Attitude, behavior and financial knowledge of young university students in Mexico

Actitud, comportamiento y conocimiento financiero en jóvenes universitarios en México

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Abstract

Financial literacy, which includes the dimensions of attitude, behavior and knowledge, is a condition for individuals to achieve financial well-being. In the population of young university students, it is a relevant aspect since they begin the financial life cycle, with a forecast of medium and high income, but whose generation of wealth will depend on decision making. Therefore, the objective of this paper is to measure the level of financial literacy of students at the Universidad Autónoma del Estado de México, in order to identify areas of opportunity and gaps to address. For which an instrument designed in Ecuador was applied, for the Latin American context, which meets the necessary psychometric levels. The sample consisted of 521 participants from various programs and educational spaces that were close to graduation. Analysis was subject to central and dispersion measures as well as non-parametric group comparison tests. Among the results, it was identified that most students are at a high level of financial literacy, although the lowest score was obtained in the knowledge dimension. Significant differences were found in gender, by educational program, academic space and employment status.

Financial Knowledge, Financial Behavior, Financial Attitude, Financial Literacy, University students, Comparison

Resumen

La alfabetización financiera, que incluye las dimensiones de actitud, comportamiento y conocimiento, es una condicionante para que los individuos logren alcanzar el bienestar financiero. En la población de jóvenes universitarios resulta un aspecto relevante toda vez que inician el ciclo de vida financiero, con pronóstico de ingresos medios y altos, pero cuya generación de riqueza dependerá de la toma de decisiones. Por lo tanto el objetivo del presente trabajo es medir el nivel de alfabetización financiera de estudiantes de la Universidad Autónoma del Estado de México, con la finalidad de identificar áreas de oportunidad y brechas por atender. Para lo cual se aplicó un instrumento diseñado en Ecuador, para el contexto latinoamericano, que cumple con los niveles psicométricos necesarios. La muestra estuvo conformada por 521 participantes de diversos programas y espacios educativos que estuvieran próximos al egreso. Entre los resultados se identificó que en gran proporción los estudiantes se encuentran en el nivel alto o muy alto de alfabetización financiera, aunque la puntuación más baja se obtuvo en la dimensión de conocimiento. Se encontraron diferencias significativas en género, por programa educativo, espacio académico y estatus laboral.

Conocimiento Financiero Comportamiento Financiero, Actitud Financiera, Alfabetización Financiera, Universitarios, Comparación

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Introduction

Financial literacy is a necessary skill to cope with life today. At the beginning of this millennium, some economists such as Alan Greenspan identified that financial skills are a key ingredient to develop new economies and create new financial opportunities for all, as cited by Joo and Chatterjee (2012). Gomez-Macfarland (2018) emphasizes that financial literacy enables individuals to take advantage of the benefits of the financial products offered, thus strengthening, financial systems. In other words, financial literacy empowers the consumer of financial products (García, Grifoni, López, & Mejía, 2013; Goyal & Kumar, 2021). Derived from this impact, the intensified interest in measuring, analyzing and generating strategies that improve financial literacy indicators is justified, especially because of its relationship with people's perception of well-being (Aydin & Selcuk, 2019; Hernández-Mejía, García-Santillán, & Moreno-García, 2021; Karakurum-Ozdemir, Kokkizil, & Uysal, 2019; Vieira, Potrich, & Mendes-Da Siva, 2018).

Thus, the Organization for Economic Cooperation and Development (OECD) has been a leader in research to measure the level of financial literacy, mainly with the global application of two instruments: Adult Financial Literacy in G20 countries and Program for International Student Assessment PISA in its financial literacy section. The dimensions of the instrument come from the 2018 OECD/INFE version: Financial Knowledge, Financial Behavior, Financial Attitudes and Financial Inclusion (OECD, 2020a). It is worth noting that some studies identify that financial knowledge and attitude have positive impacts on financial behavior (Vieira et al., 2018).

The second instrument, in the most recent exercise sought to identify what students know about mathematics, science and reading and can do with this knowledge, where the financial aspect is included. Twenty countries participated in this study (OECD, 2020b). Unlike the instrument used by the OECD in adults, the PISA aims to measure the ability of young people to apply knowledge and skills in key areas in order to interpret problems under various financial contexts (OECD, 2019), in this sense, the instrument seeks to answer the question Are students smart about money? (Schleicher, 2019).

Likewise, in 2014, The Standard & Poor's Ratings Services Global Financial Literacy Survey was conducted with the purpose of identifying the degree of understanding of four basic financial concepts (Klapper, Lusardi, & van Oudheusden, 2014). In addition, in Mexico, the National Financial Inclusion Survey (ENIF) was conducted for the fourth time in 2021. This Mexican instrument, in the financial education section, seeks to identify financial behavior, financial knowledge (called financial capability in the document) and freedom in financial decisions.

In the same way, Higher Education Institutions (HEI), through their researchers, contribute to the analysis and development of measurement instruments focused on more specific sectors, in differentiating conditions for their contexts, and also with methodological bases that meet the psychometric requirements that provide robust research.

Thus, the objective of this paper is to present the results of the measurement of financial literacy in university students of the Universidad Autónoma del Estado de México through an instrument developed in Latin America specifically designed for this context and sector. This in order to answer the following questions

RQ1. What level of financial literacy do university students achieve?

RQ2. Is there a significant difference in financial literacy and its dimensions among university students by gender?

RQ3. Is there a significant difference in financial literacy and its dimensions among university students by educational program?

RQ4. Is there a significant difference in financial literacy and its dimensions among university students by academic space?

RQ5. Is there a significant difference in financial literacy and its dimensions among university students by employment status?

The paper, henceforth, is divided into five sections. The first establishes the theoretical and contextual framework that takes up the studies that define and operationalize the construct "Financial Literacy" and the contextualization of the sample studied based on the financial life cycle. Then, the method used is explained, which determines the instrument used to collect the information from the sample and subsequent analysis. It continues with the results section that describes the statistical data obtained, to give way to the discussion session of the results that contrasts with what has already been studied. Finally, the conclusions explain the scope and limitations of this work.

Financial literacy (AF)

On financial literacy, several works have compiled definitions from other authors. The aim is to identify a universal conceptual definition, which allows a homogeneous operationalization.

In a first antecedent, the definition appears in the United States in 1997 by Jump$start Coalition for Personal Financial Literacy, as: "the ability to use knowledge and skills to manage one's own financial resources effectively throughout life" (Stolper & Walter, 2017, p. 8).

Later, through the analysis of 71 individual studies published between 1996 and 2008, Huston (2010) concluded, among other points, that there is a weak conceptualization and definition of the financial literacy construct; in the same way as Stolper and Walter (2017).

Huston(2010) emphasized that the measurement of financial literacy is not measuring the degree of information that people have, but the ability and confidence to use that information to make decisions that generate economic well-being. Similarly, Skagerlund, Lind, Strömbäck, Tinghög and Västfjäll (2018) conclude that not only is knowledge of financial concepts important, but even more, the ability to use them to perform basic calculations and make sound decisions for financial well-being. Thus, financial literacy is a broader construct than financial education (Vieira et al., 2018).

Integrating the complexity of time and situations encountered in life Remund (2010, p. 284) proposes that "Financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate short-term decision making and sound long-term financial planning, taking into account life events and changing economic conditions."

In addition, various institutions and organizations built their definition on the understanding that financial literacy goes beyond an inventory of knowledge, skills and behaviors, focusing on the awareness of these and the confidence to use them to make more accurate decisions aimed at financial wellbeing, as shown in Table 1.

Institution	Conceptualization of Financial Literacy
ASIC (2011, p. 4)	"is about understanding money, finances and being able to apply that knowledge to make effective financial decisions."
Atkinson & Messy (2012, p. 14) OCDE	"A combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being
Klapper et al. (2014, p. 4) S&P	"..ability to make financial decisions regarding saving, investing, borrowing and more."
CONAIF (2017, p. 195)	"Combination of awareness, knowledge, skills, abilities, and behaviors necessary to make financial decisions"
OCDE (2019, p. 18)	"It is the knowledge and understanding of financial concepts and risks, as well as the skills and attitudes to apply such knowledge and understanding to make effective decisions in a variety of financial contexts, to improve

Table 1 Institutional definitions on Financial Literacy
Source: Own elaboration

Although, through an agglutination of published works, Vieira et al. (2018) concludes that various authors measure financial literacy only with financial knowledge using it as a synonym, this view is limited

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Meanwhile, research in the last decade points out that financial literacy is a construct measured through the dimensions of attitude, knowledge and financial behavior. Méndez Prado et al. (2022) review 45 definitions of financial literacy published between 2010 and 2021, to identify that the total consider financial knowledge as a dimension of financial literacy, 36 add behavior and 19 include the previous dimensions, plus financial attitude. For their part, with the bibliometric review Goyal & Kumar (2021) find the consistency of previous studies (507 studies) in that the three dimensions are not only interrelated with financial literacy, but also with each other.

Financial life cycle of young college students

This financial well-being is modified by the stage of life through which the individual passes, marked by a financial life cycle. The cycle is composed of three stages: accumulation, consolidation and protection. The objectives of each stage are different, as are the skills and knowledge required to achieve them. The main objective of the first stage, according to Garay Anaya (2015), is to achieve the main goals of the individual such as the acquisition of assets, business projects and the formation of a family along with the satisfaction of their needs. It is at this stage that there is greater consumption and purchasing power. The relationship between the biological and financial life cycle was also taken up in the research of Allgood and Walstad (2013) whose determination was five generations: (18-29; 30-39; 40-49; 50-59; and 60-69 and over 69).

For his part, Zacari (2008) exposes the relationship of human capital with the financial life cycle. Human capital is transformed or monetized throughout the individual's life, becoming financial capital.

Having said this, we can typify the university student as the subject who is in the first generation of adults, whose transition to the stage of accumulation becomes latent and due to his condition in the investment of human capital makes him a potential generator of financial capital. Being in this almost invisible line of entry to its financial cycle, this sector presents the following characteristics:

- University students are in the conversion from a state of economic dependence to independence of livelihood and therefore of decisions. This sector of the population is almost ready to start generating income. Thus, they begin to abandon parental supervision to manage their own financial affairs (Aydin & Selcuk, 2019).

- They are developing human capital to convert it into financial capital in the short to medium term. Unlike other types of workers, university students have academic preparation, although little or no professional experience. In any case, most of them will earn medium-high incomes in the short to medium term. Students more advanced in their educational programs have higher levels of knowledge, Aydin & Selcuk (2019) suggest that it is because the soon-to-be graduates have more motivation to learn about such topics because of their proximity to financial independence.

- When they reach the age of majority, they will be open to apply for any product and/or formal financial product, such as credit. Some topics become more relevant because of the stage of the life cycle of college students. For example, payment behaviors are preliminary in college students, while debt behaviors are more advanced (Xiao, Ahn, Serido, & Shim, 2014).

- This sector is still related on a daily basis to the educational institution, so they are at a crucial moment to develop and strengthen their financial literacy. Kaiser and Menkhoff (2017) point out that financial education at a teaching moment is crucial to improve financial knowledge and awareness. In addition to the fact that the habits acquired in these years persistently affect their economic life cycle (Aydin & Selcuk, 2019).

Methodology

The measurement instrument.

There are instruments designed and applied by formal bodies such as the OECD and the ENIF, but their main objective is only to obtain a descriptive overview, i.e., they do not offer parameters that allow weighting the level of financial literacy. Some global studies such as the one developed by S&P's Ratings Services focus only on the understanding of certain concepts (risk diversification, inflation, arithmetic and compound interest) (Klapper et al., 2014). Others have been developed by in developed country contexts, far from the Latin reality or aimed at the adult population in general.

Thus, the instrument developed by Méndez Prado et al. (2022) was chosen for a Latin American context and aimed at young adults whose purpose is to measure financial literacy from a key decision making approach through the dimensions of Financial Attitude (A), Financial Behavior (CM) and Financial Knowledge (C). The instrument was validated with a sample of 478 young Ecuadorians.

The instrument was subjected to Correlation Analysis, Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) tests to validate the underlying theoretical construct. The Cronbach's alpha reached α= 0.855. Regarding the SEM indicators, the authors obtained: Chi-square/Grades of freedom, $x^2/pdf=2.08$; Goodness of fit index, GFI= 0.959; Comparative fit index CFI= 0.952; Mean square error of approximation, RMSEA= 0.059. All from model number 2 (CM~~C; A~~C; A~~C; A~~CM).

The instrument developed by the authors contemplate the three dimensions of financial literacy establishing the following definitions taken from other works (Chaulagain, 2015; Lusardi, 2015; Vieira et al., 2018):

Financial Knowledge (C). "Ability to assimilate and understand economic and financial processes to make correct decisions about financial planning, budgets, loans and other issues" (Méndez Prado et al., 2022, p. 3).

Financial Behavior (CM). "Reflects the skills and actions to achieve short- and long-term financial objectives that can be acquisitive or cover unexpected expenses." (Méndez Prado et al., 2022, p. 3)

Financial Attitude A. "How an individual perceives and judges financial issues and nurtures intentions regarding money" (Méndez Prado et al., 2022, p. 3).

The instrument is made up of 41 items. The Attitude (A) factor with 17 items (9 with inverse treatment). The Behavior factor (CM) with 13 items. Both on a Likert scale 1-5. The Knowledge factor (C) with 11 items with dichotomous response analysis (1=correct, 0=incorrect).

Sample and data collection

The instrument was self-administered through the Surveyplanet platform to a total of 616 students from three University Centers of the Autonomous University of the State of Mexico (Ecatepec, Valley of Mexico and Zumpango), during the months of March and April 2023. Sample by convenience and voluntary participation.

Groups	Description
Age	Max= 40 Mín=20 x̄= 21.92 DE=2.021
Female	n= 349 (67.0%)
Male	n=172 (33.0%)
B.A. in Administration LA	n=120 (23.0%)
Bachelor of Accounting LC	n= 64 (12.3%)
Bachelor in Law LD	n= 106 (20.3%)
Bachelor's Degree in Tourism LT	n= 49 (9.4%)
Bachelor's Degree in Psychology LPS	n= 88 (16.9%)
B.S. in Computer Science LIA	n= 75 (14.4%)
B.S. in Actuarial Science LAC	n=19 (3.6%)
Works formally	n=37 (7.1%)
Works informally	n=224 (43.0%)
CU Ecatepec	n=96 (18.4%)
CU Valle de Mexico	n= 79 (15.2%)
CU Zumpango	n= 346 (66.4%)
Does not work	n=260 (49.9%)
Works informally	n=224 (42.9%)
Works formally	N=37 (7.10%)

Table 2 Descriptive of the sample
Source: Own elaboration

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Of the total number of responses obtained, 95 participants were discarded because they did not pass the commitment criteria in the answering process. These criteria were as follows:

1. Participant who selects the same answer in all items ($\bar{x} = 0$), is discarded.

2. Participant who takes less than the average time minus one standard deviation (0 h 6 min 49 s, minimum), is discarded.

Thus, only 521 participants will be considered for the analysis, whose characteristics are shown in Table 2.

The analysis

The results of the 521 participants were subjected to descriptive and inferential statistical analysis with the help of SPSS software. For the descriptive analysis, the central measures were used: mean and median; while for dispersion, the standard deviation and range were used.

Regarding group analysis, the Kolmogorov-Smirnov normality test was first applied to the metric variables. Due to the result, the Mann-Whitney U test was used (accompanied by the Hedges g to measure the effect size) and the Kruskal-Wallis test; in addition to the post hoc analysis with the Games Howell test.

The tests to determine the difference between groups were used on the total obtained from A, CM and C; while for Financial Literacy it was applied to the result from equation 1, which was proposed in the work of Méndez Prado et al. (2022).

$$FL = (0.34*FA) + (0.30*FB) + (0.36*FK) \tag{1}$$

It should be noted that Méndez Prado et al. (2022) also presented five levels of financial literacy based on the results achieved in the three dimensions, as shown in Table 3.

Level	Score
Very High	80-100
High	60-80
Average	40-60
Low	20-40
Very Low	0-20

Table 3 Descriptive of the sample. Level of financial literacy
Source: (Méndez Prado et al., 2022)

Results

The reliability results of the instrument are satisfactory in AF, A, CM and C (∞= .817, ∞= .814, ∞=.843 and ∞=.607; respectively).

Beginning with the descriptive analysis of each of the items of dimensions A, CM, C (see Table 4), it is detected that in dimension A, the highest weighted items are: AF13.A13. The importance of saving ($\bar{x}$= 4.39 SD= 0.903), AF4.A4. Disability contingency plan ($\bar{x}$=4.31 SD= 0.934); while the lowest were: AF8.A8. Planning for old age ($\bar{x}$= 3.54 SD=1.340) and AF12.A12 .Investing time in financial records ($\bar{x}$=3.56 SD= 0.953).

Meanwhile, for the CM dimension, the items with the highest scores were: AF26.CM9. Paying debts on time ($\bar{x}$= 4.55 SD=0.788) and AF23.CM6. Paying bills on time ($\bar{x}$= 4.41 SD= 0.864). In contrast, AF29.CM12. Financial reserve for unexpected circumstances ($\bar{x}$= 2.76 SD=1.260) and AF18.CM1. Controlling expenses in a written manner ($\bar{x}$= 2.73 SD=1.069).

Finally, for the C dimension, AF36.C6. Cost of debt by term ($\bar{x}$=0.80 SD=0.402) and AF33.C3. Use of discount ($\bar{x}$= 0.79 SD=0.402) reached the highest value, on the contrary, AF32.C2. Interest rate calculation ($\bar{x}$=0.36 SD=0.480) and AF41.C11. Fixed vs. variable rate ($\bar{x}$=0.14 SD=0.351) resulted with the lowest scores.

It is relevant to highlight that the mean and median of A ($\bar{x}$= 67.31 SD=8.570; Mdn=68 Rank=45) was higher than the mean of CM ($\bar{x}$= 48.20 SD=8.107; Mdn=49 Rank=52).

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Item/Dimension/Construct	Min	Max	Mdn	Rgo	x̄	DE
AF1. A1. Develop a regular savings pattern	1	5	4	4	3.93	1.242
AF2.A2. Written financial goals to prioritize spending	1	5	4	4	4.14	1.031
AF3.A3. Written budget for financial management	1	5	4	4	3.98	0.922
AF4.A4. Disability contingency plan	1	5	5	4	4.31	0.934
AF5.A5. Expense planning	1	5	4	4	4.24	0.912
AF6.A6. Future planning	1	5	4	4	4.13	0.896
AF7.A7. Financial statement in 5 or 10 years	1	5	4	4	3.97	0.912
AF8.A8*. Planning for old age	1	5	4	4	3.54	1.340
AF9.A9*. Financial plan for decision making	1	5	4	4	3.61	1.071
AF10.A10*.Saving plan to meet the needs AF11.	1	5	4	4	3.86	1.087
AF11.A11*.The need for planning AF12.	1	5	4	4	3.75	1.060
AF12.A12*.The investment of time in financial records AF13.	1	5	4	4	3.56	0.953
AF13.A13*. The importance of saving	1	5	5	4	4.39	0.903
A14.A14*.The Time of Debt	1	5	4	4	3.97	1.055
AF15.A15*.Alignment of plans based on life stage AF16.	1	5	4	4	3.78	1.012
AF16.A16. Life changes and financial plans	1	5	4	4	4.25	0.761
AF17.A17*. The integral theme of financial planning	1	5	4	4	3.90	0.825
Financial Attitude (A)	40	85	68	45	67.31	8.570
AF18.CM1. Controlling Expenses in a Written Manner AF19.	1	5	3	4	2.73	1.069
AF19.CM2. Comparison of Prices	1	5	4	4	4.15	0.974
AF20.CM3. Saving from monthly income	1	5	3	4	3.69	1.130
AF21.CM4. Spending Plan	1	5	3	4	3.28	1.154
AF22.CM5. Competence in personal finance	1	5	3	4	3.42	1.026
AF23.CM6. Paying bills on time	1	5	5	4	4.41	0.864
AF24.CM7. Monthly savings	1	5	3	4	3.65	1.104
AF25.CM8. Analyzing the financial situation before a major purchase AF26.	1	5	5	4	4.27	0.967
AF26.CM9. Paying debts on time	1	5	5	4	4.55	0.788
AF27.CM10. Saving to achieve long-term goals	1	5	3	4	3.72	1.074
AF28.CM11. Increasing savings based on income growth	1	5	4	4	3.98	1.099
AF29.CM12. Financial reserves for unexpected circumstances	1	5	3	4	2.76	1.260
AF30.CM13. Savings in the last 12 months	1	5	3	4	3.60	1.158
Financial Behavior (CM)	13	65	49	52	48.20	8.107
AF31.C1. Effect of Inflation	0	1	1	1	0.56	0.497
AF32.C2. Interest Rate Calculation	0	1	0	1	0.36	0.480
AF33.C3. Use of Discounting	0	1	1	1	0.79	0.411
AF34.C4. Time Value of Money	0	1	1	1	0.64	0.479
AF35.C5. Comparison of annuity with different terms	0	1	0	1	0.38	0.486
AF36.C6. Cost of Debt by Term	0	1	1	1	0.80	0.402
AF37.C7. Diversification	0	1	0	1	0.40	0.490
AF38.C8. Cost of debt by maturity (comparative)	0	1	1	1	0.55	0.497
AF39.C9. Identification of equity	0	1	0	1	0.41	0.492

Item/Dimension/Construct	Min	Max	Mdn	Rgo	x̄	DE
AF40.C10. Capital credit	0	1	1	1	0.55	0.498
AF41.C11. Fixed vs. variable rate	0	1	0	1	0.14	0.351
Financial Literacy (C)	.00	11.00	6	11	5.5854	2.30236
Financial Literacy (AF)	71	157	121	86	121.090	12.954

Table 2 Level of knowledge of CBFP by item
Source: Own elaboration

Applying eq. (1) identifies the mean Financial Literacy in the sample is 67.44 (FL = (0.34∗79.1825) + (0.30∗74.1532) + (0.36∗50.7764)). Thus, the distribution of the financial literacy level is observed in Figure 1.
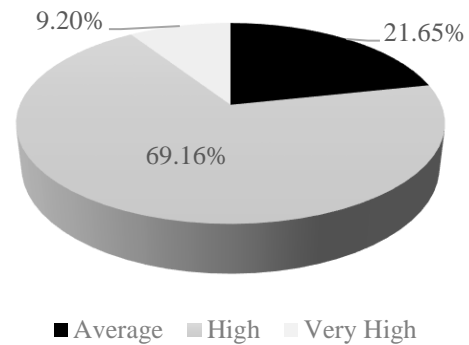
Figure 1 AF level of the sample
Source: Own elaboration

Gender showed statistically significant differences in A, where the scores of women (Mdn=68; Range=45) is higher than that of men (Mdn= 66; Range =42) U= 24973.00; p=.001; Heges= 0.331570, as can be seen in Table 5.

	Female (n=349) Mdn (Range)	Male (n=172) Mdn (Range)	U	p	g of Hedges
A	68 (45)	66 (43)	24873.00	.001	0.331570
CM	47 (41)	50 (52)	26624.00	.036	0.165645
C	6 (11)	6 (11)	24908.00	.001	0.297824
AF	121(72)	121(86)	29286.50	.652	0.061286

Table 5 Comparison between PA dimensions and gender
Source: Own elaboration

Likewise, with CM, where, on the contrary, the scores of women (Mdn=47; Range= 41) lower than that of men (Mdn= 50; Range =52) U= 26624.00; p=.036; Heges= 0.165645 (Note Table 5).

Through the medians shown in Table 5 no gender difference is identified, with respect to C, however, through the mean it is observed that males (x̄= 6.0407, SD=2.4215) have a higher score than females (x̄= 5.3610, SD=2.2105), U= 24908.00; p=.001; Heges= 0.297824.

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	A	CM	C	AF
		Mdn (Range)		
LA (n= 120)	69 (43)	50 (34)	6 (11)	122 (57)
LC (n=64)	71 (36)	48 (39)	7 (10)	126 (65)
LD (n=106)	66.5 (43)	51 (52)	5.5 (11)	121 (81)
LT (n=49)	69 (32)	47 (38)	5 (10)	121 (66)
LPS (n=88)	68.5 (40)	45 (37)	5 (9)	120 (55)
LIA (n=75)	64 (37)	49 (37)	5 (9)	119 (54)
LAC (n=19)	70 (29)	49 (26)	6 (6)	125 (43)
H de K	20.579	26.212	46.388	29287
p	0.002	<.001	<.001	0.004

Table 6 Comparison between AF dimensions and education
Source: Own elaboration

The Kruskal Wallis test indicated the difference between the groups by profession (Bachelor in Administration LA, Accounting LC, Law LD, Tourism LT, Psychology LPS, Administrative Informatics LIA and Actuary LAC) of the three dimensions. As identified in Table 6.

The post hoc analysis through the Games Howell test exposed that LC students (Mdn=71) scored higher than those belonging to the LIA Program (Mdn=64 p=0.016) 95% CI [0.57, 9.33]. In turn, LPS students (Mdn=68.5) also score higher than LIA participants (Mdn=64 p=0.016) 95% CI [0.64, 8.48]. This is in the Financial Attitude dimension.

Regarding CM, students in the LPS program (Mdn=45) scored lower than students in: LA (Mdn=50 p<0.000) 95% CI [2.19, 8.09], LC (Mdn=71 p=0.035) 95% CI [0.17, 7.82], LD (Mdn=51 p=0.009) 95% CI [2.19, 8.09] and LIA (Mdn=49 p<0.046) 95% CI [0.03, 6.61].

In dimension C, the score of LA (Mdn=6) and LC (Mdn=7) students is higher than: LD students (Mdn=5.5 p=0.002) 95% CI [0. 3431, 2.3133] and (Mdn=5.5 p<0.000) 95% CI [0.7824, 2.9688] , respectively; than LT students (Mdn=5 p=0.022) 95% CI [10.38, 2.2812] and (Mdn=5 p<0. 000) 95% CI [55.53, 2.9255], respectively ; that LPS students (Mdn=5 p<0.000) 95% CI [0.3172, 2.0586] and (Mdn=5 p<0.000) 95% CI [0.7423, 2. 7293] respectively and that LIA students (Mdn=5 p=0.022) 95% CI [0.851, 1.8749] and (Mdn=5 p<0.000) 95% CI [0.5138, 2.5421], respectively.

Also, the Kruskal Wallis test presents significant difference in the dimension of A and CM, between the groups of students with academic space ascription. H(2)=12.209. p=.002 and H(2)=9.682 p=.008, respectively, as shown in Table 7. Applying the post hoc analysis, students from Zumpango (Mdn= 68.5) have a higher score, in dimension A, than students from Ecatepec (Mdn=65 p=0.006) 95% CI [0.76, 5.60].

On the other hand, students from Valle de México (Mdn= 51) out score Zumpango (Mdn=48 p=0.001) 95% CI [1.13, 5.62] in the CM dimension.

	CU Ecatepec (n=96)	CU Valle de Méx. (n=79)	CU Zumpango (n=346)	H of K	p
		Mdn (Range)			
A	65 (44)	67 (38)	68.5 (43)	65 (44)	.002
CM	47.5 (40)	51 (30)	48 (52)	47.5(40)	.008
C	5 (9)	6 (8)	6 (11)	5 (9)	.058
AF	118 (63)	122 (62)	122 (86)	118 (63)	.059

Table 7 Comparison between AF dimensions and space of ascription
Source: Own elaboration

As shown in Table 8, there is only a difference in the CM dimension, by work activity H(2)= 12.562. p=.002. The CM is found to be lower in those who do not work (Mdn=47).

	Formal work (n=37)	Informal work (n=224)	Not working (n=260)	H of K	p
		Mdn (Range)			
A	70 (36)	68 (43)	68 (45)	1.991	.370
CM	51 (30)	51 (52)	47 (38)	12.562	.002
C	6 (11)	6 (11)	6 (11)	5.322	.070
AF	128(59)	122 (81)	120(72)	5.223	.073

Table 8 Comparison between AF dimensions and work activity
Source: Own elaboration

Adding the post hoc analysis through the Games Hollew test yields that students who do not work (Mdn=47) score lower than students who work informally (Mdn=51 p=0.038) 95% CI [0.80, 3.55] (refer to Table 8).

Discussion

The FA of the sample of university students is higher than that of the general Mexican population (CNBV, 2022; INCyTU, 2018). The results expose that 78.36% of the students in this sample are at a high or very high AF level. This fact supports the issue that AF improves as the educational level increases (CNBV, 2022).

Klapper et al. (2014) identify that in emerging economies young people between 15 and 35 years old present higher levels of AF than adults in the following stages (consider that the authors limit the measurement of literacy with four knowledge questions). It is worth noting that this knowledge will improve over time since Hernández-Mejía et al. (2021), through the ENIF results, find that knowledge behaves as an inverted U with age (age ranges 15-24, 25-34, 35-44, 45-54).

Proportionally, A obtains the best result, followed by CM, leaving C on the last rung. Part of the reasons that may explain this result is that, unlike CM and A, C is made up of evaluation questions.

The items with the lowest scores are related to calculating the simple interest rate and making a decision regarding the type of rate (fixed or variable) and predicting a future scenario.

In line with the general population that understands the concepts of diversification, inflation and interest, but is more deficient in the calculation of interest rates (CNBV, 2022), the sample shows the same trend. Somehow it is made to glimpse that the mathematical aspect is not entrenched, a weakness that has been dragged from the upper secondary level, since the PISA results reveal that 56% of Mexican young people are at the lowest level in the mathematical evaluation (OECD, 2018).

Regarding decision making among interest rates, it is important to identify that not only knowledge is necessary among university students but also application in decision making, as explained by Osorno Morales and Hernández Rivera (2021).

While the highest items achieved by the participants, which are related to A, point to the importance of saving and having a contingency plan in case of disability of a family member who supports financially. In practice, it seems that this remains more in intention than in fact (a statement that is confirmed later), since according to the ENIF 2021, the population with a higher level of education prefers to spend money rather than save it compared to other educational groups. Likewise, Montoya Gómez et al. (2016) find that young university students tend to the intention to save, only a small percentage carry it out adequately.

About the contingency plan, despite the fact that students consider it fundamental, in fact through the item of C (one of the lowest score items said dimension) students do not have a financial reserve for unexpected circumstances. Evidence shows that only 18% of Mexicans would have resources to cover their needs for three months in case of an eventuality (CNBV, 2022).

Continuing with the discussion, the item related to the importance of investing time to record financial matters (from the A dimension) and the behavior of keeping expense records in writing (from the CM dimension), are the lowest scoring items in their respective dimensions. Thus, both what they think and what they do, in an undesirable way, are aligned. And this trend is reflected in the results of the ENIF 2021 survey, since 2 out of 10 people make a budget and 4 out of 10 register their debts (CNBV, 2022).

The behavior of paying bills and debt on time represents a good indicator in university students, appearing to be influenced by knowledge, since according to Xiao et al. (2014) knowledge reduces risky payment behaviors.

Regarding the analysis of differences between groups. It was observed that there is a significant difference in the three dimensions by gender, where the score of A in women is higher than that of men; while for the dimensions of C (with its reservations) and CM men obtained a better score.

Klapper et al. (2014) describe that women score lower in knowledge regardless of whether they belong to a developed or developing country. However, Aydin and Selcuk (2019) state that there is no significant difference between knowledge by gender; likewise Karakurum-Ozdemir et al. (2019) (results obtained for Mexico). The possibility of this lack of difference may be in line with the sample results, that although there is significance, there is no gap in the median (indicator for non-parametric samples). In contrast to the results found in the sample, regarding behavior, according to Xiao et al (2014) men incur more risky payment and indebtedness behaviors. Specifically in the use of credit cards, women pay the full amount monthly so as not to generate interest (64.4% over 61. 47%) (Hernández-Mejía et al., 2021).

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Concerning the educational program, on the A dimension, LIA students obtained the lowest scores. In the behavior dimension, LSP obtained the lowest scores. While in knowledge, the highest scores are in LC and LA. Identifying heterogeneity among the results of each program, visualizing that the programs within the economic-administrative area have better scores.

Continuing with the differences found by academic space, students from Zumpango surpass students from Ecatepec in A scores, although they are surpassed by students from Valle de México in CM. This suggests that there are other environmental variables that influence the AF dimensions of the students, such as the level of urbanism of the municipality, the proximity to the metropolis, the presence of industry and the socioeconomic level of the entity. These variables will provide the basis for further research.

Finally, the employment status of the participants. Hernández Rivera (2019) do not find a significant difference between the C of those who work and those who do not, in the same way as the results of this study, since significance is only detected in CM, where the lowest score is obtained by students who do not work. It is worth noting that young people with their own income begin to experiment earlier with financial products, including credit cards (the most widely used formal debt product by Mexicans (CNBV, 2022)). As cardholders, they are more financially literate than the general population (Hernández-Mejía et al., 2021). Also consider that the greater the economic independence, the greater the interest in becoming financially literate (Aydin & Selcuk, 2019).

Conclusions

University students show results above the average obtained by the Mexican population, however, it is necessary to generate strategies that allow strengthening the study programs in favor of decision-making. In terms of knowledge, it is essential to improve the exercise of calculus and to understand how it is useful when making decisions. Likewise, it is necessary to develop mechanisms that allow the transfer of conceptual theoretical knowledge to the solution of problems under different scenarios.

In the same way, that positive perceptions become desirable actions to achieve wealth and financial wellbeing.

The work offers evidence on the application of an instrument generated in Latin America that satisfactorily fulfills the psychometric indicators, and that takes into account the environment for a specific group that begins its maturity in the financial life cycle. Valuing the exercise of other researchers who seek to propose with scientific rigor.

The results shed light on future research questions that help to explain the level of Financial Literacy and its dimensions as well as the correlation between each one of them, transferring it to other student samples in our Continent.

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