	3,234	2,066	1,298
	(1,979)***	(1,473)**	(0,893)**	(0,342)***
Employment	0,079	0,134	0,046	0,251
	(0,661)	(0,426)	(0,366)	(0,012)**
Monthly per capita household income	0,005	0,176	0,094	0,121
	(0,000)	(0,142)	(0,118)	(0,072)
Low-Middle Income Level	0,151	0,183	0,153	0,016
	(0,772)	(0,507)	(0,405)	(0,257)
Middle Income Level	0,068	0,177	0,229	0,121
	(0,797)	(0,515)	(0,418)	(0,243)
Medium-High Income Level	0,471	0,429	0,464	0,157
	(0,885)	(0,558)	(0,477)	(0,297)
High Income Level	1,803	0,971	0,666	0,452
	(0,900)**	(0,614)	(0,300)*	(0,252)*
Stable income	1,547	0,924	0,545	0,104
	(0,544)***	(0,354)***	(0,300)*	(0,182)
Saving	1,610	0,851	0,651	0,174
	(0,601)***	(0,391)**	(0,344)*	(0,231)
Government transfers	-0,779	-0,347	-0,124	-0,308
	(0,797)	(0,458)	(0,411)	(0,270)
Constant	11,528	0,482	5,166	5,880
Prob > F	0,000	0,000	0,009	0,000
R2	0,570	0,550	0,380	0,430
Observations	384	384	384	384

Note: 1/ Coefficient. 2/ Standard error in parentheses. 3/ Statistical significance at (*) 10%, (**) 5% and (***) 1% Source: own elaboration

Source: own elaboration

4.   Discussion

The results of the study show that the variable that has the greatest positive impact on FE is the educational level, specifically having specialized professional training in finance, mathematics or economics improves the results (Villagómez and Hidalgo, 2017; Mancebón et. al. 2019; Lusardi, 2019). It is important to include FE topics in the school curriculum to foster an understanding from an early age and later have adequate financial skills to make better decisions (Duque et al., 2016; Denegri et al., 2018). Regarding the income level, there is a positive correlation with financial capabilities; in other words, higher income levels increase the financial skills of individuals (García et al., 2021). Mejía and Rodríguez (2016) mention that people with stable incomes are more likely to pay their bills on time,

adopt future financial goals and assume risks. On the other hand, Lusardi and Mitchell (2015) support the existence of an inverse causality problem between both variables.

The direct relationship between savings and FE is corroborated, showing that the capacity to save, specifically through formal mechanisms such as savings accounts, contributes positively to the FE, and saving also increases the probability of keeping track of personal financial affairs and being predisposed to invest despite the risks. Whereas, erroneous financial decisions generate adverse effects on the economy that are translated into a reduction in savings capacity, as well as less capital formation, a decrease in pension funds, and therefore greater inequality in income distribution (Mejía and Rodríguez, 2016).

Regarding the condition of the head of household, a direct relationship with the FE is confirmed, since they tend to monopolize the family financial resources, generating an adverse effect on the remaining members who do not play an active role (Mejía and Rodríguez, 2016; Roa and Mejía, 2018), by preponderating the condition of head of household in men, it generates a negative effect on women who obtain worse results, as pointed out by Mendes et al. (2019); however, Mejía and Rodríguez (2016) indicate that women who play an active role at the financial level within the household can greatly reduce the negative impact.

Regarding age, the research found that the younger population and older adults are those who present lower financial capabilities, compared to the population in intermediate ages (Lusardi, 2019; Lusardi and Mitchell, 2015); however, the results of the research refute this assertion, concluding that the level of FE increases as the years of life of people increase; therefore, older adults develop better financial capabilities, which allows them to have a fund for their retirement.

5. Conclusions

In the province of Cusco, the FE index score was 19 out of 30 points, which is equivalent to a good score, explained by favorable attitudes toward financial well-being and the appropriate management of basic financial concepts. However, on issues related to household finances, it was shown that a large part of the population does not plan their family finances, specifying that about half of the population does not have a household budget.

The econometric analysis shows that socioeconomic factors are determinant in the FE of the province of Cusco, among the main conditioning factors, in the first place is the level of education, mainly having higher education, followed by the level of income, especially having high income; also having the ability to save, being head of household and residing in the urban area have a significant impact on the FE. The contribution of all the aforementioned factors to improve the level of FE is of great importance.

For this reason, we seek to emphasize the importance of the FE as a key instrument for achieving greater financial inclusion and contributing to the quality of life, recommending the promotion of FE diagnostic studies focused on sub-national areas and specific populations in order to conduct baseline research that will help institutions make better decisions. It is also recommended to continue with the design of public policies and private initiatives that promote the FE as part of the cross-cutting training of people, according to their cultural and socioeconomic characteristics.

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