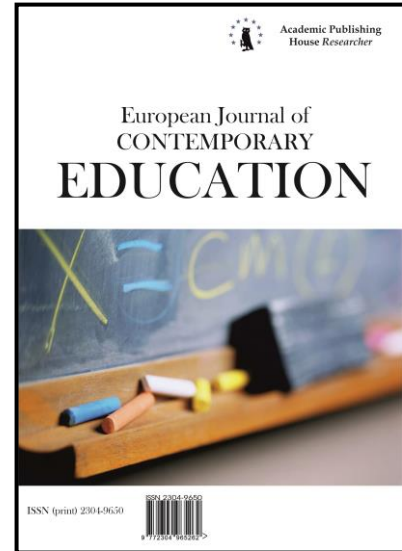




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Gender Differences in Savings. Case Study

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Abstract

Some basic financial topics such as savings and investment are important and required for a financially educated society. Therefore, the purpose of this study is to identify some characteristics that explain the savings habit of college students, as well as finding if this habit differs in relation to gender. For that purpose 60 students from the Universidad Popular Autónoma of Veracruz were surveyed and for data analysis, the statistical techniques used were Z scores to test population proportion and ANOVA to determine if there are differences by gender between the means. The main findings point to students having a savings habit, even though the amounts are minimal (< than \$3,000.00 MXN (\$160.00 USD) per month) and regarding gender differences, it was only proven that there is a difference in the variable INCOME, but not in the other three (Food Expenses, Mortgage Expenses and Savings).

Keywords: Savings, income, college students, gender.

1. Introduction

Savings is one of the most important aspects on the economic life of people, since it is the key to obtain financial Independence and accumulate wealth. Also, having savings allows for economic safety and being able to accomplish goals such as having your own business or acquiring an asset such as a house or a car. Savings can have different objectives as well: save to cover education or health care services, retirement planning or facing different kinds of emergencies.

However, nowadays there are limited saving choices since financial institutions like commercial banking do not offer investment products that guarantee long-term savings as such; this, due to the economic situation in the country, which has caused great instability in financial markets, as mentioned by García-Santillán, Escalera-Chávez & Venegas Martínez (2014).

Several organizations and authors have carried out researches providing relevant findings about the lack of savings habit and investment vision, an example of this is the study made by the

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National Banking and Stock Commission (CNBV for its acronym in Spanish), which obtained alarming numbers related to credits' payments overdue in Mexico: the number is six times higher than it was at the beginning of the decade (CNBV, 2009).

On the other hand, the National Savings and Financial Services Bank (Bansefi for its acronym in Spanish) points out that the population using commercial banking is approximately 37 % of the economically active population. For the most part, this population is located in urban areas and thus, "only 13 % of rural households report Access to savings or credit instruments" (Gómez & Vega, 2006).

Therefore, it is possible to state that for dispositions on economic policy to work, not only must the government intervene, but it is also necessary that citizens are trained and informed in order to participate responsibly in the economy.

It should be noted that Bansefi (2009), mentions that popular savings and credit entities known as "cajas populares" (popular savings funds) are organizations that have traditionally focused on lending financial services to the lowest income population. The numbers from Bansefi indicate that the average loan from this savings funds users is \$19,000.00 MXN or \$1,000.00 USD approximately, which are destined to house construction or improvements, household expenses, business expenses, education and car expenses.

According to Klaehn, J., Helms, B. & Deshpande (2006), savings behavior is present at all socio-economic levels; nonetheless, a large part of the population uses informal instruments due to a lack of access to formal savings instruments in the financial market. Another obstacle that is mentioned is the fact that low-income people do not trust the financial system and this lack of financial knowledge prevents them from saving at formal financial institutions.

Data from the Financial Inclusion National Survey in 2015 show that the population does not know the financial products and services offered in the market, since 53 % do not know where to go in case of financial problem. Specifically, regarding savings, only 44 % have some kind of formal savings product and 51.5 % do not know the existence of saving accounts that do not charge fees.

Furthermore, the savings products more commonly used by Mexicans are payroll accounts (63 %) and savings accounts (40 %); however, 53 % of those with a payroll account and 44 % of those with a savings account do not know the fees charged to make use of these instruments. The former causes that in case of emergency, people resort to loans from family, friends or acquaintances to obtain resources (70 %) and the other choice is pawnshops, being informal sources which can be costly.

The relation between education and savings behavior was explored by Yoshino, Morgan & Trinh (2017), who proved in Japan that the level of education and financial literacy are positively and significantly related to savings and financial inclusion.

Because of the former, it can be considered that regarding educational aspects, nowadays college institutions have an important role in training, since society demands information in specific subjects that are vital in daily life and thus, college institutions provide spaces not only for students but for society in general. In this manner, social, business and government sectors, to mention a few, require intensive extra-curricular training courses, for example in financial topics, which are considered catalysts for economic growth, particularly in the case of savings.

After this approach to the importance of savings, it is pertinent to pose the study questions: what is the savings habit of college students? And, does savings habit differ in relation to gender?; this, the aim of this study is to identify the habit of college students regarding savings and if it differs in relation to gender. It could also be thought that, being college students – regardless of whether or not they work since they do get income from their parents -, then they could have and develop a good savings habit. From there, the hypotheses of this research are posed:

Ha1: College students have the savings habit.

HO1: College students do not have the savings habit.

Ha2: Savings habit in college students differs in relation to gender.

HO2: Savings habit in college student does not differ in relation to gender.

2. Literature review

Savings has been the subject of numerous research papers, mainly regarding retirement planning (Anderson, Baker & Robinson, 2017; Bucher-Koenen & Lusardi, 2011; Lusardi & Mitchell, 2007 & 2008; Van Rooji, Lusardi & Alessie, 2012) or savings behavior in relation to financial

literacy (Lusardi, 2004; Mandell, 2008; Mandell, Schmid Klein, 2009; Sabri, McDonald, 2010; Hamilton et al., 2012), besides being considered one of the financial topics that are part of financial inclusion and literacy (Bernheim, Garret, 1996; Chen, Volpe, 1998, 2002; Peng et al., 2007; Huston, 2010; Cameron et al., 2013; Zait, Berteau, 2015).

Another example of the former is the study by Bernheim, Garrett & Maki (2001), where the authors point out that taking a financial management course during basic education causes a positive effect in decision making in adult age in relation to savings, having a tendency to save a larger portion of income than when said education was not received. It must be noted that the database they used considered the 56 % of unbanked adults worldwide by accessing deposits, loans and financial laws promoting financial inclusion.

However, Mandell (2008) differs from the former; because of to the study he made for the *Jumpstart Coalition for personal financial literacy*, where senior-year students were surveyed measuring variables like: income, money management, savings and investment, expense and credit. Said work proved that financial behavior of young people will not change in time, hence their financial decisions have a negative effect in the economy, which translates to low savings rate and capital formation, low retirement savings and a higher distribution inequity of income and wealth.

On their part, Dupas & Robinson (2009) made an experiment in Kenya, where they selected random bank accounts from market vendors (mostly women) and bicycle taxi drivers (men), in rural areas. Said experiment proves that, despite the large fees to retire money, a large amount of women (40 %) used the accounts and were able to save more, even though the savings opportunities for women are limited. In this sense, results involve important savings and investment obstacles for women according to the study sample.

In this line of thought, Fazio (2009) mentions the importance of promoting savings habit and use of financial institutions services and states that there is evidence that having financial literacy enables the correct use of savings and investment instruments.

De Bassa Scheresberg, Lusardi, & Yakoboski (2014) made a study about personal finance of college educated young *millennials*; among their findings are the fact that 85 % have a savings account, despite being unprepared for economic emergencies, which seems like a contradiction, or is indicative that having a savings account does not imply that enough resources have been saved to face an emergency.

Specifically, saving behavior in college students have been analyzed in previous research, like the study carried out in Malaysia by Sabri & McDonald (2010), who found that students with higher financial literacy are more likely to have better savings behavior and therefore, having fewer financial problems.

Once the literature review on savings has been presented, next the methodology used in this study is explained.

3. Methodology

This study is empiric and non-experimental because there is not a manipulation of independent variables (X) that modify the effect (Y), since they are observed as it happens. Also, it is descriptive and cross-sectional, approached from a quantitative perspective to determine if college students have the savings habit or not, as well as knowing if there is a difference in relation to gender.

3.1. Population and sample

As a result of the interview with directive personnel from the Universidad Popular Autónoma of Veracruz, it was considered pertinent to carry out a study that could provide an insight on students' savings habit, as a first approach to monitor financial literacy of said institution's students. Also, a relevant fact that should be considered is that these students attend college during weekends because for the most part, they work and thus, this schedule fits their needs.

Financial education is a current subject and efforts are being made worldwide to counter the lack of financial education in society; therefore, globally and specifically in the national context, the need for a financially literate society has been visualized, because it would mean a society that makes better financial decisions.

With these arguments, the study was made with the participation of students from the majors in: Social Work, Sports Education and Artistic Education. As a result, the determination of the

sample was not probabilistic, since it was selected by convenience, meaning that the population taken was comprised by the students from the previously described carriers and who were present at the moment of the survey application, which was during a weekend when they attended class.

60 students were surveyed, who comply with two basic inclusion criteria: the first was that they were present during the survey application and the second was that they were enrolled and valid, meaning, without owing any subjects from other semesters.

3.2. Instrument

The instrument was designed form a series of indicators regarding income and savings, as well as some socio-demographic data. The items considered in this study are from the test by Zamora-Lobato et al. (2017).

3.3. Measurement procedure

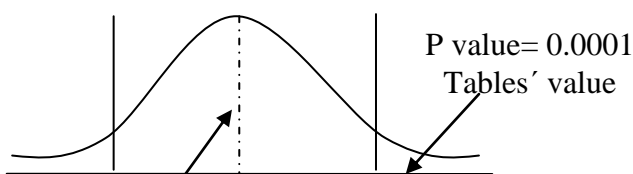
3.3.1. Z score to test population proportion for Ha1 and Ho1

Regarding the savings habit of college students, a Z score to test population proportion was used. This test seeks to measure the corresponding proportions about savings habit using the statistic Z

Consequently, the work hypothesis establishes that mostly, college students have the savings habit, on the contrary, the null hypothesis establish the negation to this assumption. So, in order to contrast the work hypothesis, the test of population proportion is used (Ho: p=0.5, Hi: p> 0.5). The decision criteria states that Ho is rejected if Z calculated > Z critical (tables), if the case is contrary Ho is not rejected.

The procedure of the test establishes that the statistic Z is obtained from the following mathematical expression:

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



Where x = sample proportion, n= sampl

P= 0.5 ó Z=0 P-hat = xi? ó Z= xi?

$$\hat{P} = \frac{x}{n}$$

3.3.2. ANOVA of one factor for Ha2 and Ho2

For the contrast of the hypothesis, the statistical procedure ANOVA is used in order to prove if the savings habit of the UPAV students differs in relation to gender. For that purpose the following format is established:

$$Ho : \mu_1 = \mu_2 = \mu_1$$

$$Ha \ni \mu_i \neq \mu \text{ --- } j = 1, 2, \dots, K$$

Based on theoretical criteria, to calculate the ANOVA it is required to comply with the assumptions of normality and homoscedasticity. K samples upon which treatments were applied are independent and the populations have the same variance (homoscedasticity). In this manner, the following elements intervene in the ANOVA procedure:

Total variation is given by: $SCT = \sum_{j=1}^K \sum_{i=1}^{n_j} (x_{ij} - \bar{X})^2$ hence the intra-groups variation complies with:

$SCD = \sum_{j=1}^K \sum_{i=1}^{n_j} (x_{ij} - \bar{X}_j)^2$ therefore, the global mean is represented by: $\bar{X} = \frac{\sum_{j=1}^K \sum_{i=1}^{n_j} x_{ij}}{n}$. and finally, the

inter-groups variation is: $SCE = \sum_{j=1}^K (\bar{X}_j - \bar{X})^2_{n_j}$

Where: X_{ij} : is the value i-esim of the sample j-esim; N_j : the amount of said sample and \bar{X} : the means.

If the null hypothesis cannot be rejected, $SCE / K-1$ and $SCD / n-K$ are two unbiased estimators of the population variance and the coefficient between them is distributed according to F of Snedecor with $K-1$ degrees of freedom in the numerator and $n-K$ degrees of freedom in the

denominator. The distribution is set out from the two variables X and Y, each with a Chi² with *m* and *n* degrees of freedom respectively: $X \rightarrow \chi_m^2$ y $Y \rightarrow \chi_n^2$

Therefore, if Ho is true, then it is expected that the quotient between both estimations is approximately equal to 1, so that Ho will be rejected if this quotient differs significantly from 1; next the data analysis is presented.

4. Data analysis and discussion

As a result of the data analysis, firstly the socio-demographic characteristics of the surveyed students are described. The frequencies obtained with their mean and standard deviation, as well as the Shapiro-Wilks statistic and the Kolmogorov test with Lilliefors correction and the value of P=0.00 are shown in graphics 1 through 6, with the gender, age, marital status, work status, type of job they have (considering they are employees who study on weekends) and lastly, number of family members.

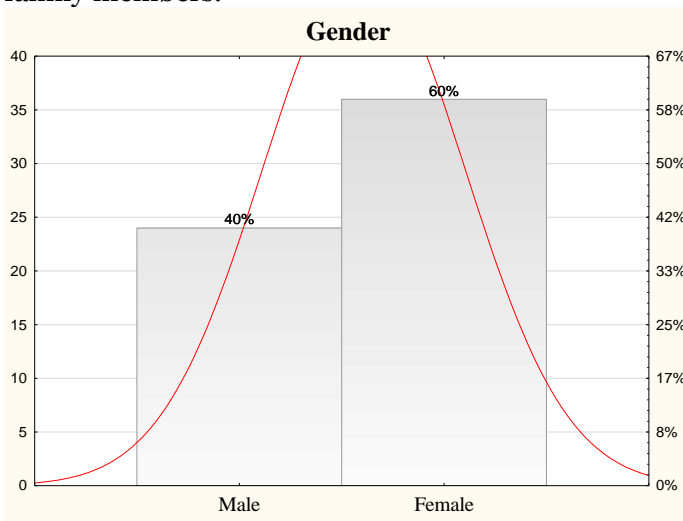


Fig. 1. Gender

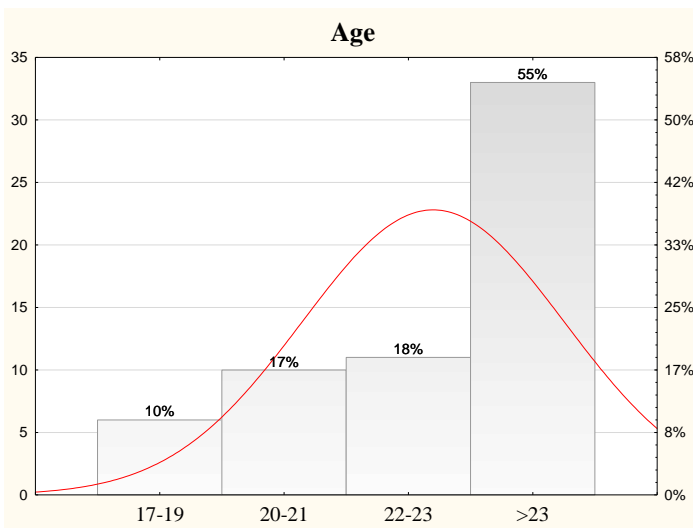


Fig. 2. Age

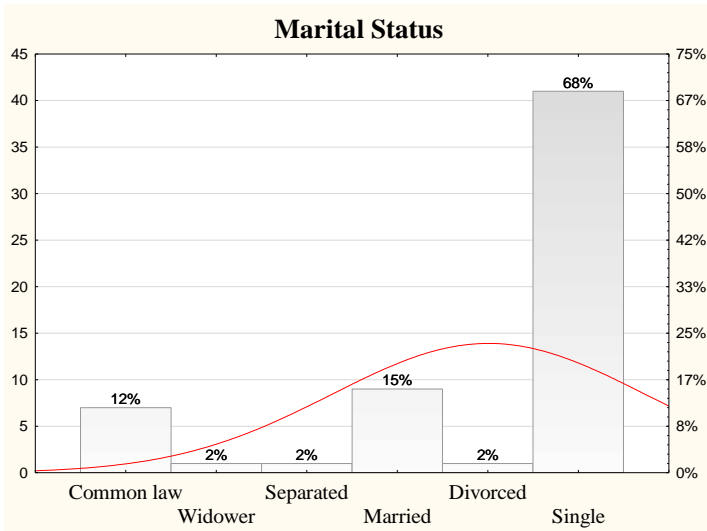


Fig. 3. Marital status

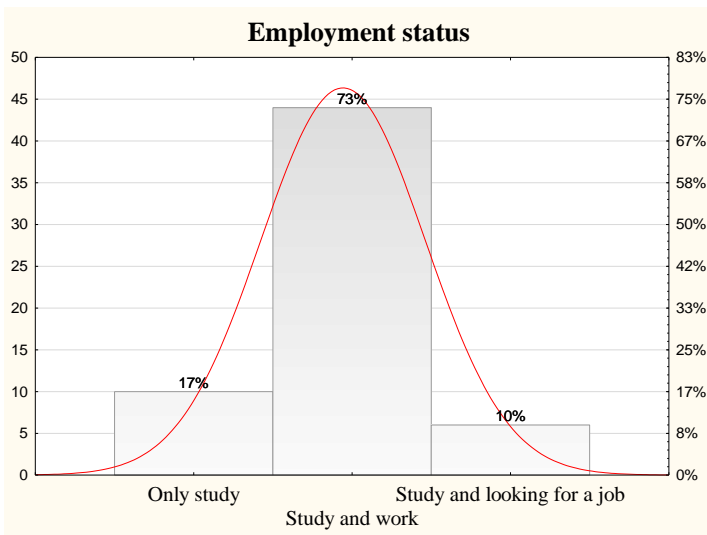


Fig.4. Employment status

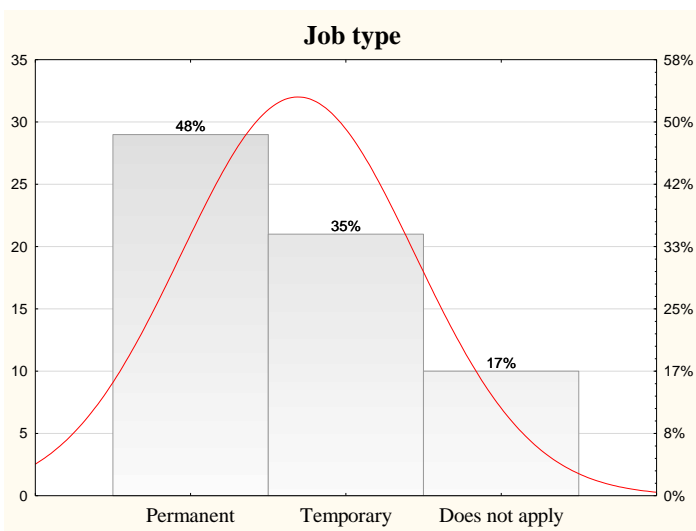


Fig. 5. Job type

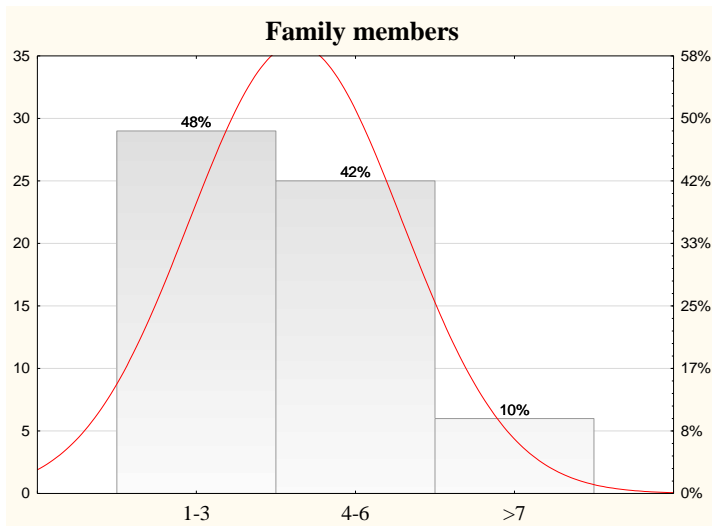


Fig. 6. Family members

Resuming, the most significant results from the student’s profile were: 60% are women whose age is over 23 years old, as proven by the larger percentage (55%) and their marital status is single (68%), they work and study as proved by the largest percentage obtained (72%) and their job type is permanent (48%). Finally, their families are composed by 1 to 3 members (48%). For the contrast of the hypothesis, the analysis of the corresponding statistical test (*Z* and ANOVA) continues.

Procedure for savings habit:

If $p > 0.5$ is not equal and is assumed as alternate hypothesis, it means that the null hypothesis is the affirmation that $p = 0.5$ and the value $\alpha=0.05$ is considered for its level of significance. Hence, the basis is the asseveration that: $H_0: p = 0.5$ and $H_1: p > 0.5$

Graphically, it can be observed that 92% of the surveyed students save very little, since option 1 refers to an amount lower than \$3,000.00 MXN.

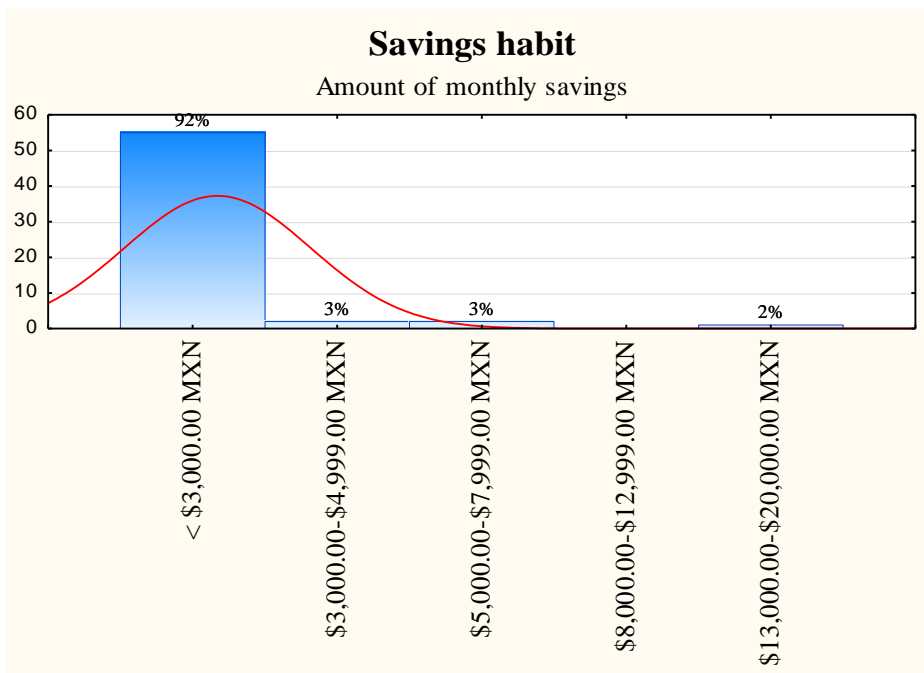


Fig. 7. Savings habit (monthly saving amount)

In such manner, to prove a population proportion p it is very important the sample statistic

\hat{p}

$Z = ?$

$\hat{p} = \frac{x}{n}$

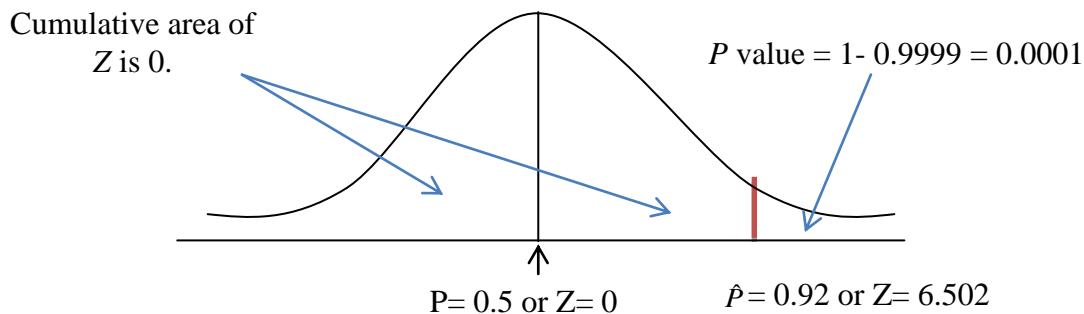
$p = .5$

$q = 1 - p$

$n = 60$

$$Z = \frac{\hat{p} - p}{\sqrt{\frac{(p)(q)}{n}}} = \frac{.92 - .50}{\sqrt{\frac{(.5)(.5)}{60}}} = \frac{.42}{\sqrt{\frac{.25}{60}}} = \frac{.42}{0.06454972} = 6.502$$

$Z_{calculated}$ 6.502 is $>$ a $Z_{theoretical}$ and the value of $P = 0.0001$ is $<$ than the significance $\alpha=0.05$, then H_0 is rejected.



For the value of $Z = 6.502$ we use the value 0.999 from the tables for the cumulative area on the left of Z value and the area on the right of the statistic Z is $1 - 0.9999 = 0.0001$ and if we consider that it is $<$ to the significance level $\alpha=0.05$ then there is enough evidence to reject the null hypothesis.

ANOVA for means differences in: income, expense and savings habit by gender

In table 2, the value of Levene statistic can be seen, which in Income is less than significance 0.05 and so, equality of variances is rejected in this factor. Nonetheless, for Food expenses, Mortgage expenses and Savings, significance is higher than 0.05, suggesting equality of variances.

Table 2. Variance homogeneity test

	Levene Statistic	df1	df2	Sig.
Income	7.182	1	58	.010
Food expenses	2.583	1	58	.113
Mortgage expenses	2.157	1	58	.147
Savings	.735	1	58	.395

Among these lines, table 3 shows ANOVA with statistic F and its significance, which, as in table 2, supports the evidence that for factor Income the equality of variances hypothesis is rejected, not to in the factors: Food expenses, Mortgage expenses and Savings, where the significance is higher than 0.05, suggesting equality of variances.

Table 3. ANOVA

		Sum of		Quadratic		
		squares	df	mean	F	Sig.
Income	Inter-groups	9.344	1	9.344	10.104	.002
	Intra-groups	53.639	58	.925		
	Total	62.983	59			
Food expenses	Inter-groups	1.003	1	1.003	1.022	.316
	Intra-groups	56.931	58	.982		
	Total	57.933	59			
Mortgage expenses	Inter-groups	1.600	1	1.600	1.619	.208
	Intra-groups	57.333	58	.989		
	Total	58.933	59			
Savings	Inter-groups	.069	1	.069	.166	.685
	Intra-groups	24.264	58	.418		
	Total	24.333	59			

In [table 3](#) the statistic F of the dimensions Food expenses, Mortgage expenses and Savings shows a significance level higher than 0.05, which leads us to conclude that there are no significant differences by gender.

Still, in the variable Income the significance value is lower than 0.05, which leads to the conclusion that there is difference between means.

Consequently, to identify the theoretical value of F with 1 df_1 in the numerator and 58 df_2 in the denominator, the closest value in the tables is taken, which is 60 df_2 , so the F value is 2.791 from where, if the decision criteria is taken, we get that:

The value for calculated F for Income is $10.104 >$ critical F (2.791), rejecting the null hypothesis. The value of calculated F for Exp-Food is $1.022 <$ critical F (2.791), the value of calculated F for Exp-Mort-Serv is $1.619 <$ critical F (2.791), in both cases there is evidence to reject the null hypothesis, thus accepting the alternate hypothesis. Finally, the value of calculated F for Savings is $.116 <$ critical F (2.791), not having evidence to reject the null hypothesis, rejecting the alternate hypothesis instead.

5. Final discussion and conclusions

The purpose of this study focused on measuring some aspects that explain savings habit in college students; also, another purpose was to identify if this behavior differs in relation to gender. The findings are described next.

Most of the students who answered the survey were female, whose age is 23 years old or more. Also, they are single and are dedicated mainly to their studies and work, being the latter permanent.

The ANOVA analysis proved that there isn't any differences related to gender in the variables of Food expenses, Mortgage expenses and most importantly, savings behavior, even though there is a difference in the income they receive, which can be a reflection of the job inequity that prevails not only in Mexico but in many countries.

This data must be considered carefully since different studies have highlighted the role of women in several fields, both work and study related; this, because they are preparing more, as stated in the study of financial inclusion of women from the VI region ([Salazar et al., 2017](#)), where participation of women in financial area has increased. Regarding to savings, this study shows that more than 50% of women have some kind of savings capacity, even though their activities are

restricted to house work. Also, those who have some savings use them for housing, while a minimal percentage use it as savings.

Even though in this research where the subject of savings was approached specifically and no differences related to gender were found, some financial literacy studies have proved that still, there is an inequity between men and women, like the study by Chen & Volpe (2002), where female college students proved to have less financial knowledge than their male counterparts or the research by Moon, Ohk & Choi (2014) in China, who found that female college students have less financial education and opportunities than males, which causes great differences in their financial literacy related to gender.

On the other side, more than half of the students stated to earn an income that does not surpass the amount of \$3,000.00 MXN per month and finally, most of them still depend on their parents, situation that is demonstrated by the large percentage of responses (42%), being a logic fact given that the surveyed college students remain single.

It is possible to express some considerations about factor 1, which refers to income by activity or job. The analysis reveals that income earned by job development of students is seen pessimistically, in comparison to the latest report from the Special Advisor of the UN General Secretary for Inclusive Financial Development, who points out that around 2,500 million adults nowadays are excluded from the financial system. In said report, the data from the Global Findex (2014) is taken, which in its 2014 database states that 80% of people living with less than \$2.00 USD a day do not have accounts at any financial institution.

Other items that were measured were: food and mortgage expenses, which were integrated to the questions of the survey applied to the students. In the same line of thought, a series of indicators related to Income and Savings as well as some data for socio-demographic profile were added. All the items considered in the survey were taken from the test by Zamora-Lobato et al. (2017).

Among the findings of this survey applied to college students is the fact that they consider important and useful to have a budget for managing their resources, being able to identify that students perceive as important to have a higher income to cover their basic needs.

The former agrees with the research by Lusardi & Mitchell (2007), where respondents answer several questions that measure their preferences in literacy and financial risks, finding that many households are not familiar with economic concepts needed to make financial decisions, in such manner that there is a lack of financial literacy in young people and senior adults, who are not sufficiently informed about financial concepts, which causes grave consequences for savings, retirement plans, mortgages and other financial decisions.

Factor IV measures savings of college students, where it is clearly proved that savings habit in college is not enough and this is due to a lack of financial inclusion, as mentioned in other researches aimed to study the levels of financial knowledge, among which stands out the one by Bucher-Koenen & Lusardi (2011), who made a study about German households that included a series of questions about financial knowledge and the consequences of lack thereof.

It is also important to consider the environmental factors involved in college students' savings habit, as proven by Hamilton, Shobe, Murphy-Erby & Christy (2012), who found out that even though the parents of young people from low-income households encourage their children to save, those families lack savings for the future or to reach a specific goal due to the lack of resources. In the case of students considered in this research, it can be observed that their income is limited and this may influence their savings capacity.

Perception is another fundamental element that must be considered regarding savings behavior, since for example, if a young person has a negative perception towards savings for the future, we would think that he/she will be less likely to have emergency savings or make a financial planning for the future (Atkinson & Messy, 2012).

From a specific context, the present study provides an insight to the savings behavior of college students in Mexico, particular, from Veracruz, proving that saving is still not enough, besides finding that there were not any significant differences related to gender in the studied population. Other research might enrich the existing information about savings from other contexts and also confirm if truly there aren't any significant differences between genders in other places or population groups.

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Annex

Instrument

a.- Gender: Male () Female ()

b.- Age: ____ years old

c.- Marital status:

() Common law () Separated () Divorced ()
Widower () Married () Single

d.- Current job status:

() Only study () Study and work () Study and looking for a job

e.- Job type:

() Permanent () Temporary

f.- Number of family members:

() 1-3 () 4-6 () >6

g.-How much do you earn for your job, activity or business each month?

- () Less than \$3,000.00 MXN (\$160.00 USD approx.)
- () \$3,000.00 - \$4,999.00 MXN (\$160.00 - \$264.00 USD approx.)
- () \$5,000.00 - \$7,999.00 MXN (\$265.00 - \$424.00 USD approx.)
- () \$8,000.00 - \$12,999.00 MXN (\$425.00 - \$689.00 USD approx.)
- () \$13,000.00 - \$20,000.00 MXN (\$690.00 - \$1,060.00 USD approx.)
- () More than \$20,000.00 (\$1,060.00 USD approx.)

h.-How much do you spend on food and groceries per month?

- () Less than \$3,000.00 MXN (\$160.00 USD approx.)
- () \$3,000.00 - \$4,999.00 MXN (\$160.00 - \$264.00 USD approx.)
- () \$5,000.00 - \$7,999.00 MXN (\$265.00 - \$424.00 USD approx.)
- () \$8,000.00 - \$12,999.00 MXN (\$425.00 - \$689.00 USD approx.)

- \$13,000.00 - \$20,000.00 MXN (\$690.00 - \$1,060.00 USD approx.)
- More than \$20,000.00 (\$1,060.00 USD approx.)

i.-How much do you spend on house or services per month?

- Less than \$3,000.00 MXN (\$160.00 USD approx.)
- \$3,000.00 - \$4,999.00 MXN (\$160.00 - \$264.00 USD approx.)
- \$5,000.00 - \$7,999.00 MXN (\$265.00 - \$424.00 USD approx.)
- \$8,000.00 - \$12,999.00 MXN (\$425.00 - \$689.00 USD approx.)
- \$13,000.00 - \$20,000.00 MXN (\$690.00 - \$1,060.00 USD approx.)
- More than \$20,000.00 (\$1,060.00 USD approx.)

j.-How much do you save per month?

- Less than \$3,000.00 MXN (\$160.00 USD approx.)
- \$3,000.00 - \$4,999.00 MXN (\$160.00 - \$264.00 USD approx.)
- \$5,000.00 - \$7,999.00 MXN (\$265.00 - \$424.00 USD approx.)
- \$8,000.00 - \$12,999.00 MXN (\$425.00 - \$689.00 USD approx.)
- \$13,000.00 - \$20,000.00 MXN (\$690.00 - \$1,060.00 USD approx.)
- More than \$20,000.00 (\$1,060.00 USD approx.)