

<https://doi.org/10.23913/ride.v15i29.2015>

*Scientific articles*

***Educación financiera, materialismo y valor del dinero: su efecto en el endeudamiento de estudiantes universitarios***

***Financial education, materialism and the value of money: its effect on college students' indebtedness***

***Educação financeira, materialismo e valor do dinheiro: seu efeito no endividamento dos estudantes universitários***

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## Resumen

La tendencia a contraer deuda en la población mexicana incrementa los costos de financiamiento y la probabilidad de morosidad. Por ende, el presente trabajo analiza el impacto de la educación financiera, el valor del dinero y el materialismo sobre el endeudamiento en estudiantes universitarios de Baja California. Para ello, se diseñó una investigación cuantitativa, no probabilística y transversal, con una muestra aleatoria de 333 sujetos. Las relaciones entre los constructos se probaron utilizando modelos de mínimos cuadrados parciales (PLS). Los resultados muestran que cinco de las seis relaciones propuestas son estadísticamente significativas, por lo que la educación financiera y el valor del dinero afectan positivamente el endeudamiento. Además, el modelo explica de forma limitada el endeudamiento (0.238) y el valor del dinero (0.147). En conclusión, esta investigación contribuye al conocimiento del endeudamiento en jóvenes y adultos universitarios, ya que se consideraron nuevos factores que condicionan la decisión de ellos al momento de realizar compras a crédito.

**Palabras clave:** endeudamiento, educación financiera, estudiantes universitarios, materialismo, valor del dinero.

## Abstract

The tendency to incur debt in the Mexican population increases financing costs and the probability of default. In this sense, this paper analyzes the impact of financial education, money's value, and materialism on indebtedness among university students in Baja California. The research is quantitative, non-probabilistic, and cross-sectional, with a random sample of 333 subjects. The relationships between constructs were tested using partial least squares (PLS) models. The results show that five of the six proposed relationships are statistically significant: financial education and the value of money positively affect indebtedness. The model weakly explains indebtedness (0.238) and the value of money (0.147). This research contributes to the knowledge of debt in young and adult university students by considering new factors that influence their decision to make purchases on credit that lead them to become indebted.

**Key words:** indebtedness, financial education, university students, materialism, value of money.



## Resumo

A tendência da população mexicana de contrair dívidas aumenta os custos de financiamento e a probabilidade de incumprimento. Portanto, este trabalho analisa o impacto da educação financeira, do valor do dinheiro e do materialismo na dívida de estudantes universitários da Baixa Califórnia. Para tanto, foi desenhada uma pesquisa quantitativa, não probabilística e transversal, com amostra aleatória de 333 sujeitos. As relações entre os construtos foram testadas usando modelos de mínimos quadrados parciais (PLS). Os resultados mostram que cinco das seis relações propostas são estatisticamente significativas, portanto a educação financeira e o valor do dinheiro afetam positivamente a dívida. Além disso, o modelo explica de forma limitada a dívida (0,238) e o valor do dinheiro (0,147). Concluindo, esta investigação contribui para o conhecimento do endividamento em estudantes universitários e adultos, uma vez que foram considerados novos fatores que condicionam a sua decisão na realização de compras a crédito.

**Palavras-chave:** dívida, educação financeira, estudantes universitários, materialismo, valor do dinheiro.

**Reception date:** January 2024

**Acceptance Date:** July 2024

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## Introduction

Data from the National Banking and Securities Commission (CNBV) indicate that the consumer credit portfolio recorded a balance of 1.31 trillion pesos in June 2023, with a general delinquency rate (Imor by the acronym in Spanish) of 2.18%. In particular, the Imor of the consumer credit portfolio was 3.07%, broken down into 3.04% for credit cards, 4.81% for personal loans, and 5% for loans intended to acquire personal property. These data reflect the increase in household consumption and highlight a growth of 16.8% in the credit card consumption portfolio (Banco de México, August 30, 2023; National Banking and Securities Commission, 2023).

However, the COVID-19 pandemic had a profound impact on global economic activity and in Mexico, as it affected inflation levels and reduced the real income of people who could not adjust their nominal income to the increase in prices, especially those with lower purchasing power, which decreased their payment capacity and increased their probability of default (European Central Bank, 2023). In addition to this, inflation has driven the growth of prices, particularly of the basic basket, since food represents the largest proportion of spending for those with lower incomes (Banco de México, 2022). These people,



who often lack verifiability in their income, are limited in guarantees and credit history, so they generally have to opt for less favorable financing conditions, such as shorter terms and/or higher interest rates, which increases the probability of falling into default (Jaume, *et al.*, 2022).

For this reason, debt and, in particular, over-indebtedness is a growing phenomenon throughout the world and has become a social problem (Hämmig and Herzig, 2022). This is because, for certain groups of people, their income is not sufficient to cover the costs of their needs or lifestyle, which leads them to resort to financing that involves interest, commissions, and expenses required by the individual or morality that grants the loan.

In this context, the CNBV (2022) indicates that in Mexico there are 30.5 million credit cards in circulation, of which the largest proportion corresponds to department store cards (54%), followed by bank cards (25%), credits personal (10%) and payroll loans (7%). In addition, the National Financial Inclusion Survey (ENIF) (2021) indicates that 25% of the adult population has a credit card, while 46% has a debit card. When considering the educational level, it is observed that 73% of people with a bachelor's degree or higher have a debit card and 26% have a credit card, while among those with high school education 49% have a debit card and only 9% have a credit card, which suggests that the higher the educational level, the greater the probability of having a credit card (National Banking and Securities Commission and National Institute of Statistics and Geography, 2021).

During 2021, despite the pandemic, the Mexican banking system granted 3.4% more credit cards compared to 2020 (National Banking and Securities Commission, 2022), which is concentrated in six banks that cover 73% of the total: Banorte, HSBC, Scotiabank, Santander, Citibanamex and BBVA (the latter issued 891,762 new cards, so it ranked first in this category) (Banco de México, July 8, 2022). In addition, the financial stability report for the second half of 2022 indicates a decrease in the number of credit card users who pay their debt in full each month, which indicates an increase in credit leverage. Likewise, the Imor has increased in the strata of payroll credit, credit card, and personal loans. Even consumer credit registers growth rates, particularly the balance of the bank credit card portfolio (Banco de México, 2022).

Now, according to the neoclassical approach, the increase in debt fuels consumption and economic growth, while in the economic literature it is argued that, in the periods after a crisis, the growth of debt has a positive impact on the economy, since it encourages household consumption. However, the growing indebtedness of families has become an economic

problem (Petrov *et al.*, 2020), since many people use credit cards to pay their financial obligations (Mendonça and Dalagostini, 2019).

Among the causes that originate this scenario, Gutiérrez *et al.* (2017) highlight the propensity for debt, low financial literacy, and the growth of poverty in society. For their part, Carlsson and Nilsson (2020) suggest that future research should consider other types of external influences as causes of debt, such as social norms, social pressure, and social status.

Having explained the above, this research seeks to analyze the influence of financial education, the value of money, and materialism on the propensity to borrow. This work is novel, since most studies on debt do not use the value of money and materialism as independent variables, so it contributes by proposing a theoretical approach to determine which variables affect this practice in a developing country.

After this introduction, the structure of the article is organized thematically. First, the theoretical support of each of the variables and the relationships proposed as hypotheses are presented; then the methodology is described; Subsequently, the results of the structural model are analyzed, and finally the conclusions are discussed and recommendations for future research are offered.

## Indebtedness

Debt is a means that allows households to meet their costs. In the case of young people, they often consume more than they earn in the hope of a future increase in their income, which often does not materialize, so they accumulate debts that will have to be paid in adulthood (Petrov *et al.*, 2020). Likewise, it is perceived that low-income households tend to get into debt (Arsyanti *et al.*, 2018), while those who experience an increase in the value of their homes tend to feel more confident and take out new consumer loans. On the other hand, in the case of those considered rich, higher levels of over-indebtedness are observed, suggesting that the perception of valuable collateral can lead to insecure behaviors encouraged by financial institutions (Camões and Vale, 2020).

A person in debt is one who has an obligation to pay another person, which is often associated with antisocial behavior (Li *et al.*, 2019). Debt has two types of causes: those linked to the individual (such as a lack of financial education or their willingness to get into debt) and those based on circumstances (such as external crises or the pressure exerted by financial institutions) (Gutiérrez *et al.*, 2017). A negative stance towards debt indicates an

austere attitude, while a hedonistic attitude considers both credit and debt as natural options to immediately satisfy material needs (Quintano and Denegri, 2021).

However, it should also be considered that individual behavior and personal circumstances—such as insufficient income to cover regular expenses or the occurrence of critical life events, such as unemployment, separation, divorce, and illness—can lead people to contract debts (Hämmig and Herzig, 2022). Furthermore, the context influences, since low interest rates and the growth of the minimum wage lead to an increase in people's debt levels (Enache, 2022). In addition to that, the degree of indebtedness is also influenced by sociodemographic variables such as gender, race, marital status, occupation, and income (Franco, 2020), and the expansion of consumer credit also leads to an escalation in consumer over-indebtedness (Yin, 2018).

To reduce or eliminate these behaviors, in China, in 2015, the Supreme People's Court issued a provision to restrict the high consumption of debtors, which specified that a natural person debtor should not engage in high consumption behaviors (Yin, 2018). Table 1 illustrates different previous studies that have debt as a dependent variable, which demonstrates that this is a topic of interest for the academic community.



**Table 1.** List of previous studies

Author(s)/Year	Qualification	Place	Dependent variable	Independent variables
Hämmig and Herzig (2022).	Over-indebtedness and health in Switzerland: A cross-sectional study comparing over-indebted individuals and the general population	Zurich, Switzerland	Over-indebtedness	Health, musculoskeletal disorders, sleep disorders, and depression.
Carlsson and Nilsson (2020).	Determinants of indebtedness among young adults: Impacts of lender guidelines, explicit information, and financial (over) confidence	Sweden	Debt decision	Ability to handle loan information, standard of appropriate borrowing behavior, and financial (excess) confidence of the borrower.
Oğuz-Duran (2020).	Turkish Version of the Revised and Short Indebtedness Scale (ISR-S): Translation, Validity, Measurement Invariance and Reliability Studies for Turkish University Students.	Türkiye	Indebtedness	Gratitude, happiness, and satisfaction with life
Camões and Vale (2020).	I feel wealthy: A major determinant of Portuguese households' indebtedness?	Portugal	Type of debt	Housing wealth
Petrov, Tonkova and Todorova (2020).	Structural and Value Dimensions of Household Indebtedness in Bulgaria	Bulgaria	Debt level	Price of short-term consumer loans
Mendonça and Dalagostini (2019)	Style Consumption and Propensity to Indebtedness: Evidence on the Peace Border.	Santana do Livramento, Brazil and Rivera, Uruguay	Debt propensity	Materialism, risk perception and risk behavior, age, income, gender and educational level.
Ahmed, Alabdullah, Amran, and Yahya (2018).	Indebtedness Theory and Shariah Boards: A Theoretical Approach.	Malaysia	Indebtedness	Responsibility, financial instruments and Islamic principles.
Gutiérrez, Serrano and Cuesta (2017)	A multivariate study of over-indebtedness' causes and consequences	Spain	Over-indebtedness	Aspects of the borrower such as his propensity for debt and his lack of financial education.

Source: self-made

## Financial education

The Organization for Economic Cooperation and Development (OECD) has led efforts on the importance of financial education, considered a driver of inclusive social development, in 35 countries around the world. To this end, it offers governments a framework to share experiences and seek solutions to common problems with the mission of promoting policies that improve the economic and social well-being of people (OECD, January 25, 2018).

Financial education, then, is the process through which individuals acquire or expand their knowledge and develop the ability to understand and use financial concepts to make correct decisions in the face of changing financial conditions. This skill is essential in the 21st century, as it allows people to manage their resources through informed planning (Aksoylu *et al.*, 2017; Aranibar *et al.*, 2023).

In 2012, the OECD developed the *Measuring Financial Literacy study*, a pilot plan applied in 14 countries to measure the level of financial education through three dimensions: knowledge, behavior and attitude. The results indicated a lack of financial knowledge in a considerable proportion of the population (Atkinson, 2012), which limits the understanding of economic aspects such as interest rates, income and prices, which is crucial for making informed decisions about the use of financing and avoiding over-indebtedness (Gutiérrez *et al.*, 2017; Petrov *et al.*, 2020).

Consequently, it is important that individuals receive financial education, understand finances, and develop the ability to use them in making personal economic decisions (Vieira and Pessoa, 2020). In fact, due to events such as economic crises and globalization, financial education has gained special relevance, to the point of being incorporated into programs articulated in the formal educational system (Aceituno, 2018).

In this regard, it should be noted that financial education is classified into two types: formal, that is, that taught by schools and provided in the workplace, and informal, which is obtained through socialization and teaching provided by parents and other family members (Zhang and Fan, 2022).

However, the low levels of financial literacy in the general population are a consequence of the lack of instruction on this topic, which is reflected in bad habits and lack



of knowledge in daily financial planning (García *et al.*, 2015). Furthermore, in most Latin American countries, financial education programs are scarce (Aguilar-Sinche *et al.*, 2019).

On the other hand, it is worth mentioning that although financial education reduces dependence on debt and improves payment behavior, training in economics increases both the probability of having outstanding debt and the prevalence of payment difficulties (Brown *et al.*, 2016). In this regard, Cornejo *et al.* (2017) found that the majority of young adults were in debt with banks and/or commercial houses, which is linked to no or low financial knowledge. Furthermore, the findings of Zhang and Fan (2022) confirmed that formal financial education is negatively associated with loan delinquency, while subjective financial knowledge is positively associated with loan repayment delay and is a strong predictor of debt behaviors.

In this context, Gutiérrez *et al.* (2017) presented an explanatory model of over-indebtedness that includes among its causes the lack of financial knowledge among individuals, so the first working hypothesis is presented below:

- H1: Poor financial education directly, positively and significantly influences debt.

Now, we live in a consumer society derived from the increase in credit and the search for satisfaction of personal needs and desires, which are often satisfied with the acquisition of products, which results in non-payment and consumer debt (Mendonça and Dalagostini, 2019). In fact, in the specific case of young consumers, it can be indicated that they have consumer debt, hence educational policies are applied in the subjects of mathematics, economics and financial education with the aim of improving their financial behavior (Brown *et al.*, 2016). In particular, college students often apply for consumer loans as they hope to earn higher incomes by becoming competitive professionals (Zhang and Fan, 2022).

Likewise, in a consumerist and materialistic world, the consumer gives great importance to possessions, since they consider that they provide satisfaction and are a sign of success. Consequently, they seek happiness through the acquisition of goods, even if this means incurring debt (Páramo, 2019). Based on this premise, the second hypothesis is proposed:

- H2: Poor financial education directly, positively and significantly influences materialism.

On the other hand, it has been shown that financial education allows us to understand that money has a nominal and a real value, and that inflation affects its value over time (Jaramillo *et al.*, 2016). However, ignorance of this reality can provide an erroneous approach

to the value of money, which is why people tend to use credit cards as a form of payment. Although these offer certain benefits, their interest rates are the highest in the market (López, 2016). Therefore, the third hypothesis is the following:

- H3: Poor financial education directly, positively and significantly influences the perception of the value of money.

## Materialism

Consumption leads to materialism, which is assimilated as a cultural value linked to the possession and acquisition of material goods. For this reason, the consumer makes new purchases, since for him material goods have an essential role in his life and are a source of satisfaction or dissatisfaction. However, materialism can have negative consequences such as debt (Mendonça and Dalagostini, 2019).

Materialism is a personal judgment of individuals driven by their environment to assign greater value to the acquisition of material possessions, since they believe that these generate satisfaction, well-being and happiness. Furthermore, it is perceived as a sign of success, since this is judged by the quantity and quality of possessions, which is why many individuals resort to credit. Therefore, it is inferred that materialistic behavior affects the propensity to borrow (Quintano and Denegri, 2021; Minella *et al.*, 2017). In this context, the explanatory model of Gutiérrez *et al.* (2017) also found the tendency to imitate others in their materialistic objectives as a cause of over-indebtedness, which served as the basis for proposing the fourth hypothesis:

- H4: Materialism directly, positively and significantly influences debt.

According to Mendonça and Dalagostini (2019), materialism is assimilated as a cultural value that affects to a greater extent people who tend not to be interested in the economy and how it can affect them, hence their consumption plans lack control (Gutiérrez *et al.*, 2017). Furthermore, given the increase in the line of credit, consumption is facilitated and encourages individuals to purchase material goods to satisfy their desires and needs (Mendonça and Dalagostini, 2019). In fact, money is very important for materialistic people, since it is the means to acquire the desired goods; Therefore, these people claim to need greater income to satisfy their needs (Denegri *et al.*, 2022).

Studying the impact of materialism is important in a context in which it is observed that the value of money is relative. This scenario has increased over generations and has

reached its peak with generation X (Denegri *et al.*, 2022). Therefore, the fifth hypothesis is proposed:

- H5: Materialism indirectly, positively and significantly influences the perception of the value of money.

### Value of money

Money has significant social meaning and can function as a means of integration or differentiation; Furthermore, it is considered a commodity and a means to obtain performance. In the financial system, it is determined rationally by considering temporality, interests, risks, uncertainty and inflation. Personally, the value attributed to money has its origin in the process of economic socialization, influenced by intergenerational observation (Quintano and Denegri, 2021; Rabbani and Hasan, 2023).

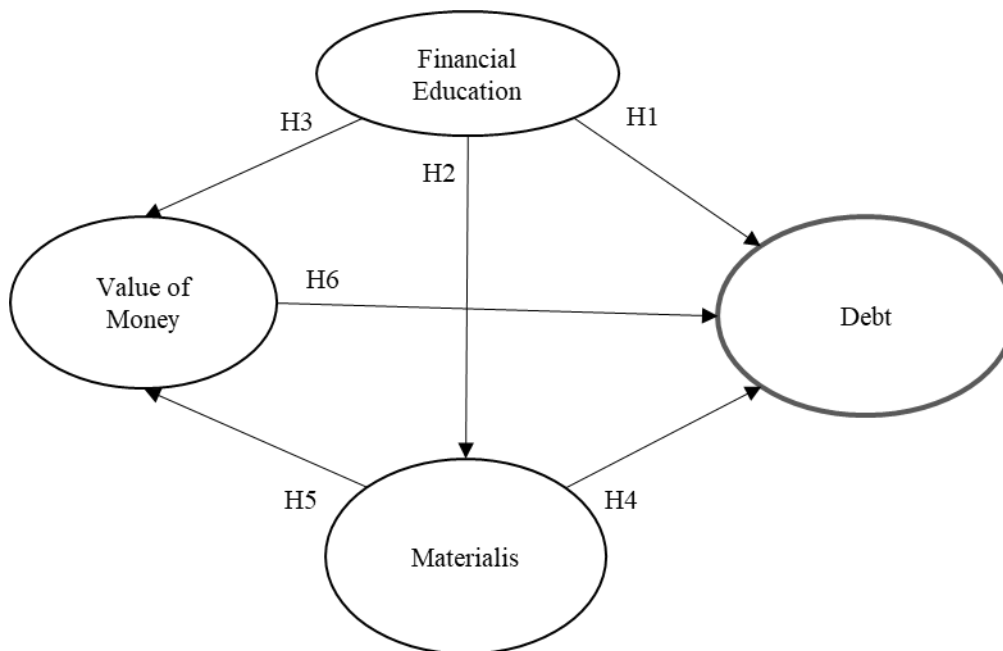
Likewise, the valuation of money is a construction that depends on the social class of the individual, who mainly considers its cost and the perceived quality of the goods acquired (Jones *et al.*, 2020). In fact, the information provided by studies impacts people's decisions, as it can discourage the consumption of goods that cannot be afforded (Carlsson and Nilsson, 2020).

On the other hand, the appreciation of money has also become a form of power and status in society, since it represents a utilitarian product and a symbolic emotional representation (Denegri *et al.*, 2021). For example, young people require it to participate in leisure and, when they do not have it, they resort to informal loans (Barros *et al.*, 2019). According to Minella *et al.* (2017), the value attributed to money impacts the level of debt. Therefore, the sixth hypothesis is proposed:

- H6: The value of money directly, positively and significantly influences debt.

In summary, Figure 1 illustrates the research hypotheses according to the relationship between the variables.

**Figure 1.** Theoretical Model



Fountain: Own elaboration

## Materials and methods

Initially, the available academic literature was consulted and analyzed to identify the antecedents of the various variables measured in this study. Subsequently, the scale previously validated by Minella *et al.* (2017) was adapted and transculturalized to the Mexican context. The items were translated with the support of Portuguese language experts to guarantee the linguistic, conceptual and cultural equivalence of the instrument with respect to the original scale. The translated version was subjected to expert validation following the methodological proposal of Escobar and Cuervo (2008).

Specifically, quantitative, empirical and cross-sectional research was developed, using a non-probabilistic sample of young adults. A total of 333 valid surveys were collected, a sample size that meets the recommendations of Hair *et al.* (2017). Likewise, it should be noted that the maximum number of predictor variables included in the proposed model is three (figure 1). According to this criterion, at least 109 observations were required to detect  $R^2$  values of at least 0.15, with a significance level of 1% and a statistical power of 80%, so the sample is considered of an acceptable size. Data were collected using two methods: in-person surveys using cluster sampling and an online Google form.

For data analysis, the statistical technique of structural equation modeling based on partial least squares (PLS-SEM) was used, known for its usefulness to explore and predict

models, especially in theoretical development in early stages (Hair *et al.*, 2019). The sample was made up of 60% women and 40% men, with an average age of 22 years, and an age range between 18 and 39 years.

## Results

For the inferential statistical analysis of the data, two stages were followed: in the first, the psychometric attributes of the measurement model (convergence and discriminant validity) were reviewed; In the second, the structural model was assessed.

### Measurement model

For the development of the model, it was considered that the operationalization of the constructs is reflective. From the original scale, 43 items were eliminated because they had factor loadings less than 0.708 (Hair *et al.*, 2017). Therefore, the final model included only 12 items, as can be seen in Table 2, where the majority exhibit factor loadings greater than 0.708 and all are statistically significant. Likewise, it was decided to include an item with a slightly lower factor loading due to the results of the loading relevance test, since it was anticipated that this study is exploratory for Mexico and the elimination of the item could affect the composite reliability. Therefore, the VDD5 indicator was maintained (Hair Jr. *et al.*, 2020).

**Table 2.** Convergent validity and internal consistency reliability.

Latent variable	Indicator	Loads	Cronbach's alpha	Composite reliability	bird
Financial education (FE)	EF8 Identified the costs I pay when purchasing a product on credit	0.872	0.884	0.928	0.811
	EF9 I use a bank credit card because I don't have money available for expenses	0.919			
	EF10 When purchasing in installments, I compare available credit options	0.910			
Materialism (M)	M3 My life would be much better if I had many things that I don't have	0.793	0.790	0.863	0.611
	M4 Buying things gives me a lot of pleasure	0.789			
	M5 I would be much happier if I could buy more things	0.810			
	M7 I like to have a lot of luxury in my life	0.734			
Value of money (VDD)	VDD5 Money builds a better world	0.637	0.359	0.745	0.600
	VDD8 I will be completely satisfied when I reach the situation that I determined for myself	0.891			
Debt (E)	E1 It is not right to spend more than I earn	0.813	0.671	0.818	0.600
	E2 It is better to save money first and then spend	0.755			
	E3 I know exactly how much I owe in stores, credit cards or banks	0.755			

AVE-average variance extracted.

Source: self-made

Regarding the composite reliability of the constructs, Cronbach's alpha and composite reliability values for the financial education, materialism and indebtedness variables meet the minimum and maximum recommended cut-off points of 0.60 and 0.95, respectively. About the analysis of average variance extracted (AVE), the measurement model complies with what was suggested, since all the values of the constructs are greater than 0.50 (Fornell and Larcker, 1981; Sarstedt *et al.*, 2014).

In the case of the *value of money variable*, which has a Cronbach's alpha of 0.359, a value is observed that is not appropriate. However, it is important to consider that Cronbach's



alpha is a conservative measure of reliability, while composite reliability tends to overestimate it. Therefore, both measures are reported. Despite the low Cronbach's alpha, the composite reliability of 0.745 is adequate for analysis with PLS, as it meets the recommended criterion (Martínez and Fierro, 2018). Therefore, it was decided to keep the variable in the model.

### Discriminant validity

Discriminant validity refers to the extent to which an item is different from the others and measures a different aspect of the variable. This is determined using the Fornell-Larcker criterion, HTMT (*heterotrait-monotrait ratio*) and cross-loading analysis (Hair *et al.*, 2017). According to the Fornell-Larcker criterion, the square root of the AVE is compared with the correlations that the construct has, hoping that the square root of the AVE is greater to confirm discriminant validity (Fornell and Larcker, 1981; Martínez and Fierro, 2018). This is seen in Table 3.

**Table 3.** Fornell Larcker and Heterotrait-Monotrait Ratio Criteria

latent variable	Fornell Larcker Criteria				HTMT Ratio			
	1	2	3	4	1	2	3	4
1. Financial education	<b>0.901</b>							
2. Debt	0.401	<b>0.775</b>			0.505			
3. Materialism	0.138	0.096	<b>0.782</b>		0.165	0.174		
4. Value of money	0.284	0.378	0.294	<b>0.775</b>	0.458	0.679	0.589	

Note: The square root of the AVE value is on the diagonal in bold

Source: self-made

The HTMT values are below the conservative threshold of 0.85 (Table 3), confirming the discriminant validity of the reflective model (Hair *et al.*, 2017). Cross-loadings allow us to verify that no item has a higher loading on another variable than the one it measures (Hair *et al.*, 2017). This was true for each item of the different constructs, as can be seen in Table 4, where the highest loadings have been highlighted.

**Table 4.** Cross-loadings

	EF	AND	M	VDD
E1	0.328	0.813	0.156	0.38
E2	0.241	0.755	0.024	0.248
E3	0.35	0.755	0.021	0.231
EF10	0.91	0.322	0.125	0.224
EF8	0.872	0.404	0.132	0.301
EF9	0.919	0.343	0.115	0.23
M3	0.099	0.068	0.793	0.25
M4	0.105	0.128	0.789	0.265
M5	0.124	0.123	0.81	0.186
M7	0.108	-0.05	0.734	0.206
VDD5	0.123	0.136	0.303	0.637
VDD8	0.288	0.399	0.194	0.891

Note: The highest loadings for each item are in bold

Source: self-made

### Structural model

The evaluation of the structural model was carried out with the determination coefficients ( $R^2$ ), the structural paths and the predictive relevance indicators  $Q^2$ . The first ( $R^2$ ) determines the prediction quality of the structural model, by estimating the degree to which the model explains the data (Seidel and Back, 2009). It is also explained as the combined effect that exogenous variables have on endogenous variables (Hair *et al.*, 2014). As a rule of thumb to determine its magnitude, an  $R^2$  of 0.75 is considered substantial, an  $R^2$  of 0.50 is moderate, and an  $R^2$  of 0.25 is weak (Hair *et al.*, 2014). In the proposed model, there are three endogenous variables: E, M and VDD. According to the magnitude of the  $R^2$  coefficient, the model weakly explains the three: E [0.238], M [0.019] and VDD [0.147].

The path coefficients of a PLS structural model can be interpreted as standardized beta coefficients from ordinary least squares regressions and their significance is determined through the *bootstrapping procedure*. If the paths lack statistical significance or show signs contrary to those proposed, there is no support for the proposed hypotheses. However, when they are statistically significant, there is evidence that the proposed causal relationship is supported by empirical findings (Hair *et al.*, 2011). In the proposed model, 5 of the 6 structural paths (H1, H2, H3, H5 and H6) coincide in sign with the proposed one and are statistically significant (95% confidence level). From the results, it is possible to affirm the following:

- The low EF has a positive and significant influence on debt [0.321,  $t=5.726$ ].
- Low EF has a positive and significant influence on materialism [0.138,  $t=2.407$ ].

- The low EF has a positive and significant influence on the value of money [0.248,  $t=3.538$ ].
- Materialism positively and significantly influences the value of money [0.259,  $t=4.435$ ].
- The value of money positively and significantly influences debt [0.298,  $t=4.561$ ] (table 5).

**Table 5.** Structural relationships proposed in the model

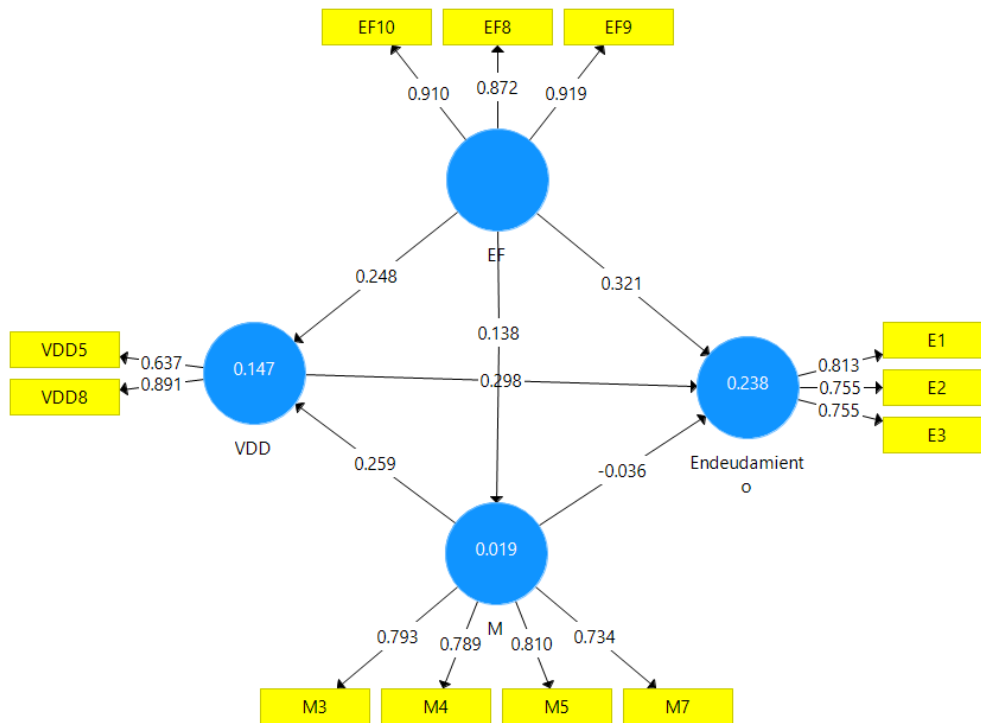
Relationship	Path coefficient	t-statistics	P Value	$f^2$	VIF	Supported hypothesis
H1. Financial education -> Debt	0.321	5,726	0.000	0.124	1,092	Yeah
H2. Financial education -> Materialism	0.138	2,407	0.016	0.019	1,000	Yeah
H3. Financial education -> Value of money	0.248	3,538	0.000	0.071	1,019	Yeah
H4. Materialism -> Debt	-0.036	-0.030	0.527	0.002	1,098	No
H5. Materialism -> Value of money	0.259	4,435	0.000	0.077	1,019	Yeah
H6. Value of money -> Debt	0.298	4,561	0.000	0.099	1,172	Yeah

$f^2$  - effect size, VIF- variance inflation factor

Source: self-made

The evaluation of the structural model also includes the evaluation of the effect size ( $f^2$ ), the evaluation of collinearity and the determination of path coefficients (Benítez *et al.*, 2020; Ringle *et al.*, 2020). Figure 2 and Table 5 present the results obtained from the evaluation of the structural model.

**Figure 2.** Results of the structural model



The R<sup>2</sup> values are in the endogenous constructs and the path coefficients are in the arrows.

Source: self-made

The variance inflation values (VIF) of the model indicate that there is no multicollinearity, given that they meet the criterion of being less than 3.0 (Hair *et al.*, 2019) (see Table 5). Concerning the Q<sup>2</sup> value, the degree of prediction of the endogenous variables is evaluated. Values less than 0.25 indicate small predictive accuracy (Ali *et al.*, 2018; Hair *et al.*, 2017). The values obtained were 0.008 for materialism, 0.126 for indebtedness and 0.085 for the value of money. All of these indicate a small predictive accuracy (table 6).

**Table 6.** Stone Geisser Q<sup>2</sup>

	SSO	SSE	Q <sup>2</sup> (=1- SSE/SSO)
Financial education	999,000	999,000	
Indebtedness	999,000	873,587	0.126
Materialism	1332,000	1320.712	0.008
Value of money	666,000	609,557	0.085

Source: self-made

## Discussion

The increase in the consumer credit portfolio is the result of the opportunity taken by households to access resources and increase their well-being, but at the same time it is a financial burden with interest that reduces the level of income and the ability to react to eventualities (Díaz *et al.*, 2019), which contributes to debt. Likewise, it can be indicated that young people stand out for not being good payers of their debts, and that the highest level of formal education does not always indicate a greater credit culture (Golman and Bekerman, 2018).

As mentioned, this work aims to analyze the influence of financial education, materialism and the value of money on debt. In this sense, it is innovative given that, according to the review carried out, there are no previous studies in Mexico on this topic. On the one hand, it was proposed that financial education positively and significantly influences debt. The results confirm this hypothesis in the environment of Mexican university students, which coincides with what was indicated in previous works (Cornejo *et al.*, 2017; Gutiérrez *et al.*, 2017; Zhang and Fan, 2022), which indicate that the scarce or no financial education has unfavorable effects on people's debt. However, it differs from the findings of Aksoylu *et al.* (2017) and Aranibar *et al.* (2023).

In the context studied, financial education is manifested to a greater degree in the use of bank credit cards when money is not available for expenses (EF9). Meanwhile, indebtedness is strongly reflected in the analysis subjects' consideration that it is not correct to spend more than they earn (E1).

Furthermore, it was postulated that the value of money positively and significantly impacts debt contracting. The findings confirm this relationship and coincide with the arguments of Minella *et al.* (2017). In fact, in the context of the study, the value of money is manifested to a greater degree in the goal of being completely satisfied when one's self-determined situation is achieved (VDD8).

The data also confirm the postulation that financial education positively and significantly impacts materialism. In this specific case, materialism manifests itself to a greater degree in the study subjects' perception of feeling more happy if they could buy more things (M5). Furthermore, the results indicate that financial education positively and significantly impacts the value of money, which coincides with the findings of Jaramillo *et al.* (2016) and López (2016).

On the other hand, it was confirmed that materialism positively and significantly influences the value of money, a result that agrees with the studies of Denegri *et al.* (2022). However, the hypothesis that materialism positively and significantly influences debt was not validated.

Finally, this study has some limitations, among which the collection of data through an online survey using self-report from university students stands out. In this sense, there is a potential selection bias due to the sampling method used, so the findings are not generalizable to the general population.

## Conclusions

The present study contributes to the literature by analyzing how the behavior of university students impacts their decision to acquire goods through financing. In fact, the results confirm that financial education and the value of money play a strategic role in the generation of debt, which is why it is suggested to review educational and credit policies in order to find a balance that avoids negative effects on the personal finances of university students.

## Future lines of research

It is recommended to continue the study to confirm the results, as well as delve into the specific personal factors of university students that influence their decision to take on debt. In addition, it would be relevant to explore macroeconomic aspects such as financial risks, including market risk and inflation risk. It would also be interesting to investigate the effects of debt on health, and it is suggested to carry out comparative studies to identify differences according to gender and generation (age) in the decision to get into debt.

Finally, given that this work has a quantitative approach, it is recommended to complement the results with qualitative approaches that allow identifying factors associated with the variables studied that may not have been fully captured in the quantitative design.



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