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## Financial Literacy on College Students in the Context of Tuxtepec, Oax

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### Abstract

The objective of this study is to determine the variables that explain the knowledge of financial literacy among college students in Tuxtepec, Oaxaca, and to identify whether the level of financial literacy that prevails in these students differs by gender, age and school grade. To do so, the study is based on a theoretical reference recently exposed by Goyal and Kumar (2021), who analyzed 502 articles between the years 2000 to 2019, in their findings they found that the gender gap and financial education, impacts on financial behavior. The participants of the study were 600 college students of a public sector Institution. The statistical procedure for data analysis was: first, the instrument was validated with Cronbach's alpha and normality through the values of skewness and kurtosis, then the correlation matrix, Brattle's test of Sphericity with Kaiser and the sample adequacy measure were calculated, and the extraction of components under the criterion of eigenvalues > to 1 and total variance. Finally, to verify if there is a difference in relation to the variables of financial education, gender, age and employment status, an ANOVA analysis is performed. Finally, the findings show that there is a difference between the variables: Gender and financial literacy (Saving and Investment); Age (Spending and Credit); Employment Status (Income, Money Management, Spending and Credit, Saving and Investment). This leads us to think that the higher level student presents a low level of financial knowledge, which could affect their personal growth, and that the gap of gender, age and employment status makes a difference in relation to the variables studied.

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### **1. Introduction**

Currently, the issue of financial literacy is becoming more important on a daily basis due to the international requirements issued by some organizations such as the G-20, which recognizes that financial inclusion is a key factor in the fight against poverty, which is why policies must be designed to help improve this aspect in all countries around the world. In this regard, the recent work of Dinc, Cetin, Bulut and Jahangir (2021), who conducted a study in the Islamic region, based on the steps recommended by DeVellis (2003), focused on the development of a scale of financial inclusion, which in addition to covering all segments of the Islamic financial sector, was also applicable to any country, even those who are not familiar with the financial practice.

Other findings were reported in the study conducted by Lusardi, Hasler and Yakoboski (2020) in the United States, in which they show that financial fragility is strongly linked to financial literacy and many Americans are ill-equipped to deal with the financial decisions necessary to weather a financial crisis such as that of Covid-19, being strongly associated with specific demographic groups, such as African Americans and those with low incomes.

In the same idea Swiecka, Yesildag, Özen and Grima (2020) conducted a study in Poland with the participation of high school students with an age range of 5 to 16 years, whose objective was to determine the level of financial literacy of students, as well as to verify whether the level of financial literacy is different gender and the effect of gender on financial literacy at an early age. Their study showed that there is a good level of financial literacy among high school students in Poland, although gender makes a difference in financial behavior and in the use of financial instruments, it does not influence the level of financial literacy of students.

Morgan and Long (2020) examine the effects of financial education on financial inclusion and savings behavior in Laos, the most sparsely populated country in Southeast Asia. In their reported results, they note that financial education has statistically positive effects on both financial inclusion and savings, and people with higher levels of financial education are more likely to have savings in both formal and informal forms than those with lower levels of financial education, even when controlling for income and education.

Niu, Zhou and Gan (2020) conducted a study in China on the level of financial education and its impact on retirement readiness, showing that even though China is the second largest economy in the world, a large proportion of Chinese lack financial education, even basic financial knowledge. In addition, they report findings that women, the elderly and the poorly educated lack financial literacy; those with advanced financial literacy tend to prepare for retirement by purchasing long-term financial plans and increase the likelihood of purchasing private pension insurance.

On the issue of socio-demographic profile, Sahul and Jia (2020), conducted a study in Malaysia where they show that socioeconomic factors related to education, income, ethnicity, marital status and the number of credit cards that people have, influence the decisions of payment of credit cards. Other works that have been identified in the existing literature on financial education, is a systematic and bibliometric study conducted by Goyal and Kumar (2021), in their work they perform an analysis of 502 articles published in journals between the years 2000 to 2019, with the aim of adopting a meticulous approach aimed at presenting quantitative and qualitative knowledge on the topic financial education, from three perspective: 1) levels of financial education among different cohorts, 2) the influence that financial education experts on financial planning and behavior, 3) the impact of financial education. In their findings they found that the gender gap, tax and insurance literacy and digital financial literacy impact financial planning and behavior.

Based on the arguments previously exposed about Financial Education, we can see that it is evidently a phenomenon that is in the academic, scientific and political discourse. Therefore, the following questions arise:

#### **Question Research**

What are the variables that explain the knowledge of financial education among college students in Tuxtepec, Oaxaca? In addition, it is pertinent to ask: Does the level of financial education that college students have differs by gender, age and school grade? Therefore, the following objectives are set: To determine which variables explain the financial literacy

knowledge of college students in Tuxtepec, Oaxaca. In addition, to identify whether the level of financial literacy among college students differs by gender, age and grade level.

### **Hyphotesis**

H1. Financial literacy in college students is explained by at least one factor.

H2. Prevalent financial literacy among college school students differs by gender, age, and grade level.

### **2. Literature review**

Currently, the topic of financial education is gaining strength in the international context, due to the interest of countries in increasing the level of bankarization of their population. Despite the efforts made by academics, international organizations and even local governments to improve financial education, the expected results have not been achieved. In this regard, they recently carry out a study Lusardi et al. (2020) where they showed that from 2017 to 2020, there was only a 3 % increase of people who correctly answered questions about financial education, they also report that, in the case of gender, this phenomenon is observed more in women, low-income people, unemployed or disabled, young people and those with less education, same results that are consistent with the study of Wagner (2019).

In the same idea, Sembiring and Leon (2021) contribute to the literature on this construct, as they analyze the relationships between demographic factors with pension planning and financial literacy in Indonesian population. In that study, they find that age, education level, marital status and income have a significant relationship with financial literacy and pension planning; and gender factor has no relationship with financial literacy. However, in the study of Kawamura, Mori, Motonishi and Ogawa (2021), they point out that people with higher financial literacy tend to be more daring and reckless with some financial aspects, unlike people who have lower financial literacy, they may be better at retirement planning.

But what happens with people who are illiterate, in this regard Xue, Gepp, O'Neill, Stern and Vanstone (2020) conducted a study called: Financial literacy and financial strategies: The mediating role of financial concerns, in their findings identify that people with financial illiteracy are more likely to have financial concerns, also reduce their expenses, increase their debts and in some cases may even sell their homes. Klapper and Lusardi (2019) conducted a study in which they found that not only in developing countries there are gaps in financial literacy, but also in countries with well-developed financial markets, and that, worldwide, only one in three adults has financial literacy; women, poor and less educated adults are the most lacking in financial literacy.

Other works have explored these behaviors in single people, hence the work of De Beckker, De Witte and Van Campenhout (2019), in their study made up of 12 countries ( Belgium, Canada, Croatia, Estonia, Hong Kong, Jordan, Latvia, Malaysia, Netherlands, New Zealand, Thailand and the United Kingdom), show that single people, with less education and unemployed with low income, are those who lack financial illiteracy, and on the contrary people with a high level of education who live with a partner, have a high percentage of financial literacy, financial behavior and financial attitudes, the countries that belong to this group are Belgium, Canada, Hong Kong and New Zealand.

Similar results were reported by Stolper and Walter (2017) who showed that financial literacy turns out to be considerably lower in transition economies and lower income economies compared to industrial economies; the elderly, the young, as well as less educated and lower income people, have particularly low literacy levels, making financial mistakes more frequently. On the other hand, Cucinelli, Trivellato, Zenga (2019) conduct a study in fourteen Italian regions in which they show that not only the socio-demographic and socio-economic conditions of individuals, but also certain characteristics of the regional context where they live have an impact on their financial literacy.

The study conducted by Karakurum, Kokkizil and Uysal (2018), find that women, young people and people who cannot read or write in the official language of their country of residence have less financial literacy, hence financial literacy increases with quality education. Another study by Ćumurović and Hyll (2018) reveals that there is a positive relationship between financial literacy and self-employment, as people with less financial literacy are more likely to work as wage earners than take steps towards self-employment.

Garg and Singh (2018) show that in most parts of the world the level of financial literacy among youth is low, moreover socio-economic and demographic factors such as age, gender, income, marital status and educational level influence the financial literacy of youth and there is an interrelationship between financial knowledge, financial attitude and financial behavior. Swiecka et al. (2020) show that young people aged 15-16 years have a very good level of financial literacy as in a survey conducted 45.3 % scored medium level and 43.8 % scored high level in financial literacy.

Eniola and Entebang (2017) conduct a study on the level of financial literacy of SME owners and managers in Nigeria, their finding confirms that financial literacy of SME owner-managers is not related to how well they perform their activities within SMEs, however, for financial decision making it does affect knowledge on financial literacy.

In the student population have been explored relatively frequently in the topics on financial literacy, on this we cite the work of Aydin and Akben (2019), who analyzed financial behavior in university students from 14 campuses in the region of Turkey. The findings they reported show that students with higher parental income have more financial literacy and with it more favorable financial attitudes; those who receive financial education and learn about finances through their parents have less concern for repayment of their student loans, similar results those reported by Fan and Chatterjee (2018).

In this idea, Zhu (2018), finds that family financial socialization is another important factor in financial attitudes, while direct financial teaching by parents has a positive impact on adolescents' financial behavior.

To this research can be added the studies conducted by Al-Bahrani, Buser and Patel (2020), whose analyze a sample of 529 college students at three institutions in the southeastern United States, in their findings they report that financial literacy is acquired through education and the culture that exists in the country of residence, not through acquired experience, as there is a gender gap that develops at an early age, i.e. before people have had the opportunity to develop financial skills through experience or specialization in domestic roles.

On the contrary, Douissa (2020), analyzes students from the University of Sharjah in the United Arab Emirates, in her results she shows that the factors used in the literature such as: gender, educational level, business studies, financial inclusion, family income, do not explain financial behavior or the dimensions of financial attitude, they only capture the knowledge dimension of financial literacy.

Ramos, García-Santillán and Molchanova (2020), measured the financial competence of 224 university students in Mexico and Colombia, finding that university students in Colombia have a higher level of financial education than Mexican students, in the topics of retirement planning, inflation, credit (use of credit cards), savings and investment, and risk diversification. García (2020) also analyzes high school students, and in his findings he reports that, according to the variables of savings and investment, students have a favorable attitude towards their personal finances and there is a significant relationship between financial knowledge and the application of financial products. This behavior is associated with the context in which the students have developed, i.e., from home they have fostered the customs of their parents towards the administration of family finances.

### **Design and method**

The study is a non-experimental quantitative, descriptive, exploratory and correlational cross-sectional study. The participants were 600 college students enrolled in two institutions of the Tecnológico Nacional de México, campus Tuxtepec and the campus of the Papaloapan basin, both belonging to the state of Oaxaca. The type of sampling is non-probabilistic by self-determination since it was considered to apply the sample for convenience to the groups, which were previously agreed with the campus authorities and the research group and also, with the support of some professors. The instrument is the Likert scale used in García-Santillán, Contreras-Rodríguez and Moreno-García (2017) which integrates topics associated with income, money management, savings and investment, as well as spending and credit, all in relation to knowledge, use and application.

The procedure for measuring the data matrix is as follows: first, the instrument is validated through Cronbach's alpha internal consistency index and the normality of the data through the values of skewness and kurtosis, to subsequently calculate the correlation matrix and the values of

Bartlett's test of Sphericity with Kaiser and the measure of sampling adequacy (MSA) and the extraction of components under the criterion of eigenvalues > 1 and the total variance. Finally, to verify if there is a difference between college students at the higher level in Tuxtepec, Oaxaca in relation to the variables of financial education, gender, age and employment status, an ANOVA analysis is carried out.

**3. Data analysis**

The validity of the test yielded a Cronbach's alpha value of .745 in the 42 items, so the internal consistency is acceptable. In relation to the conformation of the database, of the 600 college students whose participated (Table 1), 322 were male (51.8 %) and 289 were female (48.2 %), the age ranged from 17 to 29 years old and a significant percentage were working students (71.7 %).

**Table 1.** Descriptive variables profile

Gender	%	Age	%	Labor status	%
Male	51.8	17 to 20	60.00	Study	71.7
Female	48.2	21 to 24	39.00	Study and work	28.3
		25 to 29	1.00		

Source: Own.

**Normality test of the data**

In this section, the value of skewness and kurtosis for samples larger than 300 is presented, according to this information, the values of the study sample (600 college students), the value of skewness should be less than 2 and kurtosis should be less than 7. The values of skewness and kurtosis of the study variables are shown in Table 2, all of them show values less than 2 and 7 respectively.

**Table 2.** Theoretical values skewness and kurtosis, and values of the sample

Simple size	Z value	skewness	kurtosis	p value	Null hypothesis	Distribution
small n < 50	> 1.96	Ignore	Ignore	0.05	Reject	Non normally
medium 50 < n < 300	> 3.29	Ignore	Ignore	0.05	Reject	Non normally
large > 300	Ignore	> 2	> 7	0.05	Reject	Non normally
Skewness and kurtosis of the study sample						
		Income	Money management	Saving and investing	Spending and credit	Distribution
skewness		0.174	0.073	0.249	0.395	Normal
Standard error of skewness		0.100	0.100	0.100	0.100	Normal
kurtosis		-0.658	-0.603	-0.322	0.733	Normal
Standard error of kurtosis		0.199	0.199	0.199	0.199	Normal

Source: Hae-Young Kim (2013)

Subsequently, we report the tests that allow us to verify the adequate structure of the data to determine the set of variables that explain the knowledge of financial education of college students in Tuxtepec, Oaxaca. Table 3 shows the correlation between the variables, all are positive, tend to one and none is zero or one, so it does not constitute an identity matrix, so it is feasible to continue with the factor analysis. In addition, the chi-square test is significant and the KMO value is greater than 0.712. Also the values of the Sample Suitability Measure (MSA) are all greater than 0.500.

**Table 3.** Correlation matrix, KMO and MSA

Variable	Income	Money management	Saving and investment	Spending and credit	MSA
Income	1.000	.528	.458	.338	.692
Money management		1.000	.355	.344	.713
Saving and investment			1.000	.478	.714
Spending and credit				1.000	.735
Determinant = .408					
Measure Kaiser-Meyer-Olkin.712					
Chi-square (6 df)534.421					
p value.000					

Source: Own.

The principal components method was applied for the extraction of components and the eigenvalue criterion > 1. The results are shown in Table 4. As can be seen, the analysis detects a factor that explains 56.32 % of the total variance and the contribution of each variable to the model.

**Table 4.** Component matrix, eigenvalue and variance

Variables	Component 1	Communalities
Income	.784	.614
Saving and investment	.767	.588
Money management	.742	.550
Spending and credit	.707	.501
eigenvalue	2.253	
% total variance	56.324	

Source: Own.

The results of the ANOVA analysis are shown below, which allowed verifying if there is a difference between the college students of Tuxtepec, Oaxaca in relation to the variables of financial education, gender, age and employment status. It should be noted that the values *p* values associated with each factor in relation to gender, as well as the values of the variables income, money management, spending and credit are less than 0.05, only the saving investment variable is greater than 0.05. This indicates that there is no difference in relation to gender with respect to the first three variables, however, in terms of savings and investment, there is a difference between men and women.

**Table 5.** ANOVA-financial knowledge and gender

Variables	F	<i>p</i>
Income	6.024	.014
Money management	12.656	.000
Spending and credit	13.780	.000
Saving and investment	3.495	.062

Source: Own.

To verify the difference between the college students in relation to the variables of financial knowledge and age. The results are shown in Table 6, in which it is observed that the first three variables are significant and only the spending and credit variable is greater than 0.05, which denotes that there is no difference in relation to the college students' financial knowledge (income, financial management, savings and investment), in terms of age. However, financial knowledge does differ in terms of spending and credit.

**Table 6.** ANOVA-financial knowledge and age

Variables	F	Sig
Income	3.526	.000
Money management	2.566	.007
Saving and investment	3.664	.000
Spending and credit	1.246	.264

Source: Own.

Finally, to verify if there is a difference between the college student in relation to the variables of financial education and their employment status, the results are shown in [Table 7](#). As we can see, each variable that make up the financial education construct, all *p* values are greater than 0.05, which reveals that there is a difference between the financial knowledge of college students who work and those who do not.

**Table 7.** ANOVA-financial knowledge and labor status

Variables	F	<i>p</i>
Income	1.693	.194
Money management	.338	.561
Saving and investment	.832	.362
Spending and credit	.052	.820

Source: Own.

#### 4. Conclusion

In this work an ANOVA analysis was carried out to verify if there is a difference between college students in Tuxtepec, Oaxaca in relation to the variables of financial education, gender, age and employment status. The results show that there is a difference between the variables: Gender and financial knowledge (Saving and Investment); Age (Spending and Credit); Work Status (Income, Money Management, Spending and Credit, Saving and Investment).

Therefore, it is concluded that college students in Tuxtepec, Oaxaca have low level of financial literacy which may affect their economic growth as they lack the ability to take financial risks and even make decisions regarding the acquisition of wealth. As pointed out by Xue, Gepp, O'Neill, Stern and Vanstone (2020), in their findings they identify that people with financial illiteracy are more likely to have financial worries, reduce their expenses, increase their debts and in some cases may even sell their homes.

The results of this study are in agreement with the findings reported by Garg and Singh (2018), whose found that the level of financial literacy among youth college is low, moreover, socio-economic and demographic factors such as age, gender, income, marital status and educational level influence the financial literacy of youth and there is an interrelationship between financial literacy.

These results are consistent with the study by Ramos, García-Santillán and Molchanova (2020), whose reported that college students in Colombia have a higher level of financial education than Mexican students in the areas of retirement planning, inflation, credit (use of credit cards), savings and investment, and risk diversification. However, in relation to gender, in this study there was no evidence of any difference between the variables: income, money management, spending and credit, but not in the variable savings and investment. This is evidence that there is no difference in relation to gender with respect to the first three variables, however, in what refers to saving and investment there is a difference between men and women. Regarding this result, it is concordant with that reported by Lusardi et al (2020), Jamie (2019), Klapper and Lusardi (2019), who showed that the lack of financial knowledge occurs more in women.

In relation to the variables on financial knowledge and age, the results show that the first three variables are significant (income, money management, savings and investment) that is, there is no difference between them, only the variable expending and credit is different in terms of age. And in relation to employment status in all the variables analyzed there is a difference between those who work and those who do not work. Relevant to this result is the study carried out by



Semiring and Leon (2021), who showed that age, level of education, marital status and income have a significant relationship with financial education and pension planning.

The results of this research are not in line with those reported by Douissa (2020), as it shows that the factors used in the literature such as: gender, educational level, business studies, financial inclusion, family income, do not explain financial behavior or the dimensions of financial attitude, they only capture the knowledge dimension of financial literacy. Similarly, these results do not coincide with what García (2020) reported, since in his study of high school students he finds that, according to the savings and investment variables, students have a favorable attitude towards their personal finances and there is a relationship difference between financial knowledge and application. of financial products. They also differ from the results found by Swiecka et al. (2020) who show that young students between 15 and 16 years of age have a very good level of financial education since in a survey conducted 45.3 % obtained a medium level score and 43.8 % achieved a high level score in financial literacy.

### 5. Future research

Based on the results presented, which were compared with the studies that were the basis for this work, the following is now presented: It is necessary to continue fighting for higher education institutions to include subjects related to the topic of Financial Inclusion in their curricula. In this variable, financial education is already immersed in the different topics associated with financial products and services offered in local financial systems and throughout the world. Financial knowledge could help to increase the use of and access to these services and thus increase Financial Inclusion.

It is important that Financial Institutions and Educational Institutions explore options to establish collaboration agreements and jointly design new strategies for the contents of educational programs, based on the offer of financial services and products, all this, in order to improve financial knowledge among the student population.

It would be interesting to continue evaluating the perception of elementary and high school students in the different municipalities of the state of Oaxaca, in order to know the gaps that exist in relation to financial issues and in turn propose adjustments to the school curriculum from this level, so that when they reach higher education they have solid knowledge on financial issues.

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