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Published in the USA

European Journal of Contemporary Education
E-ISSN 2305-6746
2022. 11(4): 1164-1175
DOI: 10.13187/ejced.2022.4.1164
https://ejce.cherkasgu.press

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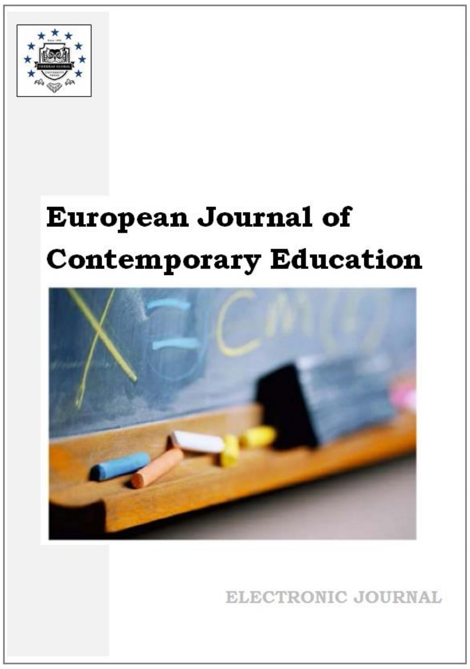

Financial Education in School of Business Students: Case Study from Veracruz, Mexico

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Abstract

The purpose of the study is to evaluate the knowledge level and behavior that business school students from Veracruz, Mexico have in relation to interest rates, inflation, savings, credit and budgeting. For the empirical study, a non-experimental quantitative cross-sectioned and descriptive design was followed. The test used was that of Moreno-García et al. (2017), which was answered by 309 undergraduate students from Veracruz, Mexico. Data measurement was performed using descriptive statistics, cross tables and the non-parametric test of proportions (Z). The main findings point to the fact that more students understand well the impact of inflation than the relationship between interest rates and bonds; that students do not consider that saving provides financial security; and that there is no gender difference in terms of saving behavior. Most of the business school students do not have a credit card, prefer debit cards and have acceptable practices in budget planning. In summary, the results of this study show a good level of financial knowledge in relation to interest rates, inflation, investment, credit, and show adequate behavior of savings and credit card, as well as the use of the budgets. However, it was expected that each item would have a greater number of correct answers, considering that the population under study has received training in mathematics, economics, and finance. It is noteworthy that, in relation to gender, there are more men who correctly answer the questions about inflation and it is women who have better practices in the use of their credit cards.

Keywords: business, college, financial education, students, Mexico.

1. Introduction

In an era of digitization, people at a very young age become financially active citizens in the economy (Andreou, Philip, 2018). Making effective financial decisions requires a level of

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knowledge that allows the understanding of financial concepts and risks (OECD, 2016). It is clear that financial education is necessary at all ages to avoid costly mistakes that can have long-term impacts (Wagner, 2019), especially in young people, among whom it is of great importance because it prepares future adults to comply with any profession or continued study at a university (Belás et al., 2016).

In Mexico, there have been findings reporting the existence of possible areas of opportunity in terms of financial knowledge among young people. On this, Moreno-García, García-Santillán and Gutiérrez-Delgado (2017), have carried out a study whose results confirm that the levels of financial education are low among young Mexicans. Only 6.6 % of the sample answered the three questions used to evaluate them and only 35 % answered two of them correctly. Results obtained by the OECD are similar: only 40 % of their sample had a sufficient level of financial knowledge and only 30 % were considered to have adequate financial attitudes. In aggregate terms, it is worrying that only 10 % of the young population have the three necessary components to make financial decisions and 22 % do not have any of the three proposed by the OECD (Villagómez, Hidalgo, 2017).

A precarious financial knowledge has also been observed among business students. These results were reported for Mexico by León, Hernández and Haro (2022) and in Colombia by Duque, González and Ramírez (2016). The foregoing is worrying: if these students find it complex, the difficulty will be greater for those belonging to other areas.

Making young people aware of the importance of financial education is essential to prepare them to manage their own financial resources (Lusardi, Mitchel, 2011). Increasing the knowledge in this age group in terms of savings, investment and other topics related to the financial system will lead to a more educated society capable of making sensible decisions about the use of tools that banks provide (León et al., 2022).

With these arguments, the following question arises: What is the financial knowledge level that undergraduate students from a business school have? It is specifically questioned whether students know how to calculate interest payments, if they understand the effect of inflation, whether they save to have economic security or not and whether they make good use of credit cards. The objective of the research is to evaluate the level of financial knowledge that undergraduate students from a business school have on the topics of interest, inflation, savings, credit cards and budgets.

2. Literature review

According to a study carried out in 2014, in which basic aspects of financial education were evaluated among Mexicans aged 15 and older, only 32 % of the participants have elementary knowledge on the subject (Klapper et al., 2014). CONSAR (2016) identified that Mexicans born after the 1980s and who are already active in the labor market spend more in the present without planning for the future.

Alvarado and Duana (2018) identified a lack of interest in planning for retirement and savings among Mexican adolescents. It should be noted that their results differ according to gender, since men consider saving to spend in the short term on perishable goods while women save to spend on durable goods. These results contrast with those obtained by Fisher (2010), Sarigül (2014), Lusardi (2019) and Osorno and Hernández (2021), who identified that the male population in Mexico has a greater financial culture compared to the female population, in addition to the fact that the latter also denotes less confidence in their knowledge.

Moreno-García, García-Santillán and Gutiérrez-Delgado (2017) identified that Mexican university students with formal instruction in topics related to finances nonetheless lack an adequate level of financial education regarding savings, the use of credit cards, the effect of inflation and the calculation of interest rates.

In Latin America, specifically in Argentina, Brazil, Chile and Colombia, university students generally lack basic financial knowledge and want to know more about these concepts with the intention of carrying out a responsible financial management that leads to adequate decisions in their daily lives (Gutiérrez, Delgadillo, 2018).

In Paraguay, accounting students at the National University of Pilar state that they allocate part of their income to savings: 45 % of them generate constant savings and 42.3 % occasional savings while the rest do not save. Of the latter, three main reasons are mentioned for not doing so:

one is lack of interest, another is lack of income and the last is dependence on their parents, which means that they do not consider saving as their own responsibility. Of the percentage that does save, only 14.5 % use bank accounts, the rest keeping it in savings accounts or piggy banks. Their main motivations to save occur in the following order: paying for their education, going on a trip, becoming independent from their parents or starting their own business and, finally, purchasing a product (Ramírez, Vázquez, 2021).

In Puerto Rico, it was found that students in general use credit cards correctly, but only 20 % use them regularly all the time. The students expressed that they rely on other people when they are unable to cover monthly expenses and almost 70 % of the surveyed sample stated that they save monthly. A third party is indifferent to using a credit or debit card to pay for their purchases and if they had the possibility of using a debit card, credit card or cash, only 9 % would use a credit card (Castro-González et al., 2014). In Brazil, credit card usage was the highest among a group of 769 university students, of which 71 % use at least one credit card and are mostly women. The results of this study show that having more credit cards increases the possibility of risky behavior and that knowing the interest rate would help reduce the risk (Mendes-Da-Silva et al., 2012).

In Chile, it was identified that male university students have more positive attitudes towards indebtedness than women, although, in general, an austere profile stood out in the sample. They are less prone to indebtedness since they are aware that their lack of credit is attributed to the lack of their own income and social awareness about avoiding indebtedness at an early age (Mansilla et al., 2016).

For Peruvian students belonging to the Marcelino Champagnat University, there is a mastery of basic financial knowledge in almost half of the sample, those in the business programs standing out from the rest of the degrees. Likewise, they had a score as a less dispersed group, which would indicate a more uniform knowledge on topics such as interest rates, investment, loans and inflation. Also, there is a higher level of knowledge in male students, those who work, those who use credit or debit cards and those who maintain a relationship of coexistence (Yaringaño, 2018). In the rest of the world, there is also interesting evidence on the levels of financial knowledge among young people.

Lusardi, Mitchell and Curto (2011) explored financial literacy in young Americans and found that only a third of the population had basic knowledge about interest rates, inflation and risk diversification, and that their levels of financial literacy were strongly related to their sociodemographic characteristics and the financial sophistication of their family. On the other hand, Turkish university students also have an inadequate level of financial education, topics related to investments being those where more attention is required (Sarigül, 2014).

For Sri Lankan business and management students, saving is influenced by the level of financial education and self-control, with the former being more influential (Tharanika, Andrew, 2017). Poles between 18 and 24 years old make decisions and plans with the priority of acquiring products in the short term (Swiecka, Wyszkowska-Kaniewska, 2019). In Georgia, 18-35-year-olds save to maintain status and a high standard of living, but do not save for the future and tend to spend (Chudzian et al., 2014).

In China, a study carried out by Yao and Meng (2018) explored factors related to the use of credit cards among students from ten universities. The results show that the economic dependence on parents and the level of financial education influence the credit card payment behavior of university students. They also identified that gender is not related to this behavior.

From theoretical and empirical arguments found in the literature review, the following statements are established as hypotheses:

Hi1. College students know how to calculate interest payments.
Hi2. College students understand the effect of inflation.
Hi3. College students consider that saving provides financial security.
Hi4. College students make good use of their credit card.
Hi5. College students often make a budget to plan their expenses.

3. Methodology

This is a non-experimental empirical study that is approached from the hypothetical-deductive, cross-sectioned and descriptive method. The participants were undergraduate students from the only business school in the state of Veracruz, Mexico. The sample is non-probabilistic by self-determination, since, due to the conditions of confinement during the pandemic, the survey was sent in electronic format to the email accounts of the 431 students enrolled in the different degrees of UCC Business School. The electronic survey was sent in February 2021 and 309 students responded, making up a good magnitude database. To obtain the data, the survey used in Moreno-García et al. (2017) was used.

In the absence of multivariate normality in the data, descriptive analysis will be used through cross tables to determine the response frequencies by gender in each item. Likewise, for the hypothesis test, the non-parametric assertion test of Z proportions is used (Triola, 2004). To validate the reliability and internal consistency of the items, a Cronbach's alpha coefficient of 0.60 was obtained, which is slightly low, which is due to the multidimensional nature of the responses.

4. Results

Of the 309 participants, 55.34 % are women and 44.66% men. Their ages range between 18 and 28 years old, distributed as follows: 14.24 % (44 cases) of 18 years old, 30.42 % (94 cases) of 19 years old, 28.16 % of 20 years old (87 cases), 19.74 % (61 cases) of 21 years, 6.47 % (20 cases) of 22 years and the remaining 1 % is divided into three cases of 23, 24 and 28 years old.

In relation to the programs in which students are enrolled: 54.69 % (169 cases) are from international business, 18.45 % (57 cases) from business administration and management, 14.89 % (46 cases) from economics, and the remaining 11.97 % from accounting and finance. Of the total number of students who participated in the survey, 24.59 % (76 cases) are in the second semester; 40.13 % (124 cases) are enrolled in the fourth semester; 25.24 % (78 cases) are in the sixth semester; and the remaining 10.04 % (31 cases) are in the eighth semester. The results for each variable analyzed are presented below.

4.1. Interest rate calculation

Items 2 and 3 of the instrument allow us to know whether the students know how the interest rate behaves. The results are shown in Table 1.

Table 1. Interest rate behavior indicators

Item2. If the interest rate goes up, what will happen – normally – to the price of bonds?						
Gender	Increase	* Decrease	Remains the same	No relationship between interest rate and bond price	I don't know	Total
Male	52	43	5	37	1	138
Female	56	53	8	51	3	171
Total	108	96	13	88	4	309

Item3. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid on the loan will be less.					
Gender	*True	False	Rather not say	I don't know	Total
Male	90	33	14	1	138
Female	94	52	21	4	171
Total	184	85	35	5	309

* Correct answer

Interest rates and bond prices move in opposite directions. From the participants, 31 % knew about this behavior and answered correctly, 68 % gave an incorrect answer and 1 % answered that they did not know. This result shows that the vast majority of students are unaware of this basic principle in finance.

Item 3 yields results that allow us to appreciate that the majority answered correctly (184/309 = 59.54 %), that is, they know that the longer the financing period, the higher the interest payment will be. It is worth mentioning that 27 % gave an incorrect answer and the rest either did not want to answer or answered that they did not know. Regarding gender, the results show very similar percentages of correct answers between men and women.

4.2. Inflation

Items 1 and 4 allow us to identify whether students understand the effect of inflation. Table 2 shows the results obtained.

Table 2. Inflation indicators

Item1. Imagine the interest rate in your savings account is 1 % annually and that inflation is 2 % annually. After a year, how much could you purchase with the money in the account?						
Gender	More than today	Exactly the same as today	*Less than today	I don't know	Rather not say	Total
Male	15	11	104	7	1	138
Female	16	23	113	16	3	171
Total	31	34	217	23	4	309

Item4. Are your savings protected against the current inflation?				
Gender	*Yes, if I invest in items that pay higher than the inflation	Yes, if the bank says I have a high yield	I don't know	Total
Male	82	13	43	138
Female	70	15	86	171
Total	152	28	129	309

* Correct answer

The results show that 70 % of the students know that if the inflation rate is higher than the interest rate, there is a loss in the purchasing power of the currency saved. Of the participants, 21 % gave an incorrect answer and the rest either did not know or preferred not to answer. The answer obtained in item 1 contrasts with that obtained in item 4, since the question goes in the same direction, in relation to how inflation affects savings. However, only 49 % answered correctly, that savings are protected only if they are invested in instruments that pay returns above inflation, 9 % giving an incorrect answer and 41 % answering that they did not know. Depending on gender, there is a higher percentage of men who answered both questions correctly (9 % more in item 1 and 19 % more in item 4) and a ratio of 2 to 1 of women with respect to men who said they did not know the answer.

4.3. Saving

Items 5 and 6 allow us to know what saving means for students. The results are shown in Table 3.

Table 3. Savings indicators

	Gender		
Item 5: What is saving?	Male	Female	Total
Save money	44	38	82
Have money for emergencies	4	6	10
Something for the future	24	31	55
Not spend	2	2	4
Have money available	13	19	32
Money in the bank	1	4	5
Economic security	44	69	113
Money accumulated to buy	6	2	8

Item 6: How do you determine what you save?	Gender: Male	Female	Total
Total	138	171	309
Save what is left over	27	38	65
Save when wanting to buy or do something	30	53	83
Have the habit of saving	78	75	153
My income is not enough to save	3	5	8
Total	138	171	309

The idea that saving is mainly for economic security was considered by 36.5 % of students, 61 % of those who gave this answer being men. The second most voted option (26.5 %) was that saving is saving money, 53 % of those who answered this being women. The highest percentage of participants state that they have the habit of saving (49.5 %), although more men than women gave this answer and 26 % save when they want to buy or do something. In this case, more women than men act in this way.

4.4. Investment

Table 4 shows what students understand by investment.

Table 4. Investment indicator

	Item 10. What is an investment?							
Gender	Purchase something to obtain a gain	Money in a busi-ness	Having profits	Fu-ture pro-fits	Make money work	Pur-chase estate	A saving	Total
Male	25	2	36	24	47	3	1	138
Female	31	6	30	57	45	0	2	171
Total	56	8	66	81	92	3	3	309

Of the participants, 29.77 % consider that an investment is putting money to work (the most voted option by men), followed by 26.21 % who indicate that an investment represents a benefit in the future (the most voted option by women). The third most voted option was that an investment is linked to having future profits (21.36 %). The three response options follow the logic that investment involves achieving profitability within a given period.

4.5. Credit

Table 5 shows the results on the perception of the participants regarding credit and, of particular relevance, what they consider the main risk of requesting a loan.

Table 5. Perception about the credit topic indicator

	Item 12. What is credit for you?						
Gender	A loan	A loan paid off in installme nts	A debt	A loan generating interest	Help to solve a problem	Problems	Total
Male	24	25	26	57	6	0	138
Female	18	49	12	88	3	1	171
	42	74	38	145	9	1	309
Gender	Item 14. Which is the main risk when asking for credit?						
	Going into debt	Not paying and losing your property		Paying high interest rates or increases of			Total

			these	
Male	44	23	71	138
Female	54	27	90	171
Total	98	50	161	309

Of the participants, 47 % perceive credit as a loan that generates interest. It is worth mentioning that there are 54 % more women than men who respond in this way. The second most voted option is that credit is a loan that is paid off in installments (23.85 %). This option was chosen by more women than men. Regarding the main risk of requesting a loan, 52 % consider that it is paying high interest or facing increases in interest. In this answer there is practically no difference based on gender.

4.6. Credit card

Of the students, 63.75 % answered that they do not have a credit card. This percentage is equivalent to 197 students, of which 112 are women and 85 men. Table 6 shows the results of the 112 students (36.25 %) who have at least one credit card. Of this group that has a credit card, 52.67 % are women and the rest are men.

Table 6. Credit cards indicators

Item	Most answered option	Women		Men		Partial	partial/ total sample (112)
		cases	%	cases	%	cases	%
14. A How many credit cards do you have?	1 or 2	51	52.04	47	47.96	98	87.5
15. B When paying, what do you do more frequently?	Pay the whole balance	40	57.97	29	42.03	69	61.60
16. What is the main advantage of using a credit card?	a) Carrying less cash	19	59.37	13	40.63	32	28.57
	b) Unexpec-ted events	14	45.16	17	54.84	31	27.67
17. How do you prefer to handle your money?	Debit card	35	54.68	29	45.32	64	57.14
18. You or any other member at home carries out operations through:	Internet	29	52.72	26	47.28	55	49.10
19. Before choosing a credit card, do you compare the total annual cost?	Always	23	48.93	24	51.07	47	41.96
20. Do you have credit cards you do not use?	No. I cancel the ones I do not use	37	55.22	30	44.78	67	59.82
21. Do you know your due date of your credit card?	Yes, I register it so as not to pay interest	59	69.41	26	30.58	85	75.89

As can be seen in Table 6, some of the most significant data suggest the following: 87.5 % of students who have a credit card have one or two, 59.82 % cancel those cards that they do not use, and 41.96 % compare the total annual cost before acquiring one; 75.89 % keep in mind the payment due dates so as not to pay interest and 61.60 % usually pay the total balance of their card monthly. These behaviors are predominant in women (69.41 and 57.97 % respectively). The students identify that the main advantages of having a credit card are handling less cash (28.57 %), a response mostly given by women, and the possibility of covering unforeseen events (27.67 %), a response mostly given by men. Despite having a credit card, this population prefers to use a debit card (57.14 %) and carrying out their financial transactions online (49.10 %).

4.7. Budgeting

Table 7 shows the behavior of the students regarding the management of their money from the making of a budget.

Table 7. Budget indicators

Item	Most frequent answer	Women		Men		Par-tial	partial/total sample (309)
		cases	%	cases	%	cases	%
24. Do you tend to keep a record of your debts, expenses, income and savings?	Yes	107	52.97	95	47.03	202	65.37
25. Do you know how to make a budget?	Yes	106	50.48	104	49.52	210	67.96
26. Are the expenses made during last month within your financial possibilities?	Yes	151	54.91	124	45.09	275	89.00
27. Choose the most important priority in your budget:	Food	107	54.59	89	45.41	196	63.43

In relation to the issue of budgets, the results show the following: 65.37 % usually keep a record of their income, expenses, debts and savings and 67.96 % indicate that they know how to prepare a budget to plan the distribution of their money; 89 % made expenses that were within their economic possibilities in the previous month and 63 % have as the most important priority in their expenses the purchase of food. Regarding gender, the fact stands out that, in a very even way, men and women know how to prepare a budget; however, there are more women than men who keep track of their expenses and spend according to their capabilities.

4.8. Hypothesis testing

To test the hypotheses, the non-parametric procedure of Z proportions is used, in order to contrast the five working hypotheses established for this study. Results are shown in Table 8.

Table 8. Hypothesis test

H	x cases	n	Value $z = \frac{\hat{P} - p}{\sqrt{pq/n}}$	Critical value	P Value (1-critical value)	Decision
Hi1. College students know how to calculate interest payments.						
H1	88	309	-7.566	0.0001	1.000	Not reject Ho
H1	184	309	3.356	0.9996	0.000	Reject Ho
Hi2. College students understand the effect of inflation.						
H2	217	309	7.111	0.9990	0.001	Reject Ho
H2	152	309	-0.284	0.3897	0.610	Not reject Ho
Hi3. College students consider that saving provides financial security.						
H3	113	309	-4.722	0.3897	0.610	Not reject Ho
Hi4. College students make good use of their credit cards.						
H4	112	309	-4.835	0.0001	1.000	Not reject Ho
Hi5. College students often make a budget to plan their expenses.						
H5	202	309	5.404	0.9990	0.001	Reject Ho
H5	210	309	6.315	0.9990	0.001	Reject Ho
H5	275	309	13.710	0.9990	0.001	Reject Ho
H5	196	309	4.722	0.9990	0.001	Reject Ho

The summary described in Table 8 suggests the following: Regarding the test of the Hi1 hypothesis, which indicates that university students know how to calculate interest payments, two items are used separately for their assessment (item 2 and item 3). Item 2 questions the relationship between the interest rate and the price of the bonds. In this regard, there is no evidence to reject the null hypothesis, which suggests that the participants do not understand that the interest rate and the price of bonds have an inverse relationship. The contrast of item 3 indicates that the null hypothesis should be rejected, since most of the students consider that as mortgage paying time is reduced, less interest is paid.

For the Hi2 hypothesis test, which establishes that university students understand the effect of inflation, item 1 and item 4 are used. Item 1 questions the effect of inflation on purchasing power. The result suggests that there is evidence to reject the null hypothesis. This tells us that most of the participating students understand the effect of inflation. In relation to item 4, which asks if savings are protected against current inflation, the result does not give evidence to reject the null hypothesis, which indicates that it is not clear to students that one way to protect wealth is to invest in financial instruments that pay profits above inflation.

The Hi3 hypothesis test seeks to determine whether the student considers that saving is important to having financial security, for which item 5 is used, which asks what saving is. The result shows that there is no evidence to reject the null hypothesis, although of the 309 cases, 113 consider that saving gives economic security.

To test the Hi4 hypothesis, which states that university students make good use of their credit cards, it is required that students have one. However, only a minority (36.25 %) have a credit card. This prevents the development of the nonparametric test of Z proportions, which indicates that there is no evidence to support the rejection of the null hypothesis.

Finally, for the Hi5 hypothesis test, which indicates that university students usually prepare a budget to plan their expenses, items 24, 25, 26 and 27 were used. The result gives evidence of a rejection in all cases of the null hypothesis. This allows us to think that most students know how to make a budget and are used to keeping track of their debts, expenses, income and savings. In addition, the majority stated that the expenses they made during the past month were within their economic means, which speaks of proper management of their income and expenses.

The results show that more business students respond well to the question about the effect of inflation (70 %) than those who know the relationship between the interest rate and the price of bonds (31 %). These results contrast with those of Lusardi, Mitchell and Curto (2011) and with those of Klapper, Lusardi and Van Oudheusden (2014), who identified that only 54 % of young Americans answered the question on inflation correctly; however, these studies are not comparable on the interest rates results because they have questions of different levels of difficulty.

The results also show that 49.5 % of the participants have the habit of saving, a percentage similar to that found in Paraguayan students by Ramírez and Vázquez (2021), low compared to the percentage of students who save in Puerto Rico (Castro-González et al., 2014) and high compared to results such as that of Alvarado and Duana (2018) who identified that Mexican adolescents are not interested in saving.

Regarding the perception towards credit, the results of the study are similar to those identified by Mansilla, Denegri and Álvarez (2016) in Chilean students, who have a favorable perception towards indebtedness and credit. As for credit cards, the fact stands out that students prefer debit cards and only a little more than a third have at least one credit card. Of those who use a credit card, 87.5 % do not have more than two, the percentage that pays before the deadline is high, so as not to generate interest, and they pay the full amount (75.8 and 61.6 %, respectively). According to the findings of Mendes Da-Silva et al. (2012) these practices reduce the possibility that students engage in risky behaviors.

Finally, the finding reported by Moreno-García, García-Santillán and Gutiérrez-Delgado (2017), in which they point out the low level of financial knowledge in young people on issues of savings, credit cards, inflation and the calculation of interest rates, does not agree with the results of this research, in which it was identified that among business school students there is a good level of knowledge of the financial variables analyzed and acceptable behavior in terms of savings, use of credit cards and budget preparation.

5. Conclusion

Considering the national and international evidence on the subject, the results of this research indicate that business school students from Veracruz, Mexico have a high level of knowledge regarding interest rates, inflation, investment and credit and show appropriate behavior in terms of savings, credit card use and budgeting. However, it would be expected that the percentages of correct answers would be higher considering that this population has received training in mathematics, economics and finance. With regard to gender, there are more men who answer the questions about inflation correctly and it is women who have better practices in the use of their credit cards.

For future research, it is suggested to investigate the influence that family financial practices have on young people and identify, depending on the program they study, whether the study-load of mathematics and financial subjects influences their level of knowledge and behavior.

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