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Level of financial education in higher education scenarios: An empirical study on students of economic-administrative area

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ABSTRACT

This study aims to measure the level of financial literacy of young people who have received formal instruction on the matter. A survey was administered to 115 college students in the last semester of the degrees of the administrative area of the Universidad Cristóbal Colón at Veracruz, Mexico. In bachelors of this area, students take at least three courses of finance, accounting, economics and management. Financial literacy was measured according to the methodology employed by Condusef, Banamex-UNAM, and FINRA to evaluate the knowledge of young people regarding interest rate, inflation, savings, use of credit card, and budgeting. The results show that students have the knowledge and the habit of drawing up budgets to plan their expenses, but their level of financial knowledge is very low considering the rest of the variables that are evaluated.

KEYWORDS
Financial education, knowledge on investment, saving, interest rate, inflation, use of credit card, and budgeting.

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Introduction

Currently, people focus on training themselves and educate their family to earn money, but do not care about learning how to spend the money, nor save it as an element of predictability and stabilization to the uncertainties of the future (CNMV, 2008).

Excessive indebtedness has increased because the growing tendency of people to raise their living standards and satisfy their desires by acquiring products and services without having enough economic capacity (Zakaria, Jaafar and Marican, 2012). This has generated greater economic development and at the same time increased the risk to the

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most vulnerable sectors of the population, such as young people and people with limited income (Denegri, Iturra, Palavecinos and Ripoll, 1999; Denegri and Palavecinos, 2003).

It is essential to promote savings as a means of prevention and turn it into a habit that contributes to the achievement of personal and family goals (Carrillo and Lamamié, 2008).

As a result of the evolution of the financial services and the complexity of the markets and financial relations, financial education has become necessary to understand them and thus make better decisions (Carrillo and Lamamié, 2008). Increasingly more people enter the financial system to acquire resources, so more information and education on financial matters are required (Solimano and Avanzini, 2009).

Similarly, financial education becomes fundamental to choose a financial product, to demand rights and fulfill obligations as clients of the financial system, thus decreasing the possibility of borrowing (Cohen and Nelson, 2011). Singer (2008) says that this issue must be addressed in a formal way, i.e. including in schools, within the curriculum, subjects related to personal finance, taught by teachers trained in issues such as saving, budgets, inflation, and calculus of interest payments; all this so that students understand and become aware of the impact of its decisions concerning financial services.

This study is aimed to measure the level of financial education in students about to graduate of the administrative-economic area, i.e., young people who have received financial formal instruction, considering that these students will obtain a degree in economics or accounting or management or international business, they take in their careers at least three courses of finance, management, accounting and economics among others.

Literature review and hypothesis

Whereas financial literacy relates to the ability and the knowledge that people have in financial matters, and that their level of education in this field determines the correct choice of financial instruments (Mandell, 2008), financial education is considered a fundamental element in the decision-making of personal finances.

Therefore, it is paramount to generate greater awareness on the topic of financial literacy in the population user of banking and financial services. According to it, this research fits into the study on "financial literacy and financial inclusion", which began in the 1990s from evidence showing users handling poorly their financial resources (Hogarth, Hilgert and Schuchardt, 2002) and justified by a greater sophistication of financial products which require greater financial and technological skills for handling them (Hilgert, Hogarth and Beverly, 2003; Lusardi, 2008).

In general, the studies concerning financial education that have been conducted, offered evidence showing that people mostly lacks expertise in financial matters, about specific topics like saving, investing, budgeting, the effect of inflation and, in general, those issues that relate directly to personal finance, which places them at a low level of financial education (Denegri, Cabezas, Vargas and Sepúlveda, 2009; Mandell, 2008; Mandell and Schmid, 2009; Carrillo and Lamamié, 2008; Bernheim and Garret, 1996; among others). This fact is relevant, given that this type of knowledge is required to make financial decisions that will impact on their lives; likewise, their interest in financial education relates to the financial benefit that could be obtained by having an acceptable level of financial education as referred by Mandell and Schmid (2009).

Specifically, the study by Bernheim, Garret and Maki (2001) in different areas of the United States showed that middle-aged people, who took financial instruction in upper secondary education, tend to save a greater proportion of their income than those that carried no such instruction. This could suggest that receiving financial literacy helps to improve the standard of living of the people.

Denegri, Cabezas, Páez, Vargas and Sepúlveda (2009) based on a study directly conducted on students of the degree in psychology, which took a course related to finance, show that formally incorporate financial education in the curricula increases the level of financial education of people and contributes to graduate better-prepared people, which will responsibly take decisions related to financial services.

Mandell (2008), by analyzing students close to finish high school to which were taught subjects of personal finance and financial management, found that the teaching of these subjects led to a positive impact, although not significant, in different topics of financial education. This suggests that providing personal finance education materials to high school students does not cause a great impact on their level of financial education since these topics are not employed by the students in their near future and this causes forgetting of knowledge in the short term.

Some studies on the initiatives of various institutions in Spain, led Carrillo and Lamamié (2008) to expose the vulnerability of the Spanish population, that lacking of information did invest in real estate, getting them tied to financial institutions for more than a decade, which made difficult to manage their financial situation at the beginning of the 2008 crisis.

A study conducted in 2,000 Dutch homes by Van Rooij, Lusardi and Alessie (2011) showed that the low level of financial literacy in the population causes insecurity in people to invest in the stock market, so generating a little diversity of risk in their savings, and deprive people of increased performance of its assets by not taking advantage of financial instruments offered by banking and financial institutions.

This analysis was also carried out by Lusardi and Mitchel (2011), focusing on the populations of Germany, Japan, Italy, Sweden, Netherlands, New Zealand, Russia and United States, which a priori were considered at an adequate level of financial education and capable of making decisions related to financial products and services.

However, the results showed that the population has a poor level of financial knowledge which makes them inefficient for decision-making in this field, and can thus negatively affect their personal and family financial situation.

Studying the people of different countries shows that the level of financial literacy in the population is independent of the level of development of the financial market in a country.

From this evidence, arose in 2012 the *Child and Youth Finance Movement*, dedicated to enhancing the financial capabilities of children and youth, supported by OECD, UNICEF, European Parliament and other institutions and foundations. The following research hypothesis derived from the *Child and Youth Finance Movement*:

Hi_1. College students know how to calculate interest rates.
Hi_2. College students understand the importance of inflation, and considered it in the calculation carried out to value money.
Hi_3: College students save for financial security.
HI_4: College students make good use of their credit cards.
Hi_5. College students usually prepare a budget to plan their spending.

Method

The study is descriptive cross-sectional. The sample is formed by current students of the eighth semester of degrees in the administrative area of the Universidad Cristóbal Colón in Veracruz, Mexico, in the period January - June 2013. The inclusion criteria for the sample were as follows:

a. students registered in courses.
b. Mexican nationality.
c. Indistinct sex
d. any age.

The dimensions of the variable that seeks to explain, and this is the level of knowledge or financial education are calculating interest rates (VI_1), inflation (VI_2), savings (VI_3), using / handling credit card (VI_4) and budget (VI_5).

The study is not experimental, since there is no manipulation of the independent variables, and cross-sectional because the collection of data is carried out in a single moment from a survey that was designed for this, and presented in Annex 1. Survey was elaborated from three tests about financial education: 1. the Banamex-UNAM test titled “Financial Literacy of young people in Mexico”; 2. the Financial Industry Regulatory

Authority (FINRA) test; 3. the National Commission for the Protection and Defense of Financial Services Users (Condusef) test. The surveying was held in the month of June 2013.

Sample

Taking into account the above, and to determine the corresponding sample, the procedure indicated by Levin (2002) cited by "Author" (2013), which yields the following formula is adopted:

$$n = \frac{NZ^2(P)(Q)}{e^2(N-1)+Z^2(pq)}$$

Where:

N = population
n = sample
e = MPE (0.05)
Z = level of reliability (1.96)
p = probability of event for (0.5)
q = probability of the event against (0.5)

Solving we have n = 115 students distributed as shown in Table 1.

Table 1. Breakdown by Bachelor's Degree

Bachelor's degree	Count	Percent	Surveyed students
Business Management	28	16.97%	20
Marketing	22	13.33%	15
Management of tourism business	38	23.03%	26
Accounting	21	12.73%	15
International Business Group A	25	15.15%	17
International Business Group B	28	16.97%	20
Economics	3	1.82%	2
Total	165	100%	115

Source: own

Being a private university, it is assumed that most of the students belong to the upper and upper middle class, and ages are between 21 and 25.

Operationalization of variables

Table 2 show lists the operationalization of the variables involved in this investigation.

Table 2. Operationalization

Variable	Concept	Instrumentation	Operationalization

Interest rate	Level of knowledge about interest rate and its impact	Questions follow the FINRA test. Example: If you have $100 in a savings account, and the interest rate is 2%, after 5 years how much money will you have if you maintained that money in that account? a) More than today b) The same amount as today c) Less than today d) I do not know e) I prefer not to answer	Evaluate tendency of the answers: right or wrong
Inflation	Level of knowledge about inflation effects on his savings.	Questions follow the CONDUSEF test. Example: Are your savings protected from current inflation? a) Yes. I invest my money in financial products offering profit above current inflation. b) Yes. The bank where I deposit my savings tells me I have high return rates. c) I do not know.	Each answer has an assigned value (a=1, b=2, c=3); An average of them is computed.
Savings	Level of knowledge about savings; also his habits and motivation to save.	Questions follow the BANAMEX-UNAM test. Example: What does saving mean? a) Keep the money b) Having money for emergencies c) Something for the future d) Not expending e) Having money available f) Money in the bank g) Financial safety h) Money accumulated for buying	Each answer has an assigned value (a=1, b=2, c=3, and so on); an average of them is computed. A percentage breakdown of the answers is computed. For items where sorting by importance is required, the sum of answers is computed, and results are sorted in descending order.

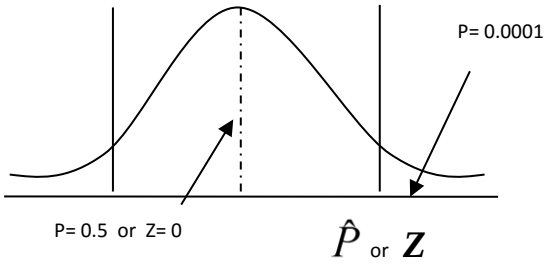
Credit card use	Perception about credit card use. Also the habits for using it.	Questions follow the BANAMEX-UNAM test. Example: What is a credit? a) It is a loan. b) It is a loan paid by installments. c) It is a debt. d) It is a loan which causes interest. e) It is a help to solve a problem. f) It is a problem.	Each answer has an assigned value (a=1, b=2, c=3, and so on); an average of them is computed. A percentage breakdown of the answers is computed.
Budget	Level of knowledge about budgets and personal finances.	Questions follow the BANAMEX-UNAM test. Example: Do you use to keep a record of your debts, expenses, incomes and savings? a) Yes. b) No. c) Yes, of:_____ (expenses, incomes or savings).	A percentage breakdown of the answers is computed.

Source: own

To test the working hypothesis, the test of the proportion of the claim is carried out (Ho: p = 0.5, Hi: p> 0.5). The percentage of all cases that fall in this range is taken, according to CONDUSEF and termed as "excellent care of money."

The statistical for this is:

$$Z = \frac{\hat{P} - p}{\sqrt{\frac{pq}{n}}}$$



Where:

X = proportion of the sample, n = sample $\hat{P} = \frac{x}{n}$

Analysis and discussion

Below, a descriptive overview with the results of the indicators that make up the questionnaire that was applied in the field work is presented. Subsequently, the result obtained from the hypothesis test, is presented for discussion. The results obtained on gender and vocational training (coursing degree) are presented in Figures 1 and 2.

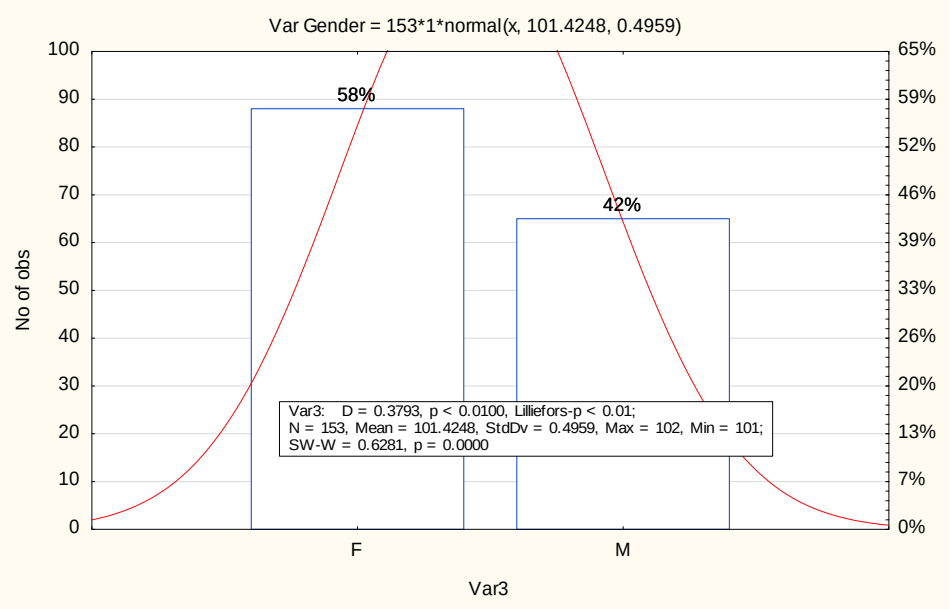
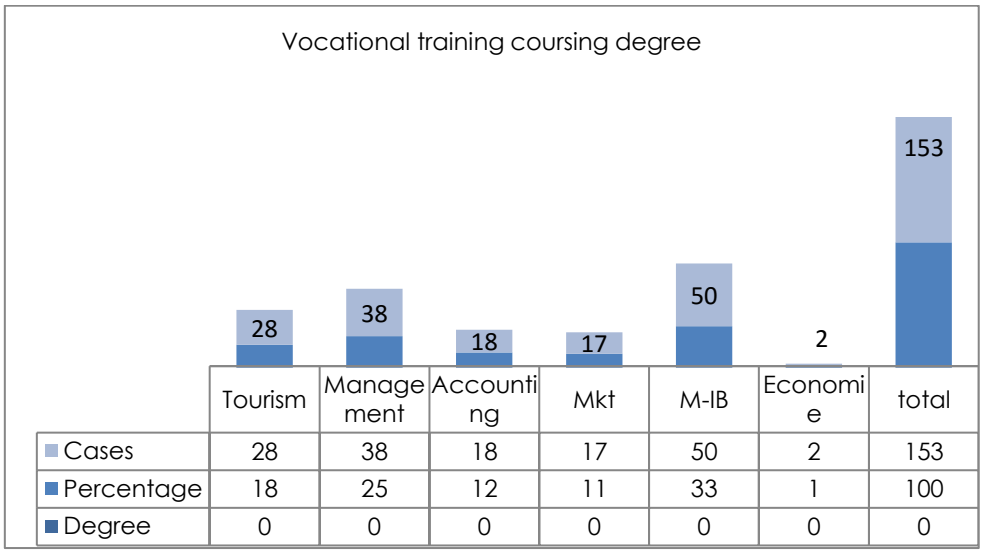


Figure 1. Gender distribution of the sample (Source: own)



	Tourism	Management	Accounting	Mkt	M-IB	Economie	total
Cases	28	38	18	17	50	2	153
Percentage	18	25	12	11	33	1	100
Degree	0	0	0	0	0	0	0

Figure 2. Bachelor's degree of surveyed students (source: own)

As shown in Figure 1, the sample was composed of 58% of women and 42% of men so the sample is balanced in terms of gender.

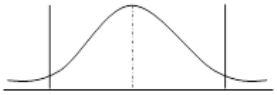
Figure 2 shows how the sample is composed of a representative percentage of each degree; the minimum percentage, corresponding to the degree in Economics is proportional to the number of its enrolled students.

Then the results of the statistical procedure (z), for all cases H_1 … H_5, referred claim ratio are presented:

DATA:	
n:	153
p:	0.5
q:	0.5
Significance a:	0.05

with Normal distribution

$$z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} \qquad \hat{p} = \frac{x}{n}$$



Regarding hypothesis 1, the result is shown in Table 3.

Table 3. *Hi₁* College students know how to calculate interest rates.

	x	*n*	*Value of Z*	Critical value	P Value (1-critical value)	Decision
H₁	80	153	0.5659	*0.71230*	*0.28770*	Not rejected Ho
H₁	48	153	-4.6082	0.00010	*0.99990*	Not rejected Ho
H₁	86	153	1.5361	0.93570	*0.06430*	Not rejected Ho

Source: own

As can be seen, for testing H_1 in their poor knowledge on the calculation of interest rates is not enough evidence to reject the null hypothesis, i.e., the result leads us to think that in the surveyed population does not exist an acceptable level of financial literacy in this specific topic.

Regarding hypothesis 2, the result is shown in Table 4.

Table 4. *Hi₂.* College students understand inflation relevance and consider it to value money.

	x	*n*	*Value of Z*	Critical value	P Value (1-critical value)	Decision
H₂	49	153	-4.4465	*0.00010*	*0.99990*	Not rejected Ho

Source: own

According to the results obtained in the test of H_2; not enough evidence to reject the hypothesis was obtained, so it is concluded that the surveyed population does not consider inflation when valuing your money.

Regarding hypothesis 3, college students save for financial security; the result is shown in Table 5.

Table 5. *Hi₃* College students do save for financial security.

	x	*n*	*Value of Z*	Critical value	P Value (1-critical value)	Decision
H₃	47	153	-4.7699	*0.00010*	*0.99990*	Not rejected Ho
H₃	54	153	-3.6380	0.00010	*0.99990*	Not rejected Ho
H₃	80	153	0.5659	0.71230	*0.28770*	Not rejected Ho
H₃	52	153	-3.9614	0.00010	*0.99990*	Not rejected Ho

Source: own

The results did not find sufficient evidence to reject the hypothesis. This leads us to believe that the population surveyed does not present an acceptable level of financial education in relation to the variable "savings".

Regarding the hypothesis 4, the result is shown in Table 6.

Table 6. *Hi*$_4$ College students make good use of their credit cards

	x	*n*	*Value of Z*	Critical value	P Value (1-critical value)	Decision
H$_4$	4	153	-11.7226	*0.00010*	*0.99990*	Not rejected Ho
H$_4$	28	153	-7.8420	0.00010	*0.99990*	Not rejected Ho
H$_4$	75	153	-0.2425	0.40520	*0.59480*	Not rejected Ho
H$_4$	54	153	-3.6380	0.00010	*0.99990*	Not rejected Ho
H$_4$	59	153	-2.8296	0.38970	*0.61030*	Not rejected Ho
H$_4$	38	153	-6.2251	0.00010	*0.99990*	Not rejected Ho
H$_4$	116	153	6.3868	0.99990	*0.00010*	*Rejected Ho*
H$_4$	62	153	-2.3445	0.00960	*0.99040*	Not rejected Ho
H$_4$	69	153	-1.2127	0.11310	*0.88690*	Not rejected Ho
H$_4$	94	153	2.8296	0.99760	*0.00240*	Rejected Ho

Source: own

With the exception of items 21 (concerning the cancellation of credit cards used) and 24 (features they want in a new credit card), the remaining indicators for $H_{4,}$ regarding the handling of credit cards, did not provide sufficient evidence to reject the hypothesis, so we conclude that the surveyed population does not have an acceptable level of financial education in the management of credit cards.

Regarding the hypothesis 5, the result is shown in Table 7.

Table 7. *Hi*$_{5.}$ College students use to budget their expenses

	x	*n*	*Value of Z*	Critical value	P Value (1-critical value)	Decision
H$_5$	87	153	1.6977	*0.95450*	*0.04550*	*Rejected Ho*
H$_5$	98	153	3.4763	0.99970	*0.00030*	*Rejected Ho*
H$_5$	135	153	9.4589	0.99990	*0.00010*	*Rejected Ho*

Source: own

The results evidenced that the College students have an acceptable level of financial education in terms of budgeting.

Conclusions and recommendations

The results obtained in this study allow us to conclude that college students do not know how to calculate interest rates. Hence, in interpreting the information related to bond prices where calculations associated with interest rates involved, they demonstrate a low level of financial education. These results are consistent with Van Rooij, Lusardi and Alessie (2011) who point out that lack of trust for investment in the stock market, caused by a low level of financial education, leads to people not to invest in that market and depriving them of the possibility of diversifying their savings and obtaining higher returns.

The result obtained for the inflation variable shows that the students are not considering it in the calculation of the value of money, failing to protect their savings from its adverse effect. This result is consistent with the study of Lusardi and Mitchell (2011) who show that the surveyed population does not have sufficient knowledge of the effect of

inflation, interest rate, or knows about diversifying risks; which negatively affects their economic situation.

With regard to savings, the results obtained by applying the test taken from the Banamex-UNAM and Condusef tests reveal that the student does not usually save for financial security. This result agrees with the results obtained in Spain and presented in the Financial Education Plan 2008-2012 presented by the Comisión Nacional del Mercado de Valores of Spain (CNMV, 2008). In this report they conclude that people focus on teaching to make money, but pay little attention when teaching how to spend and how to save it as a means of predictability and stability, especially in times of crisis, when it is essential to promote savings and make it a habit and a mean for achieving personal and family goals.

Evidence obtained regarding the use of credit card shows that the population does not have sufficient skills for handling financial instruments, such as credit cards, except for issues related to the cancellation of unused cards and the reasons for choosing a credit card. This result is aligned with the evidence obtained by Zakaria et al (2012), which concludes that excessive debt has increased due to a change in the behavior of people who aspire to a better standard of living, which leads them to purchase products by overusing credit cards. In this regard, it is important to consider Hilgert, Hogarth and Beverly (2003), who demonstrate the need to develop greater skills in the population due to the constant release of more sophisticated financial instruments.

Lastly, the results obtained provide favorable evidence regarding the habit of students in preparing a budget to plan their expenses according to their economic resources. According to Bernheim, Garret and Maki (2001) initiatives to increase the level of financial literacy have been focused on a better understanding of issues such as budgeting, saving and personal finance planning; all it aimed at improving the standard of living.

The results reinforce the proposal of Singer (2008), about the inclusion of courses related to finance, focusing on topics such as saving, budgeting, managing credit cards inflation and calculating interest rates, in order to improve the level of financial education and prepare young people to make better decisions about their personal finances.

Disclosure statement

No potential conflict of interest was reported by the authors.

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