RES MILITARIS
REVUE EUROPEENNE D ETUDES EUROPEAN JOURNAL OF MILITARY STUDIES
Social Science Journal

Relationship between subjective financial knowledge and financial education: Identification of determinants in students of the Technical University of Oruro, Bolivia

By

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Summary

In university education, it is crucial to identify elements that affect financial knowledge in Oruro, Bolivia. Determining factors were found in first-year students on financial education. Using a binary logistic model with 302 surveys, influential variables in subjective financial understanding were recognized, such as: having another occupation, money management, behavioral finance, free coexistence, monthly savings, financial planning, and access to credit. These findings will allow the creation of strategies focused on optimizing financial education.

Keywords: financial education, behavioral finance, financial planning, logit model

1. Introduction

Lusardi and Mitchell (2014), reveal the concern about the lack of financial education (FE), of policy makers who have taken measures to identify and improve, trying to respond to the global financial crisis, recognize that there is a long way to go go through to generate effective financial knowledge. They highlight that the literature suggests that many people are financially illiterate and that financial education could generate a significant impact on decision-making, which is why theoretical models, better measurements and research would be required to understand the causal relationship between education and well-being financial. Concluding that the opportunity cost of financial education represents the cost of liquidity restriction, excessive indebtedness and poverty.

PE would be constituted as the economic value in economic thought in the 20th century, "[...] only from the theory of human capital, it is possible to speak of the economics of education as an economic discipline in the making, mainly as a result of the works of TW Schultz 1960 and GS Becker 1964, when the current field of research in educational economics was developed". (Del Campo and Salcines, 2008, p. 59). "The human capital research program is very strong, with new research projects emerging in almost all areas of the economy, an important line of research is referring to education oriented to economic development." (López and Almagro, 2002, p. 104). It is important for a country to understand the relationship between development and economic growth, which is why previous work shows that: "Development, refers to the transformation of economic strategies, in order to convert reality and achieve the satisfaction of the needs of the population, for the enjoyment of life. And he, growth is evidenced by the increase in income and the value of goods and services, as well as the increase in products and services "(Ortiz, Sánchez, Ferrer and Cartay, 2020, p. 233), in this sense "[...]economic growth brings with it the need for people to know how to manage their personal finances and take advantage of more developed financial markets[…];The financial education needs of the population are not the same for all the countries of the region, for which reason more effort is needed in terms of measurement"(García, Grifoni, López and Mejía, 2013, p. 11).

Djulmatova and Sodirovich (2022), They affirm that Human Capital is essential for the knowledge society of the 21st century, and its quality is shaped by its education and culture that determines its values."(...) To reach a knowledge-based economy, several elements are required, such as the institutional framework, the educational framework, infrastructure, new technologies and the macroeconomic environment" (Romero, López and Martínez, 2018, p. 1). For his part,Teixeira (2006), focused on the legacy of Mincer (1974) highlights the economist for his contribution to the theory of human capital in contemporary labor research, and indicates that it constitutes the basis for explaining individual behavior in the labor market.

"The new concept of education, then, emphasizes the acquisition of higher cognitive dispositions to effectively face complex situations, which supposes training to solve problems to act creatively and make decisions; the set configure the contours of a training oriented towards 'employability skills'[…];points out that knowledge is currently subject to accelerated processes of devaluation dragged by the speed of technological and organizational change, which is why permanent education is essential. (Aronson, 2007, p. 15).

The term financial education, according to Méndez, Chiluiza, Everaert and Valcke (2022) indicate that it arose in the United States in 1787, when the subject was raised, there were circumstances of lack of knowledge about credit management and understanding of the circulation of coins. According to the Organization for Economic Cooperation and Development ([OECD], 2005), financial education is defined as: "as the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through objective information, instruction or advice, develop the skills and confidence to be more aware of financial risks and opportunities, make informed decisions, know where to turn for help and take effective steps to improve their financial well-being.

About,Potrich, Vieira, Coronel and Bender (2015),assert that it is an essential attribute to achieve personal financial success.Several worldwide investigations on financial education are described in the work,patelAvadhesh, Singh M, Patelayush, and Singh K (2021) where they expose Lusardi A. as a prolific author, with 33 documents with h-index 32 in the US of 1999 authors,analyzed fromthe Scopus database cited between 2001 and 2020, identifying the year 2019 with the highest production in research.

The work of Kumar P., Pillai, Kumar N. and Tabash (2023), argue that financial behavior and psychological determinants influence decision making and financial well-being, and that skills and behaviorof one have an impact on the ability to thinkwhen making financial decisions. In addition, it contributes to knowledge when it affirms that there is a positive relationship between debt and financial well-being.Financial literacy, according toGilenko and Chernova (2021),conditions financial well-being through active savings, a transcendental aspect to guarantee individual and country financial stability, determined the positive influence of financial education on savings and that young people need corresponding programs.

ForChaulagain (2015) financial education is a function of the context and situation, it refers to money and personal finances that affect the short and long term, they affirm that there are four dimensions, such as Knowledge, skills, attitudes and behavior, they emphasize that they do not there is a universal approach based on factors such as age, gender, education and socioeconomic status. PFor his part Dibb, Merendino, Aslam, Appleyard and Brambley, W. (2021), inHis research shows the relevance of emotions and how they affect financial decision-making, demonstrates how the Muddling Through Theory helps to understand the process, discovers that integral and random emotions influence decision-making financial.

The subject of PE has been subjected to various investigations and in dissimilar areas of analysis, such as construction of constructs, measurement of various factors and for different social strata. Valuable contributions to continue contextualizing and designing models for analysis, taking into account the existing literature, in financial education. According to the OECD (2005), there is a low level of financial education and a lack of awareness in educating oneself, therefore, an implementation must consider economic, social, demographic and cultural factors aimed at a certain public.The work ofFaulkner (2022), I examine the most literate countries, classified by their context and strategies, names: Australia, Canada, Finland, Germany, Israel, the Netherlands, Sweden and the United Kingdom.

In southern China, Liu and Zhang (2021) carried out research on university students who accessed consumer loans online, concluding that financial literacy negatively impacts financial behavior, evidencing that subjective knowledge influences more than objective knowledge. They identified a high level of financial stress in the relationship risky credit behavior versus financial education; finally, they state that financial self-efficacy is a partial mediator cause-effect in this relationship."Declare that Europe is one of the world's leading regions in terms of financial awareness, and recognize that education is essential to strengthen the financial security of consumers."(Kovács and Pásztor 2022, p. 60)

Koomson, Ansong, Okumu and Achulo (2022) show that, in East Africa, specific research for the countries of Kenya, Tanzania and Uganda, shows that skills in financial education improve entrepreneurship and financial inclusion, constituting a key mechanism for the poverty alleviation.“The financial education of Mexicans is varied and differentiated for each population group […] specific groups of the Mexican population, […] present significant differences in financial literacy, specific results of sociodemographic variables that predict the probability that Mexicans aged 18 years or more correctly answer the financial education questions (Mejía, García - Santillán and Moreno - García, 2022, p. 53).

For its part "(...) the lag in financial education of the Mexican population lies in the low social inclusion due to inequality and high levels of indebtedness, since this limits the success of public and private efforts made"(Mungaray, González and Osorio, 2021, p. 55). According to the OECD (2005), to promote inclusion and financial education in Latin America and the Caribbean, the most significant challenges implemented were compiled and analyzed, supported by evidence, which reflects on the limitations of successful policies, initially establishing the level of education and financial inclusion. Therefore, they ask that non-OECD countries promote and raise awareness of financial education, their governments and public institutions, so as not to be victims of fraud. “[…] thirteen countries in Latin America and the Caribbean have implemented or are implementing national strategies, either for financial inclusion or financial education […]; emphasizes that […] it is key to continue strengthening the (National Financial Education Strategy [ENEF]) and the actions contemplated within them, in addition to seeking that they have a differential approach prioritizing the most vulnerable populations, thus turning financial education into a tool against inequality and poverty”; (Organization for Economic Cooperation and Development / Andean Development Corporation [OECD/CAF] 2020, p. 8-19), at the same time points to the report cited in the table of financial inclusion (FI) and financial education (FE) strategies in Latin America and the Caribbean (LAC), that Brazil is considered a pioneer when implementing EF strategies, with the implementation of management strategies in 2010 and IF in 2012. It is also identified that Ecuador implemented both IF and EF strategies in the management of the year 2012.

The pioneering study in Brazil ofPotrich et al. (2015), carried out in the southern region, chosen for its high Human Development Index (IDH), showed that the assessment of financial knowledge is the composition of behaviors, attitudes and financial knowledge applicable to both genders, identifying the male gender with higher financial literacy.Likewise, theOECD/CAF (2020) alludes thatSeveral researchers in Latin America and the Caribbean (LAC) carry out measurements in financial education, for adults and youth, and the effects on the level of financial inclusion, do not expose that they are part of national strategies.

Mendez, Zambrano M, Zambrano S, Chiluiza, Everaert, and Valcke(2022)In their research during the period from 2016 to January 2022, highlights the need for policies for the development of financial literacy in Latin America and the Caribbean (LAC), they reviewed 4,500 Scopus articles, referring to financial literacy worldwide, where only 65 are related to LAC, listing the countries by the number of registered articles, 8 out of 30 countries are highlighted,Brazil (21), Mexico (15), Chile (9), Colombia (8), Ecuador (4), Peru (2), Guatemala (1) and Trinidad and Tobago (1), (except Barbados, Bahamas and Cuba) in generalthey identify a lack of focus on regional needs, gender gaps with an incidence on women and the need for conceptual frameworks for educational programs, they identify that the dimension of financial attitude is not taken into account in the analysis.

As the website of the Development Bank of Latin America (CAF) indicates, "financial education is even critical for inclusion, since it not only facilitates the effective use of financial products, but also helps people develop skills to compare and select the best products for their needs and empower them to exercise their rights and responsibilities […]; For this reason, they conducted surveys since 2013 to measure financial capabilities that measure financial knowledge, skills, attitudes, and behaviors in eight countries of the region: Argentina (2017), Bolivia (2013), Brazil (2020), Chile (2016), Colombia (2013 and 2019), Ecuador (2013 and 2020), Paraguay 2(017) and Peru (2013 and 2019)". (Mejia, 2021, para. 4 - 5)

Grifoni, Mejía, Morais, Ortega and Roa (2020) analyzed the national financial inclusion strategies in Latin American countries such as Brazil, Colombia, Mexico, Paraguay and Peru, they identify governance and financing challenges, they affirm that an inventory of programs will help the design of strategies and facilitate the measurement of sustainability and scalability and that they have to identify the target population with relevance, they also state that in financial inclusion financial education and its protection is important, beyond sophistication.

The work of Mejía and Rodríguez (2016) analyzes the socioeconomic determinants of financial education in Bolivia, Colombia, Ecuador and Peru in three dimensions. The first dimension, "Home Economy", shows that Bolivia shows a high rate of financial planning (61%), but a lower percentage of people who follow the plan (32%) and consider their budget as a general plan (18 %), the socioeconomic variables that have an impact are living in urban areas, having formal education, full-time employment, regular income, and the ability to save through formal channels. The second dimension, "Attitudes and behaviors", Bolivia leads in terms of preference for savings, establishment of long-term financial goals, financial planning and personal monitoring of finances. Respondents also state that the money is not meant to be spent, although they show low willingness to take risks and pay their debts on time compared to other countries. In addition, it was identified that people in the intermediate age range have more favorable attitudes towards economic well-being. In the third dimension, "Concepts and knowledge" Bolivia is below Colombia and Ecuador. It is observed that middle-aged men who live in urban areas have higher formal education, full-time employment, regular income and save formally, obtain better results in the concept index. It was identified that people in the intermediate age range have more favorable attitudes towards economic well-being. In the third dimension, "Concepts and knowledge" Bolivia is below Colombia and Ecuador. It is observed that middle-aged men who live in urban areas have higher formal education, full-time employment, regular income and save formally, obtain better results in the concept index. It was identified that people in the intermediate age range have more favorable attitudes towards economic well-being. In the third dimension, "Concepts and knowledge" Bolivia is below Colombia and Ecuador. It is observed that middle-aged men who live in urban areas have higher formal education, full-time employment, regular income and save formally, obtain better results in the concept index.

The measurement survey that was carried out in the countries Bolivia, Colombia, Ecuador and Peru, show low levels of financial education, highlighting socio-demographic aspects, the urban area presents better results in knowledge, behavior and financial attitude with respect to the rural area, women they present lower knowledge and behaviors in relation to men, with which they affirm that "the higher the educational or socioeconomic level, the greater the financial education and the greater the knowledge, the greater the behavior, suggests differentiated strategies for rural areas." (Mejía, 2014, p. 254).

Specifically, in Bolivia the work of Garay (2016)develop the procedureof calculation of financial literacy, with surveys carried out in two cities of Cochabamba and La Paz, demonstrating a low index, because Bolivians do not understand basic financial concepts and much less advanced ones, in addition, that cultural factors would have an influence. Gutiérrez and Delgadillo (2018), carried out the assessment of financial education to first-year students of the Bolivian Catholic University "San Pablo" in the city of Cochabamba, establishing that said population shows significant limitations in their understanding, application and evaluation of related actions. to the financial field.

In the population of Oruro, no research on university students is shown, formulating the objective of the research: Identify determinants of financial education that influence subjective financial knowledge in first-year students, in the Faculty of Economic, Financial and Administrative Sciences (FCEFA) dependent on the Technical University of Oruro (UTO) in the 2022 management. Evaluated through dimensions of objective financial knowledge such as: aspectssocioeconomic, basic and advanced knowledge in finance, financial attitudes, financial behavior, financial self-efficacy, financial stress, behavioral finance, credit experience and pasanaku (revolving loans), applying a binary logistic model and descriptive analysis, to demonstrate the presence of determinants that have a positive and negative impact, which will affect subjective financial knowledge.

Being of primary interest for the university is the training of professionals in accordance with the strategic objective of developing a diversified curricular management for comprehensive, flexible, quality and socially relevant training (University Development Plan [PDU], 2021-2025). In the current scenario, theoretical-practical training on the subject of Financial Education is relevant to mitigate financial, personal and business risks. The work of Carrera and Berttolini (2020) identifies the components in business financial education such as financial knowledge, behaviors, and attitudes in business management, where knowledge includes the interpretation of financial statements, investment, financing, and risk; and that behavior includes planning with budgeting,

2. Methodology

The research carried out is based on a review of the literature, it has an empirical approach, of a descriptive nature. In addition, a field study of an exploratory nature was carried out. The information collected is of a cross-sectional type and was used to identify the determinants, as raised in the research question: What will be the determinants that influence financial knowledge in first-year students registered at the Faculty of Economic Sciences, Financial and Administrative (FCEFA) in the city of Oruro - Bolivia, management 2022? The context of inquiry corresponded to questions related to objective knowledge in the dimensions of financial education such as aspects socioeconomics, basic and advanced financial literacy, financial attitudes, financial behavior, financial self-efficacy, financial stress, behavioral finance, credit experience, and pasanaku (revolving loans).

The research instrument applied in the collection of systematic information was the online survey, using the Google Forms platform, being that it was carried out in person as well as online, 52.94% of the students in situ and supervised in person and 47.06% online contacted by WhatsApp groups, the filling time was also monitored. The relevance of answering honestly was explained.

Four days prior to the official survey, a pilot test was carried out with 61 fourth-year public accounting students. During the test, a QR code was distributed that served to verify if they could access it, if they understood the questions, time control in filling and receiving the shipment.

The official survey was carried out on October 17, 18 and 19, 2022, it was applied to a sample of 302 first-year students. The sample was randomly selected by applying simple random probabilistic sampling, considering an error of 5% and 10% at a confidence level of 90% and 95% respectively, from a population of 1403 university students. The survey was carried out on students belonging to the area of knowledge: economic, administrative, financial and commercial sciences. The sample consisted of 50.90% female students and 49.10% male. The survey was named "measurement questionnaire, socioeconomic determinants and financial education", structured in nine dimensions of financial education, developed in 64 questions. The planning of the dimensions in the survey is supported by research work in Financial Education. The two dimensions, socioeconomic diagnosis and behavioral finance, were based on questions from the work of Gutiérrez and Delgadillo (2018).

Several authors define financial education based on basic and advanced financial knowledge, therefore, the design of the Financial Knowledge dimension was based on the research questions ofLusardi and Mitchell (2014), Mejía (2014), Potrich et al. (2015), Mena-Campoverde (2022) and the perception of objective and subjective financial education of Liu and Zhang (2021). The survey was prepared with four questions of basic knowledge referring to the calculation of compound interest, value of money over time and inflation, with respect to advanced knowledge three questions referring to profitability, risk and stock market were formulated. For the analysis of the binary logistic model, “1” (correct answer) and “0” (incorrect answer) were assigned. For the descriptive study, a total grade of "7" was taken, for each correct answer "1" and incorrect answer "0", considering a minimum approval grade of "4", to analyze financial knowledge.

The following dimensions were measured on a 5-point Likert scale, where “1” indicated “strongly disagree” and “5” indicated “strongly agree”. For the binary logistic model, responses “1, 2 and 3” were classified as “0” (strongly disagree) and responses 4 and 5 as “1” (strongly agree), which are detailed below: The financial attitude dimension was measured with seven questions based on the work of Mejía and Rodríguez (2016), and two questions from the work of Potrich et al. (2015), under the Likert scale with a Cronbach's Alpha coefficient of 0.8648 for nine items. The Financial Behavior dimension was measured with ten questions from the work of Potrich et al. (2015), and one from the work of Mejía and Rodríguez (2016) on a Likert scale, with a Cronbach's Alpha coefficient of 0.8129 for 11 items.

The dimension of Financial Self-efficacy and Financial Stress was each measured, with five questions taken from Liu and Zhang (2021), presented on a Likert scale and with a Cronbach's Alpha coefficient of 0.8814 for five items of financial self-efficacy, and for five items of financial stress of 0.8368. For the 30 questions posed in the four dimensions, a Cronbach's Alpha coefficient was shown to be 0.9264, which according to the parameter from 0 to 1 indicates good reliability.The following dimensions were formulated in multiple choice.

In the dimension referred to Credit Experience, motivation was found to investigate the use of credit in the sample, based on the idea on questions from Liu and Zhang (2021). For this reason, three questions referring to the practice in the use of own or household credit and identifying the source of financing were designed to identify if credit management is a topic of interest.

The dimension referred to behavioral finance, five questions were applied that were taken and adapted from the work of Gutiérrez and Delgadillo (2018). And the last dimension referred to the pasanaku, was elaborated according to the customs and cultural practices, being a community practice of Bolivia, based on principles of the Andean cosmology of solidarity, reciprocity and cooperation and according to the definition of Kurowski (2015) as finance. informal solidarity.The dependent variable "Subjective knowledge" was based on the work ofFuente-Mella, Umaña-Hermosilla, Fonseca-Fuentes, and Elórtegui-Gómez (2021), for the present work it was used with the questionHow would you rate financial knowledge in general? (Efsfin16), applying a Likert scale specified in 5 points, where 1 completely disagree and 5 completely agree. Conversion to the binary logistic model, where responses “1, 2 and 3” are identified as “Don't know = 0” and responses 4 and 5 “Know = 1”. This coding was based on the workde Mejia (2014).

The binary logistic econometric regression model was built to explain subjective financial knowledge, based on objective financial knowledge, built with the dimensions of financial education. The constructed function corresponds to a binary logistic model "logit". Specified in the following equation:

$$\mathrm{esfin16} = \frac{e^{\beta_0 + \beta_1 \mathrm{cqv8}_{\mathrm{concubino}} + \beta_2 \mathrm{eocu9}_{-\mathrm{Privado}} + \beta_3 \mathrm{eocu9}_{\mathrm{Otro}} + \beta_4 \mathrm{kpadm1} + \beta_5 \mathrm{kawmen5} + \beta_6 \mathrm{aaplap3} + \beta_7 \mathrm{tdf5} + \beta_8 \mathrm{tc3}}}{1 + e^{\beta_0 + \beta_1 \mathrm{cqv8}_{\mathrm{concubino}} + \beta_2 \mathrm{eocu9}_{-\mathrm{Privado}} + \beta_3 \mathrm{eocu9}_{\mathrm{Otro}} + \beta_4 \mathrm{kpadm1} + \beta_5 \mathrm{kawmen5} + \beta_6 \mathrm{aaplap3} + \beta_7 \mathrm{tdf5} + \beta_8 \mathrm{tc3}}} + \xi_i$$

Stata 17 statistical software was used to estimate the variables of the binary logistic model. Meanwhile, the IBM SPSS Stadistic package was used for the descriptive analysis.

Table 1 *Key variables identified in the model*

Category	Variable	Worth	Ask
Socioeconomic	cqv8	He lives with his parents=1He lives with relatives=2He lives with friends=3He lives alone=4He lives with a partner=5	Who do you currently live with?
	eocu9	Only study=1Public employee=2Private employee=3Entrepreneur=4Seller by catalog=5Other=6	In addition to studying, he has an additional occupation
financial behavior	kpadm1	Strongly disagree=0 Strongly agree=1	I am concerned about how to better manage my money.
	kawmen5	Strongly disagree=0 Strongly agree=1	monthly savings
financial self-efficacy	aaplap3	Strongly disagree=0 Strongly agree=1	I can carry out personal financial planning.
behavioral finance	tdf5	Not rational=0Rational=1	Do you think people make decisions in a way?
Credit	tc3	Not personally=0Household has credits=1	Do you have any credit?

Source: *Own elaboration, description of the variables.*

Table 1 shows the categories and the 7 variables that are considered in the estimated model, in addition to establishing in which question it is located.

Table 2. *Binary Logistic Model and Odds ratio*

Logistic regression	**number**				**Number of obs**	**= 302**
					LR chi2 (8)	**= 36.87**
					Prob > chi2	**= 0.0000**
log likelihood	**= -17536929**				**pseudo R2**	**= 0.0951**
efsfin16	**Odds ratio**	**Std. Err.**	**z**	**P>|z|**	**[95% confidence**	**interval]**
cqv8_Cohabitant	2,246,673	.9429525	1.93	0.054	.9869193	5,114,441
eocu9_Private	.3608643	.1925128	-1.91	0.056	.1268374	1,026,693
eocu9_Other	.5399849	.1871434	-1.78	0.075	.2737659	1,065,084
kpadm1	.5049417	.1515199	-2.28	0.023	.2804257	.9092111
kawmen5	2,088,895	.6094526	2.52	0.012	1,179,156	3,700,511
aaplap3	2,377,539	.6676617	3.08	0.002	1,371,175	4,122,517
tdf5	.6290915	.1639726	-1.78	0.075	.3774403	1,048,526
tc3	1,782,361	.5401717	1.91	0.057	.9840704	3,228,236
_cons	.4077299	.1281302	-2.85	0.004	.2202319	.7548573

Source: *Own elaboration, with Stata 17 software.*

Table 2 shows that the model has a total of 302 observations (surveys), presenting a Chi-square probability of 0.00, since the model is globally stable, verifying that the combined effect of all the model variables is different from Zero. Being the Case that Ho is accepted that the model is significant, and H1 is rejected that the model is not significant.

The variables individually have a P-value less than 10% and 5% respectively, denoting that the variables individually are significant, where the test is that each coefficient is different from zero. The values must be less than 0.05 and 0.10 for the variable to be significant. Being the case that Ho is accepted that each variable is significant in the model, and H1 is rejected that each variable is not significant in the model.

Within the test each coefficient is manifested to be different from zero of the Z value of tables. To reject the value must be greater than 1.96 (95%) and 1.65 (90%), higher values of Z means greater relevance of the variables. Being the case that the Ho is accepted that in each variable the Z value calculated in absolute values is greater than the Z of tables, rejecting the H1 that the Z of tables is greater than the Z calculated.

Table 3. *marginal effects*

Average marginal effects			**Number of obs = 302**			
model	**ECV:**	**IOM**				
expression:	**pr(efsend16)**	**predict()**				
dy/dx wrt:	**cqv8_Cohabitant eocu9_Private eocu9_Other kpadm1 kawmen5 aaplap3 tdf5 tc3**					
	dy/dx	**Delta-method std.err**	**z**	**P>|z|**	**[95% confidence interval]**	
cqv8_Cohabitant	.1632783	.0812877	2.01	0.045	.0039573	.3225992
eocu9_Private	-.201396	.1015501	-1.98	0.047	-.4004305	-.0023615
eocu9_Other	-.1210548	.0660475	-1.83	0.067	-.2505056	.008396
kpadm1	-.1399322	.0572974	-2.44	0.015	-.2522329	-.0276314
kawmen5	.1459477	.0561512	2.60	0.009	.0358933	.2560022
aaplap3	.1716953	.053255	3.22	0.001	.0673176	.2760731
tdf5	-.0919785	.0507784	-1.81	0.070	-.1915022	.0075453
tc3	.1175468	.0594462	1.98	0.048	.0010344	.2340593

Source: *Own elaboration, with Stata 17 software*.

From Table 3 in the model, it was established that the variable, subjective financial knowledge, will have an impact on unit changes in the set of eight independent variables identified.

The variables specified as determinants reveal the probability of occurrence that first-year studentsof the FCEFA have financial knowledge. Of these eight variables, four have negative marginal effects and four have positive marginal effects, interpreted as follows:

Negative fringe effects

If a student has another occupation in the private sector (eocu9_Private), the probability of having financial knowledge would be reduced by 20.14%; if you have another occupation in other activities (eocu9_Other), the probability would be reduced by 12.10%; if you care about managing your money better (kpadm1), the probability would be reduced by 13.99%; If they consider that people decide rationally or irrationally (tdf5), the probability would be reduced by 9.19%. In conclusion, it can be stated that a unit increase in one of the independent variables would reduce the probability that a student has financial knowledge, when all other variables remain constant (ceteris paribus).

Positive fringe effects

If the student currently lives in a common-law union (cqv8_Cohabitant), the probability of having financial knowledge increases by 16.32%; if you save monthly (kawmen5), the probability increases by 14.59%; if you can develop personal financial planning (aaplap3), the probability increases by 17.7%; if she has any credit (tc3), the chance increases by 11.75%. In conclusion, it can be stated that a unit increase in each of the independent variables would increase the probability of having financial knowledge when all other variables remain constant (ceteris paribus).

The post-estimation analysis was applied to determine the goodness of fit of the model, where the "classification confusion matrix" was used, as shown in the following table:

Table 4. *Post Estimation Analysis Confusion Matrix*

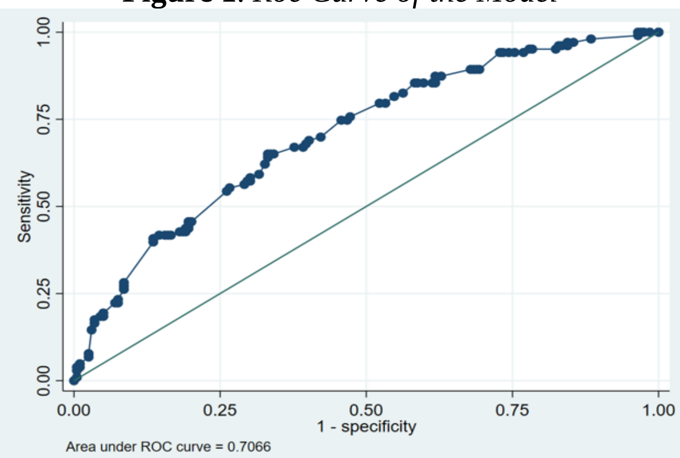
Logistic model for efsfin16			
classified	**D.**	**~D**	**Total**
+	41	27	68
-	62	172	2. 3. 4
Total	103	199	302
Classified +if predicted Pr (D) >= .5			
True D defined as efsfin16 ! = 0			
Sensitivity		Pr(+| D)	39.81%
Specificity		Pr(-| ~ D)	86.43%
Positive predictive value		Pr (D| +)	60.29%
Negative predictive value		Pr (~D| -)	73.50%
False + rate for true ~D		Pr (+| ~ D)	13.57%
False + rate for true D		Pr(-|D)	60.19%
False + rate for classified +		Pr(~D| +)	39.71%
False - rate for classified -		Pr (D| -)	26.50%
correctly classified			70.53%

Source: *Own elaboration in Stata 17.*

In Table 4, the results show that the model presents a sensitivity of 39.81%, that is, it is less likely to identify positive cases and a specificity of 86.43%, it is more likely to explain negative cases.

Analyzed the efficiency of the binary model, with the ROC curve performance diagnostic curve, the result is 0.7066, it shows that the model has a good capacity to classify the positive and negative classes in 70.66% of the total.

Figure 1. *Roc Curve of the Model*



Source: *Own elaboration with Stata 17*

3. Results and Discussion

It has been verified that subjective knowledge is affected by the dimensions of financial education, with positive and negative factors such as: occupation, money management, behavioral finance, free coexistence, monthly savings, financial planning and access to credit. Next, the identified determinants are broken down, enriched by the descriptive analysis. Positive determinants:

Coexistence in free union represents 3.6%, identifying that 72.5% of the students live with their parents, it refers to a group of young students from an urban area, single and do not have children, reasons why it should be promoted your financial education. The practice of monthly savings represents 58.9% broken down as follows: 34.10% save at home and 24.8% save in the traditional financial system. 77.48% of the sample indicate that they were taught the practice of saving. According to the range of their monthly income, they would be classified from the sociological perspective of lower-middle class. The experience with credits indicates that 23.18% of the sample have credits at home, which suggests that the practice of the family nucleus influences their financial knowledge. The 35. 8% of the sample acknowledge that they can develop personal financial planning. A high maternal influence in financial administration is identified, important for sharing financial knowledge in the family nucleus.

Negative determinants: Having an occupation in the private sector or another occupation in total sum, represents 28.47% of the sample. Concern about how to manage your money and considering that decisions are rational and irrational fully justifies that programs should be implemented to strengthen financial education within the framework of behavioral finance by applying financial psychology. Because emotions condition the options, the descriptive analysis identified in the sample that there is fear in 39.07%, 32.45% are curious, and there is ambition in 25.82%. Compared with previous reference studies, the following results are obtained: At the national level, the results achieved in financial knowledge, and it is compared with the research carried out by Gutiérrez and Delgadillo (2018) at the Bolivian Catholic University (UCB) Cochabamba. It is agreed that socioeconomic aspects are important to understand financial education. In contrast, the population in Oruro corresponds mostly to the "lower middle class".

With reference to the work of Potrich et al., (2021) where he concludes that financial education is transcendental for the construction of responsible attitudes and behaviors in personal financial management. Likewise, he states that financial knowledge is low. The results of the sample applied and analyzed by the logit model identified two variables that positively influence the financial behavior dimension, referring to financial management such as savings and concern for managing their money, and in the descriptive analysis a level was determined. of financial knowledge on average of 3.75 points out of a total of 7 (seven questions that included basic and advanced financial knowledge), separated by gender, the female shows an average of 3.55 points and the male 3.98 points,

Lusardi (2014), recognizes the lack of financial knowledge and efforts to implement financial education programs, believes that it is necessary to identify effective and useful ways to create financial knowledge. The research identified the determinants that reduce and increase knowledge in the sample, therefore, specific, theoretical and practical programs should be designed for their implementation. The evaluation of the components of the Attitudes and Behaviors Index, in the work of Mejía (2014) shows that Bolivia has a preference for saving compared to other countries. Aspect that was also identified in the binary logistic regression model determining the variable Monthly Savings.

Atlas et al. (2019), Heckman & Grable (2011), Limbú (2017) cited by Liu & Zang (2021) emphasize that the origin of financial self-efficacy is; the knowledge that is based, the experience and the emotional states. Liu and Zang (2021) conclude that financial self-efficacy has a positive impact on financial education. The estimated logit model includes a financial self-efficacy variable with a positive incidence that increases knowledge. With respect to emotions, it was identified in the descriptive crossover analysis that women are more fearful and less curious compared to men, in both genders low ambition and a slight emotion of anger are observed (see annex 2).

The results obtained demand the urgent development of strategies oriented to the development of financial knowledge in theory and practice. The basic topics should be alluded to Investment, entrepreneurship, effective decision making, financing, risk analysis, planning and budgeting, financial management, behavioral finance and Financial Technology (Fintech), prior analysis of context, forstrengthen transversally with internal and external programs.

The present study does not contemplate the measurement of prior knowledge, after completing secondary education, an aspect that should be analyzed in future investigations to measure knowledge upon admission and the conclusion of the school year.

The limitation of the study is that it was only applied to a sample of a population, of students from the area of knowledge of Economic, Financial, Administrative and Commercial Sciences, and it cannot be inferred to another area of knowledge, due to dissimilar characteristics. Consequently, future investigations should be carried out in other facultative units.

4. Conclusions

The relevance of the work was to identify the determinants that influence subjective financial knowledge, where the highest probability that negative factors explain knowledge was identified. The results of the study indicate that there are both positive and negative determinants that influence the financial knowledge of first-year FCEFA students. Eight variables were identified, four with negative marginal effects and four with positive marginal effects, which affect the probability of having financial knowledge. The individual variables proved to be significant in the model, and the null hypothesis that each coefficient is different from zero and that the Z value calculated in absolute values is greater than the Z value of tables was accepted.

University education should prioritize strengthening knowledge and skills for financial decision-making. It is essential to strengthen personal finances to transcend success to business finances, an aspect that will allow future professionals in training to face challenges and take advantage of financial opportunities, with active learning.

It is suggested to implement a financial knowledge measurement test at the beginning and end of the school year. It is also important to analyze the relevance of external actors, from the financial field that could contribute to strengthening by sharing their experience, in real context activities, oriented towards effective decisions. Within the academic context, financial education requires strategies applied transversally to previous knowledge in areas such as mathematics, accounting, economics, finance, and law. Incorporate areas framed in the booming financial technology (Fintech), because people require continuous and current knowledge, applied to real problems so that their research can model adaptation to volatile, uncertain, complex and ambiguous environments,

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Appendix 1 *Summary Relevant Socioeconomic Factors*

Percentage	Measure/Indicator	Observation	Relevance
82.5%	Students aged 17-23		Young population
83.4%	They come from Urban Zone	29.1% North Zone 27.8% South Zone	
94.70%	Marital status Single		Available time
95%	They do not have kids		focus on growth
72.5%	Lives with his parents		Dependence
57.6%	They are only students, they have no other occupation.		They may access additional programs or training.
66.9%	His income comes from the support of his parents	80 masculine gender. 122 feminine gender.	
22.5%	They have their own income	39 masculine gender. 29 female gender.	They could learn from practice.
31.10%	His monthly income is Bs 100-200		Lower class.
20.2%	His monthly income is Bs 201-400		Middle class.
16.90%	His monthly income is Bs 500-1000		Middle class.
34.10%	Save at home eg. (piggy bank)		Training financial institutions.
24.80%	Save in financial institutions (bank)		Promote better forms of investment.
20.2%	has no surplus		Forms of employment.
48.7%	His mother manages his finances		Home learning.
35.8%	They manage their money themselves.		Emphasize the budget.
77.8%	They believe that having knowledge of money management would improve their decision-making capacity	55.3% Completely agree. 22.5% agree	Teaching-practice of personal finance.

Fountain
Own elaboration based on results of the descriptive analysis of the survey, 2022.

Appendix 2. *Gender Cross Table - Emotions*

	Fear	ambition	Curiosity	Anger	Total
Woman = 0	75	36	Four. Five	3	159
Male = 1	43	42	53	5	143
Total	118	78	98	8	302
percentage ratio	39.07%	25.83%	32.45%	2.65%	100.00%

Fountain
Own elaboration, with Stata 17.

Annex 3 *Questionnaire for the measurement of financial education and socioeconomic determinants*

Category	Variable	Description
Demographic / Socioeconomic	g1	Gender
	v2	Geographic Scope: Where you live.
	z3	In which area do you live?
	e4	Write your age.
	ec5	Civil status
	h6	How many children do you have
	bch7	The baccalaureate was obtained from:
	cqv8	Who do you currently live with?
	eocu9	In addition to studying, do you have any other occupation?
	ori10	What is the source of your income?
	ring11	In what range is your monthly income?
	returned12	What is the range of your monthly expenses
	exc13	The excess of your income minus your expenses, what do you do?
	mfin14	Who Manages the finances (managing income and expenses) in your household
	cfmf15	You believe that having knowledge of how to manage your money would improve your ability to make financial decisions
	efsfin16	How would you assess your financial knowledge in general?
Financial Knowledge	cbis1	Suppose you deposit Bs 100 in a savings bank, with an interest rate of 2% per year. And no other payments are made to that account and no money is withdrawn. How much will he have in the account at the end of five years?
	cbti2	Imagine that the interest rate applied to your savings is 6% and that inflation is 10% per year, at the end of the year. How much will she be able to buy with the money in this account?
	cbvt3	Imagine that José inherits Bs 10,000.- today and Pedro inherits Bs 10,000 in three years. Who will have more?
	cbif4	In the long run. Which of the following investments will generate the highest return?
	carent5	High inflation means that the cost of living is rising rapidly.
	cavities6	When diversifying, the risk of losing money:
	camv7	Which of the following best describes the functions of the stock market?
Financial Attitude	acpag1	Consider your ability to pay before purchasing the product.
	offd2	Pay your debts on time

	adispag3	Is willing to risk
	avf4	Keep an eye on your finances personally.
	amff5	Set financial goals for the future
	anovdi6	He does not prefer to live from day to day
	aiad7	It is important to save money monthly
	aim8	It is important to stay within budget
	adfut9	The way I manage my money today will affect my future
	kpadm1	I am concerned about how to better manage my money
	kcdin2	I write down all my expenses as a form of efficient control.
	kplan3	I follow the weekly or monthly spending plan
	kmcon4	It's been more than a month without balancing my expenses
	kawmen5	monthly savings
Financial Behavior	kreser6	I have a financial reserve of at least three times my monthly income, which can be used at unexpected times.
	kcomp7	I compare prices when I buy something
	kcimpul8	I buy on impulse
	kadi9	I am willing to risk my own money when I make an investment.
	kpagd10	I pay my debts without delay
	kahbm11	Saving to be able to buy a greater good (eg: car, house)
Financial Self-Efficacy	aaconf1	I am confident that I can manage my finances
	aaplgas2	I can stick to my spending plan when unexpected expenses arise
	aaplap3	I can do personal financial planning
	aamfin4	I have the ability to progress toward my financial goals
	aamdfin5	I can easily handle financial challenges
Financial Stress	sefp1	I feel a lot of stress about my personal finances
	sgm2	I am worried about paying the monthly expenses
	smpd3	I worry about having enough money to pay for school
	sdine4	The total amount of money I owe causes me great stress
	sndin5	I don't have enough money to participate in many of the same activities that my peers do
Savings - Finances	ahcr1	At home (Family environment that takes place in the habitual residence), they taught him to:
	enf2	When you would have preferred to be taught Finances (Managing money):
Behavioral Finance	afdf1	Which of the following do you think affects your financial decisions the most:
	afef2	Which of the following emotions affects your financial decisions:
	apsd3	The psychological aspects of a person before they make a financial decision are:
	asd4	The social aspects of a person before they make a financial decision are:
	tdf5	believes that people make financial decisions
Pasanaku	psk1	I ever participate in Pasanaku (revolving loan)
	cpsk2	How do you understand the pasanaku?
Credit	tc3	Do you have any credit?
	lcr4	The credit that your household has is with one: