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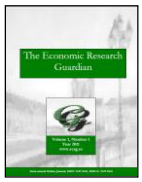

Financial Literacy of University Students in Emerging Countries: The Case of Colombia

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Abstract

Financial literacy has become a key skill for young adults, who face increasingly complex financial decisions relating to saving, budgeting, credit and the use of financial services. This study examines the factors influencing perceived financial literacy among university students in an emerging economy, focusing on Medellín and the Aburrá Valley in Colombia. A quantitative correlational research design was adopted. Data were collected through a structured questionnaire administered to 210 university students and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS 4. The results indicate that financial services and products significantly influence both financial experience and financial planning. Financial experience also positively influences financial planning, while financial planning significantly and negatively influences perceived financial decision-making influences and positively influences perceived financial literacy. However, perceived financial decision-making influences did not significantly affect perceived financial literacy. The study provides empirical evidence to support more context-specific and effective financial

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education strategies aimed at strengthening students' financial awareness, confidence, autonomy, and decision-making processes in emerging contexts.

Keywords: Financial behaviour, Financial education, Perceived financial literacy, Financial planning, University students

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1. Introduction

Understanding financial principles is essential for making informed decisions that ensure financial well-being (Barrot et al., 2024). As a result, financial literacy has become increasingly important in educational institutions, especially among university students (Douissa, 2020). Acquiring and applying financial skills is crucial as young people transition into adulthood and working life (Brau et al., 2019). Therefore, students should receive professional guidance to help them set financial goals and avoid risky behaviours, such as borrowing from informal sources to finance an extravagant lifestyle (Karim et al., 2023).

In Colombia, financial education is not only an economic or educational issue, but also a behavioural and emotional one. Many young people experience anxiety, stress, or overconfidence in relation to financial decisions, which links this issue directly to the field of financial therapy (Dote Pardo and Parra-Domínguez, 2026). Understanding these emotional, social, and behavioural dimensions within Colombia's socioeconomic conditions is key to improving financial well-being.

Despite its benefits, financial education remains poorly adopted by university students, which is a cause for concern. This gap can lead to poor financial decisions, lack of long-term planning, financial unpreparedness, over-indebtedness, low savings, lack of investment and limited financial stability (Bylander, 2021; Yong et al., 2018).

In emerging economies, a lack of financial skills, such as budgeting and saving, can perpetuate poverty and inequality and hinder business growth (French and McKillop, 2016). However, basic financial literacy can facilitate economic expansion by improving access to finance (Kandpal, 2023).

Given the global trend to promote conscious financial behaviour to improve financial well-being (Karim et al., 2023), research on this issue is crucial. Research on students' financial literacy and perceptions of their financial capabilities can inform strategies to improve savings habits and financial practices (Ergün, 2018).

Studies on financial literacy distinguish between financial education and its practical application in decision making (Marchyta and Kusumawardhani, 2024). An individual's financial literacy significantly influences planning and behaviour. Gale and Levine (2011) highlight financial education as a public policy priority that benefits individuals, families and society. Students' financial decisions also contribute to a more inclusive and sustainable financial system (Wahyuni et al., 2023).

However, recent research has also distinguished between objective financial literacy – which refers to measurable financial knowledge – and perceived financial literacy – which reflects people's self-assessment of their understanding, knowledge and confidence in financial matters. Whilst both dimensions are relevant to explaining financial decision-making, perceived financial literacy provides insight into how people assess their own financial capabilities and how these perceptions may influence their behaviour and financial planning processes. In this study, we focus on perceived financial literacy, as the measurement indicators capture students' awareness, beliefs, and perceptions regarding financial capabilities and financial decision-making.

In this context, Colombia is a particularly relevant setting for studying financial education because it has an expanding formal financial system alongside high levels of economic informality and financial practices based on interpersonal relationships. According to the National Administrative Department of Statistics (DANE, 2025), between June and August 2025, 55.2% of the employed population belonged to the informal sector. Added to this are traditional and informal savings and financing mechanisms, such as "pyramid schemes," "money chains," and "natilleras," in which trust can partially substitute for the intermediation of formal financial institutions. These characteristics mean that individuals' financial decisions depend not only on their financial knowledge but also on the perceptions, emotions, and social contexts that shape financial decision-making. Therefore, Colombia offers a particularly interesting environment for analysing how financial education relates to economic practices characterised by financial formalisation, informality, and inequality (Valencia et al., 2018).

Within this national context, Medellín and the Aburrá Valley constitute a relevant case study. The region is home to a significant university population and features a robust business and economic network spanning Medellín and the municipalities that make up its metropolitan area (Antioquia Territorial Planning Council (CTPA), 2020). At the same time, it is a region with students from diverse socioeconomic backgrounds and with varying levels of access to financial services, employment opportunities, and formal and informal financing mechanisms. This allows us to study financial education not only as the acquisition of technical knowledge but also as a phenomenon shaped by the economic and social circumstances in which young people make their decisions. In this regard, analysing university students in the Valle de Aburrá can provide relevant evidence for the literature on financial education in emerging economies, particularly regarding how financial knowledge translates into financial behaviours.

Although the literature on financial literacy among college students has grown in recent years, studies in emerging economies have already used PLS-SEM to analyse relationships between financial literacy dimensions, financial decision-making factors, financial inclusion, financial well-being, and other outcomes associated with financial behaviour (Mohd Padil et al., 2022; Bai, 2023; Kunjal, 2026; Eche-Querevalú et al., 2026). Therefore, this study does not contribute by using PLS-SEM as a methodological technique. Furthermore, evidence on financial literacy cannot be interpreted in isolation from context, as financial knowledge needs vary according to the level of economic development and the characteristics of the financial intermediation system (Kovács and Terták, 2019).

Therefore, this study expands the existing literature by examining perceived financial literacy within a specific Colombian institutional and socioeconomic context. First, Colombia combines a high degree of economic informality with the coexistence of formal financial services and informal savings and financing mechanisms, allowing an analysis of economic decisions shaped not only by formal financial knowledge but also by socioeconomic conditions and informal practices. Second, by focusing on

students in Medellín and the Valle de Aburrá, it provides evidence from a socioeconomically heterogeneous metropolitan region, with differences in access to financial services, employment opportunities, financial experience, and financing mechanisms, allowing us to assess whether the relationships found in other emerging economies are replicated in a context of informality and inequality. Third, unlike previous studies focused on investment fraud, well-being, or financial inclusion, this study simultaneously analyses financial services and products, financial experience, financial planning, perceived influences on financial decision-making, and perceived financial literacy. This perspective is relevant because perceptions of financial literacy, trust, and decision-making influences relate to students' financial behaviour and well-being (Respati et al., 2023) and can guide financial education strategies that are more attuned to the Colombian context. Consequently, this study aims to identify the factors that influence perceived financial literacy among college students in Medellín and the Valle de Aburrá metropolitan area, Colombia.

The rest of this paper is structured as follows: Section 2 explains some concepts related to financial education and presents the proposed hypotheses. Section 3 describes the methodology, including the approach, population, sample, questionnaire, and data processing technique. Section 4 presents the research results and supports the reliability of the instruments used to measure the model's variables and test the hypotheses. Section 5 discusses and compares the results with those of previous studies and outlines the study's practical implications. Lastly, Section 6 draws the main conclusions of the research.

2. Literature review and hypotheses

The literature does not offer a single definition of financial literacy, and the concept is frequently used interchangeably with financial education and financial knowledge (Vieira et al., 2019). However, financial literacy is generally understood as a multidimensional concept that encompasses both an understanding of financial concepts and the ability to apply this knowledge when making financial decisions (Potrich et al., 2016). It has been defined as the ability to interpret financial concepts for short-term decisions and long-term planning (Alkan et al., 2020) and is associated with areas such as personal finance, saving, investment and retirement planning (Lusardi and Tufano, 2009). In addition to objective knowledge, confidence and perceptions regarding financial literacy have been recognised as relevant dimensions that influence financial decisions (Fatoki and Oni, 2014).

Recent studies have distinguished between objective financial literacy and perceived financial literacy. The former refers to quantifiable financial knowledge, assessed by correct answers to financial questions, while the latter reflects people's perceptions of their own understanding, knowledge, and confidence in financial matters when managing their finances. While both dimensions help explain financial behaviour, perceived financial literacy is particularly relevant, as people's beliefs about their own financial capabilities can influence their planning, decision-making, and use of financial products and services.

Traditionally, research into financial education has focused on socio-demographic factors; however, recent studies have explored behavioural and attitudinal aspects from a multidimensional perspective (Aydin and Selcuk, 2019). Subjective attitudes, shaped by personal experiences, influence how people

perceive and manage financial matters, whilst financial awareness, knowledge and skills contribute to students' financial behaviour (Md. Sapir, Md. Shafik and Wan Ahmad, 2020).

Financial literacy encompasses several dimensions identified by researchers. Vieira et al. (2019) highlighted key aspects for university students, such as financial knowledge, experience, behaviour, attitude, knowledge application, daily decisions, evaluation, judgment, effective choice and decision-making. Similarly, Douissa (2020) reviewed the literature to analyse the behavioural determinants associated with students' financial literacy. These contributions highlight that financial literacy is not only related to knowledge acquisition but also to the perceptions, attitudes, and experiences that shape financial decision-making.

2.1. Financial experience

Lusardi and Tufano (2015) define financial experience as an individual's engagement in financial activities such as opening accounts, investing or borrowing. Work experience and money management are important determinants of students' financial knowledge (Johan et al., 2021). Parents also play an important role in shaping financial behaviour through knowledge transfer (Fan and Chatterjee, 2019). Consequently, financial experience may influence future financial planning (Fox and Bartholomae, 2020). Therefore, the following hypothesis is formulated:

H_1. Financial experience positively influences university students' financial planning.

2.2. Financial services and products

Financial institutions have diversified their services to increase financial inclusion, especially for university students (Cohen and Nelson, 2011). Access to financial products such as bank accounts, credit, insurance and mobile payments helps young people gain financial experience (Jünger and Mietzner, 2020). In addition, financial literacy improves quality of life and confidence in the future. In emerging economies, access to low-cost financial services can lead young people to take on long-term financial obligations, affecting their financial planning (Jünger and Mietzner, 2020). Therefore, the following hypotheses are proposed:

H_2. Financial services and products positively influence university students' financial experience.

H_3. Financial services and products positively influence university students' financial planning.

2.3. Financial planning

Poor financial decisions often result from a lack of information. Financial literacy is closely linked to financial planning and retirement savings, as individuals with greater financial literacy tend to plan better for retirement. Furthermore, financial literacy affects financial planning, which in turn affects wealth (Agarwal et al., 2015). University students should develop financial planning skills, as deficiencies and a lack of long-term vision have been observed (Andrade and Sánchez, 2018). Confidence in financial planning also influences financial behaviour (Sabri, 2011). Therefore, the following hypotheses are formulated:

H_4. Financial planning positively influences university students' perceived financial decision-making influences.

H_5. Financial planning positively influences university students' perceived financial literacy.

2.4. Perceived financial decision-making influences

Behavioural finance provides a theoretical framework for understanding how psychological, emotional, social and contextual factors influence financial decisions (Königstorfer and Thalmann, 2018). Unlike traditional financial models, which assume purely rational decision-making, behavioural approaches recognise that individuals' financial decisions are influenced by personal characteristics, emotions, experiences and social environments.

In this regard, emerging contexts such as that of Colombia require consideration of factors such as emotional regulation, trust in financial institutions, family influences and cultural attitudes towards debt and saving, as these elements shape the way in which individuals perceive and manage their financial decisions (Aguilar and C. L. Rodríguez, 2025). Consequently, this study does not conceptualise behavioural finance as a broad theoretical field, but rather focuses on perceived influences on financial decision-making, understood as individuals' perceptions of the personal, emotional and social factors that affect their financial decisions.

These perceived influences are relevant because financial decisions are not determined solely by knowledge or access to financial products, but also by how individuals interpret their own circumstances and the factors surrounding their choices. Consequently, the perceived influences on financial decision-making may affect students' perception of their financial capabilities and their approach to financial planning. Therefore, the following hypothesis is proposed:

H6. Perceived financial decision-making positively influences university students' perceived financial literacy.

2.5. Perceived financial literacy

Studies on financial behaviour highlight the importance of financial education in promoting responsible decision-making amongst young people (García, 2013). Lusardi (2019) emphasises the global significance of improving financial literacy, particularly as financial knowledge and perceptions of financial capabilities influence people's ability to make informed financial decisions.

However, people's perception of their own financial capabilities is also an important dimension of financial behaviour, as confidence, awareness, and subjective assessments can influence financial planning and the use of financial products and services.

Perceived financial literacy reflects people's assessment of their own financial knowledge and their ability to understand financial matters. This perception is shaped by previous experiences, financial education and interactions with financial environments. Consequently, perceived financial literacy may be influenced by factors such as financial planning and perceived influences on financial decision-making (Andrade and Sánchez, 2018; Sabri, 2011).

Furthermore, strengthening perceived financial literacy can support more effective financial education strategies by enhancing people's confidence, awareness, and participation in financial systems.

Consequently, this study proposes a model to analyse perceived financial literacy among university students, as illustrated in Figure 1.

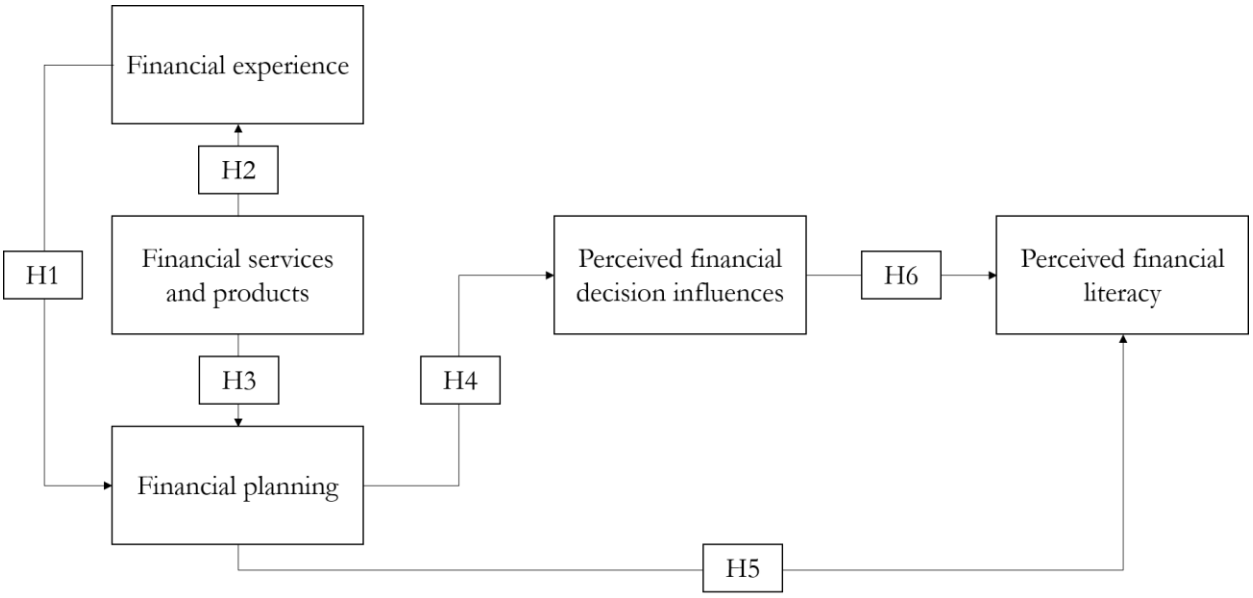

Figure 1 - Proposed model for analysing perceived financial literacy among university students

3. Methodology

This study used a quantitative, cross-sectional, correlational design to identify factors influencing perceived financial literacy among university students in the metropolitan area of the Aburrá Valley, Colombia. The research was conducted at two higher education institutions located in the Aburrá Valley region: Institución Universitaria Escolme, a private institution, and Instituto Tecnológico Metropolitano (ITM), a public institution.

3.1. Population, sample and sampling procedure

The choice of university students as the study population is justified by the relevance of perceived financial literacy and financial decision-making influences during this stage of life, when individuals begin to assume greater autonomy in financial decisions related to saving, budgeting, the use of credit, the management of financial products and services, and resource planning.

Non-probabilistic convenience sampling was used, as participants were selected based on their accessibility and availability during the data collection period. To administer the questionnaire, courses available at both institutions were selected through classroom visits, distribution of the questionnaire link by lecturers, and electronic invitations.

The inclusion criteria were: being enrolled on an undergraduate programme at one of the participating institutions during the data collection period (first semester of 2025); being enrolled on one of the

selected modules; voluntarily agreeing to participate after receiving information about the aim of the research; and completing the questionnaire with sufficient information for statistical analysis. The accessible population consisted of 241 undergraduate students enrolled on the selected modules at the two participating institutions. Of these students, 221 questionnaires were received, representing a response rate of 91.7%. Questionnaires containing incomplete information or inconsistencies that prevented their use in the analysis were excluded. Furthermore, students who had only participated in the pilot study were not included in the final sample. Following the data review, cleaning and quality control process, 11 questionnaires were excluded due to incomplete information, resulting in a final analytical sample of 210 students.

3.2. Pilot test and instrument

Before the final administration of the instrument, a pilot test was conducted with 10 students whose characteristics were similar to those of the target population. This phase evaluated the questionnaire's clarity, comprehensibility, wording, and overall functionality, and identified potential difficulties in interpreting the items.

Based on the results and observations from the pilot test, adjustments were made to improve the instrument's comprehensibility before final administration. These adjustments focused on the wording and presentation of the items, while maintaining the theoretical constructs and measurement approach defined for the study.

The final questionnaire included questions on participants' academic and sociodemographic characteristics, as well as items corresponding to five constructs: financial experience, financial services and products, financial planning, perceived financial decision-making influences, and perceived financial literacy. The items for these constructs were measured using a five-point Likert scale, where 1 corresponded to "strongly disagree" and 5 to "strongly agree." Table 1 presents the items, variables, and sources used.

The perceived financial decision-making influences construct captures students' perceptions regarding the emotional, social, and personal factors that may affect their financial decisions, whereas perceived financial literacy reflects their self-assessment of financial awareness and capabilities.

Table 1 - Study variables and items

Variables	Items	Description	Source
Financial experience	FE1	When making purchases, I typically use a credit card as my means of payment	Lusardi and Tufano (2015)
	FE2	My financial charges resulting from credit card usage or loans are usually in good standing by the cut-off date	
	FE3	Fines for late payment of my financial obligations occur regularly	
	FE4	I exceed my credit card limit	
	FE5	The banking companies that I have credit products with have warned me about potential cancellation of my products	
Financial services and products	FSP1	I believe that opening a checking account can provide financial benefits	(Jang et al., 2014; Lusardi and Tufano, 2015)
	FSP2	I believe that opening a savings account is a wise financial decision	
	FSP3	If I were to acquire a property, I would consider a mortgage loan or housing leasing	
	FSP4	I would consider taking out a loan with a bank	
	FSP5	I would like to be a client of a financial institution	
	FSP6	I would invest in government bonds to obtain long-term yields	
Financial planning	FP1	I habitually create and track a budget to organize my spending	(Jang et al., 2014; Sabri, 2011)
	FP2	I make sure that my expenses are lower than my income	
	FP3	I am aware of my financial goals and consistently achieve them	
	FP4	I believe that making investments of all types can be profitable	
	FP5	I save regularly to have a safety net for future emergencies	
Perceived financial decision influences	BF1	I believe that my gender, age, and level of education have an impact on my financial decisions	(Gutiérrez Andrade and Delgadillo Sánchez, 2018; Sabri, 2011)
	BF2	I believe that my emotions have an impact on my financial decisions	
	BF3	I believe that my social and economic status has an impact on my financial decisions	
	BF4	Family savings are for future emergencies	
Perceived financial literacy	FEL1	I believe that acquiring extensive knowledge about finance is a good way to protect my money	Gutiérrez Andrade and Delgadillo Sánchez (2018)
	FEL2	In my family, we have taken courses on finance to enhance our knowledge in this area	
	FL3	I consider it important to be familiar with the financial products and services currently offered by banks	
	FL4	I consider it necessary to understand the differences between various financial institutions (cooperatives, private financial funds, etc.)	
	FL5	I believe that the higher my level of education, the greater my level of perceived financial literacy	

3.3. Characteristics of the participants

The final sample comprised 210 students from two higher education institutions in the Aburrá Valley: Institución Universitaria Escolme and Instituto Tecnológico Metropolitano (ITM). The largest proportion of participants came from programmes related to administration and management. Specifically, 44.3 per cent were enrolled in Technology Management, 33.8 per cent in Administrative Management and 11.0 per cent in Business Administration. Together, these three programmes accounted for 89.0 per cent of the sample. The remaining participants were enrolled in Systems Engineering (6.7 per cent), Public Accounting (3.3 per cent) and Industrial Engineering (1.0 per cent). In terms of gender, 58.6 per cent identified as female, 36.7 per cent as male and 4.8 per cent preferred not to state their gender. In terms of age, 12.4 per cent were aged 15 to 20, 47.6 per cent 21 to 26, 38.1 per cent 27 to 42, and 1.9 per cent 43 or over. Furthermore, 76.7 per cent stated that they had at least one financial product or service, whilst 23.3 per cent indicated that they had none.

3.4. Data analysis and processing

PLS-SEM was employed because of its predictive nature and suitability for analysing complex behavioural models involving latent constructs related to financial decision-making and individual perceptions (Hair et al., 2019). PLS-SEM estimates the parameters of a structural model by integrating trajectory analysis with regression-based significance procedures, which is particularly useful for models aimed at explaining or predicting relationships between constructs (Amora, 2021). The analysis was carried out in two stages: (1) evaluation of the measurement model, including indicator loadings, internal consistency reliability, convergent validity, and discriminant validity for the reflective latent constructs; and (2) evaluation of the structural model and testing of the proposed hypotheses. The analyses were performed using SmartPLS 4 software, which is widely used for estimating PLS-SEM models (Sarstedt et al., 2022). Bootstrapping procedures were applied to assess the statistical significance of the hypothesised relationships.

3.5 Ethical guidelines

This research was conducted in accordance with the ethical principles applicable to research involving human subjects. The research protocol was reviewed and approved by the Ethics Committee of the Institución Universitaria Escolme, Medellín, Colombia, under Approval Code ACTA 01-19012026, dated August 25, 2026. Participation was voluntary and anonymous. Before completing the questionnaire, participants were informed of the study's objectives, the confidential nature of the information collected, and their freedom to decide whether to take part. Informed consent was obtained before administering the questionnaire.

4. Results

Structural equation modelling (SEM), a multivariate data analysis technique, was used to test the hypothesised relationships within the university students' financial education study model (Sarstedt et al., 2022). SEM includes two widely used methods: Covariance-based SEM (CB-SEM) and Partial Least Squares SEM (PLS-SEM). In this study, PLS-SEM was adopted due to its predictive power and broad applicability to management challenges, especially those involving human interaction (Avkiran, 2018).

PLS-SEM estimates parameters within a structural equation model by integrating principal component analysis and regression-based path analysis. This method is advantageous for cause-effect models that aim to explain or predict a construct (Sarstedt et al., 2022). As noted by Ringle et al. (2020), its advantages include managing complex models with numerous indicators and constructs, estimating formatively specified constructs, dealing effectively with small sample sizes, and deriving latent variable scores. SmartPLS 4 was used for the PLS-SEM analysis (Sarstedt et al., 2022).

4.1. Measurement model

Initially, the model's validity and reliability were assessed by conducting convergent and discriminant validity tests. Table 2 displays the factor loadings for each proposed item, considering that the first step in evaluating the reflective measurement model is examining indicator loadings (Hair et al., 2019). The cross-loadings criterion is used to determine if the indicator's loadings in its latent construct are greater than those in other constructs (Wong, 2016).

Some studies suggest that a factorial loading of at least 0.3 is acceptable, with values closer to 1 being more appropriate, and 0.7 being the suggested threshold (Jordan and Spiess, 2019). Accordingly, to preserve the model's validity and reliability, it is advisable to exclude components with factor loadings lower than 0.4 (Memon and Rahman, 2013). As a result, certain indicators were discarded from this study because they did not meet the established criteria.

Table 2 - Cross-loadings

	Financial experience	Financial services and products	Financial planning	Perceived financial decision influences	Perceived financial literacy
FE2	**0.836**	0.277	0.389	-0.177	0.191
FE3	**0.760**	0.181	0.291	-0.286	0.204
FE4	**0.707**	0.075	0.312	-0.249	0.085
FSP4	0.207	**0.794**	0.238	-0.082	0.316
FSP5	0.186	**0.791**	0.252	-0.130	0.243
FP1	0.245	0.209	**0.712**	-0.215	0.247
FP2	0.303	0.156	**0.726**	-0.218	0.188
FP3	0.422	0.328	**0.789**	-0.327	0.290
FP5	0.294	0.194	**0.759**	-0.267	0.268
BF1	-0.086	-0.042	-0.226	**0.674**	-0.027
BF2	-0.332	-0.148	-0.326	**0.907**	-0.196
FL1	0.188	0.213	0.265	-0.080	**0.772**
FL3	0.148	0.339	0.266	-0.175	**0.799**

Source: Own work using SmartPLS 4.

Table 3 presents the factor loadings and variance inflation factor (VIF) values, which assess multicollinearity by measuring the variance of a formative indicator that is not explained by others in the same block. A VIF value of 1 indicates no correlation between the examined variable and the

predictor variables, meaning the variance is not inflated (Avkiran, 2018). It is recommended that the VIF value of each indicator should not exceed 5 (Hair et al., 2011).

In addition, construct reliability was assessed using Cronbach's alpha, which measures internal consistency. Researchers suggest that appropriate reliability thresholds range from 0.7 to 0.9 (or 0.6 in exploratory research), with a maximum of 0.95 to avoid redundancy in indicators (Nitzl, 2018). However, Sarstedt et al. (2022) have criticised Cronbach's alpha in the context of PLS-SEM as it assumes a common factor model and tends to underestimate internal consistency reliability, making it a conservative measure.

Although Cronbach's alpha is widely used to assess internal consistency reliability, it has been criticised in the context of PLS-SEM because it assumes that all indicators have equal loadings and may underestimate the reliability of latent constructs (Sarstedt et al., 2022). Therefore, relying solely on Cronbach's alpha may provide a conservative estimate of construct reliability. Consequently, PLS-SEM studies often recommend supplementing Cronbach's alpha with composite reliability (CR), which accounts for the actual external loadings of the indicators and provides a more appropriate estimate for reflective measurement models (Ringle et al., 2020; Sarstedt et al., 2022). Higher CR values indicate greater internal consistency reliability. According to Hair et al. (2019), reliability values between 0.60 and 0.70 are acceptable in exploratory research, whilst values between 0.70 and 0.90 indicate satisfactory reliability. Therefore, in this study, construct reliability was assessed by considering both Cronbach's alpha and composite reliability.

The Average Variance Extracted (AVE) was also measured to ascertain the model's convergent validity, with values higher than 0.5 being desirable (Astrachan et al., 2014). Table 3 presents these results and shows compliance with the criteria for factor loadings, VIF, CR, and AVE.

Table 3 - Model's reliability and convergent validity

Construct	Indicator	FL	VIF	CA	CR	AVE
Financial experience	FE2	0.836	**1.289**	0.663	0.813	0.592
	FE3	0.760	1.327			
	FE4	0.707	1.261			
Financial services and products	FSP4	0.794	1.070	0.407	0.771	0.628
	FSP5	0.791	1.070			
Financial planning	FP1	0.712	1.374	0.749	0.834	0.558
	FP2	0.726	1.435			
	FP3	0.789	1.338			
	FP5	0.759	1.461			
Perceived financial decision influences	BF1	0.674	1.098	0.460	0.775	0.638
	BF2	0.907	1.098			
Perceived financial literacy	FL1	0.772	1.058	0.381	0.763	0.617
	FL3	0.799	1.058			

Source: Own work using SmartPLS 4.

The Fornell-Larcker criterion was used to assess the model's discriminant validity and ensure that the constructs were empirically distinct. According to this criterion, the square root of the average variance extracted (AVE) for each construct must exceed its correlations with the other constructs in the model (Rasoolimanesh, 2022) (see Table 4).

Table 4 - Fornell-Larcker criterion

	Perceived financial decision influences	Financial experience	Perceived financial literacy	Financial planning	Financial services and products
Perceived financial decision influences	**0.799**				
Financial experience	-0.295	**0.770**			
Perceived financial literacy	-0.164	0.213	**0.786**		
Financial planning	-0.352	0.435	0.337	**0.747**	
Financial services and products	-0.133	0.248	0.353	0.310	**0.792**

Source: Own work using SmartPLS 4.

Whilst this criterion has been widely applied in PLS-SEM studies, recent methodological developments recommend supplementing it with the heterotrait-monotrait (HTMT) ratio of correlations, which provides a more sensitive assessment of discriminant validity (Henseler et al., 2015; Sarstedt et al., 2022). The HTMT assesses the ratio of the mean correlations between constructs to the mean correlations within the same construct. Values below 0.85 indicate adequate discriminant validity, whilst values below 0.90 are considered acceptable in more exploratory contexts (Henseler et al., 2015; Hair et al., 2019). In this study, all HTMT values were below the recommended threshold, confirming that the constructs included in the model represent empirically distinct concepts. Table 5 presents the HTMT results. These results provide additional evidence that perceived financial literacy and perceived financial decision-making influences represent theoretically and empirically differentiated constructs.

Table 5 - Heterotrait–Monotrait ratio (HTMT)

	Perceived financial decision influences	Financial experience	Perceived financial literacy	Financial planning	Financial services and products
Perceived financial decision influences					
Financial experience	0.494				
Perceived financial literacy	0.327	0.413			
Financial planning	0.569	0.595	0.624		
Financial services and products	0.391	0.443	0.891	0.539	

Source: Own work using SmartPLS 4.

4.2. Structural model

The structural model's causal relationships were evaluated using R^2 values (coefficient of determination) and path coefficients. R^2 measures the variance described in each endogenous construct, making it a measure with both explanatory and predictive power (Purwanto, 2022). The path coefficient, in turn, helps determine the relationships between unobserved constructs (Zeng et al., 2021).

Table 6 presents the hypothesis testing results. This table includes the values of the path coefficient (β-value), which, according to theory, should exceed 0.005; the t-ratio test, which has a threshold of 1.96; and the p-value, which is the hypothesis test par excellence in the context of PLS-SEM and is deemed significant if lower than 0.05 (i.e., 1-95 %) (Kock, 2016).

Table 6 - Hypothesis testing

Hypothesis	Path β-value	T-value	*p-v*alue	Results
Financial experience → Financial planning	0.382	5.487	0.000	Supported
Financial services and products → Financial experience	0.248	4.179	0.000	Supported
Financial services and products → Financial planning	0.215	3.187	0.001	Supported
Financial planning → Perceived financial decision influences	-0.352	5.721	0.000	Not supported (significant negative effect)
Financial planning → Perceived financial literacy	0.320	4.021	0.000	Supported
Perceived financial decision influences → Perceived financial literacy	-0.051	0.609	0.543	Not supported

Note: β-value > 0.005; t-value > 1.96; p-value < 0.05. Source: own work using SmartPLS 4.

According to these results, the strongest relationship was observed between financial planning and perceived financial decision-making influences, followed by the impact of financial experience on financial planning and the influence of financial planning on perceived financial literacy. Although the relationship between financial planning and perceived financial decision-making influences was statistically significant, it presented a negative effect ($\beta = -0.352$; $p < 0.001$), indicating an inverse relationship between these constructs. This finding suggests that students with stronger financial planning practices may perceive a lower influence of emotional, social, and personal factors on their financial decisions. Regarding financial services and products, these constructs showed significant effects on financial planning and financial experience, underscoring their relevance in shaping students' financial experiences and planning processes. However, perceived financial decision-making influences did not significantly influence perceived financial literacy among university students.

Effect sizes, measured using f^2 and q^2, were examined to determine the strength and predictive relevance of the relationships in the structural model. Martínez Ávila and Fierro Moreno (2018) suggest using f^2 to assess the substantive contribution of exogenous constructs to endogenous variables, where values of 0.02, 0.15, and 0.35 indicate small, moderate, and large effects, respectively. In this study, the relationship between financial experience and financial planning showed a moderate effect size (0.178), whilst the remaining relationships exhibited small effect sizes.

In addition to the coefficient of determination R^2, the q^2 criterion was applied to assess the predictive relevance of the structural model (Wong, 2013). Values greater than zero indicate predictive relevance, where 0.02, 0.15, and 0.35 represent low, moderate, and high predictive relevance, respectively. In this case, all endogenous constructs met the recommended criterion, although the predictive relevance values remained low.

5. Discussion

5.1. Comparative studies

By comparing various studies on financial literacy and financial decision-making among university students, we identified patterns and trends that provide comprehensive insight into how factors such as financial attitudes, self-motivation, self-efficacy, and perceived influences on financial decision-making contribute to explaining financial behaviour and well-being among young adults. Wahyuni et al. (2023), for instance, underscored the importance of financial literacy and financial attitude in university students' financial management in Indonesia. In line with the results presented here, both studies emphasise their relevance to financial decision-making, with a significant impact on financial management behaviour and financial intention.

Other researchers, such as Dewi et al. (2020), have reported similar results when exploring the relationship between financial experience, financial perception, and financial behaviour. Nonetheless, the present study suggests a positive correlation between financial experience and financial planning. Moreover, financial experience is also associated with more effective financial planning, extending its influence beyond the acquisition and use of financial products. This aligns with Adnan and Akhtar's (2021) emphasis on the importance of financial knowledge and experience in shaping students' confidence when using digital financial products.

In their study, Muñoz-Céspedes et al. (2023) highlighted the positive influence of financial services and products on financial planning and effective decision-making. By incorporating university students, our study expands on that perspective and shows that financial experience and planning are crucial factors in financial decision-making. Similarly, Yeo et al. (2023) investigated the relationship between financial planning and behavioural dimensions in financial decision-making, emphasising the significance of financial planning in shaping individuals' financial choices. Contrary to expectations, the findings show that financial planning has a significant negative influence on perceived influences on financial decision-making. This suggests that students with stronger financial planning practices may perceive emotional, social, and personal factors as less influential in their financial decisions, possibly reflecting greater autonomy and control over their financial choices.

Furthermore, Torma et al. (2023) delved into the effectiveness of financial literacy among university students. The findings reported here align with their work, suggesting that financial experience can positively influence students' perceived financial literacy by strengthening their awareness, confidence, and perceived capabilities regarding financial matters. Taken together, both studies contribute to a comprehensive understanding of its influence on university students.

This study investigated the relationships between financial experience, financial services and products, financial planning, perceived influences on financial decision-making, and perceived financial literacy. Bai (2023), on the other hand, centred on the correlation between financial well-being and mental

budgeting, self-control, and investment decision-making. However, both studies highlight the importance of financial education in achieving positive financial outcomes.

Another noteworthy study is that conducted by Respati et al. (2023), who analysed the influence of digital financial literacy on the financial behaviour and well-being of university students. Comparing their results with this study revealed similarities in the importance attached to subjective dimensions associated with financial literacy and financial decision-making in the university context, with particular emphasis on the need to understand and manage digital financial tools in the current technological landscape.

In Colombia, the results should be interpreted in light of an economy in which informal credit and savings mechanisms continue to play an important role, especially outside urban centres. This dual financial ecosystem not only conditions access to banking services but also influences individuals' emotional and behavioural responses to money management, such as anxiety about debt or mistrust of formal institutions. These differences may explain why students with greater experience of the formal financial system tend to demonstrate better planning skills, as they come from areas with greater access to the banking system, such as Medellín and the Aburrá Valley. Additionally, the negative relationship between financial planning and perceived financial decision-making influences suggests that stronger planning practices may reduce students' dependence on emotional or social factors when making financial decisions. In this sense, the findings align with the financial therapy approach, highlighting the need for interventions that address the cognitive, affective, social, and perceptual aspects of financial decision-making.

5.2. Contributions

This study contributes to the financial literacy and financial education literature by applying PLS-SEM to examine the complex relationships between financial experience, financial services and products, financial planning, perceived financial decision-making influences, and perceived financial literacy among university students in an emerging economy. Using PLS-SEM, along with reliability and validity assessments using indicators such as VIF, CR, and AVE, ensures the robustness of the proposed model.

A relevant contribution of this study is incorporating perceived financial decision-making influences as a specific construct that captures students' perceptions of the emotional, social, and personal factors affecting their financial decisions. This approach provides a more precise understanding than broader behavioural finance perspectives, allowing the analysis of how individuals perceive the factors shaping their financial choices.

A key contribution is the conceptualisation of financial experience as a multidimensional construct encompassing access to financial products, financial record-keeping, and tax planning. In addition, the study provides empirical evidence of the positive relationship between financial experience and financial planning, a relationship that has received limited attention in previous research.

Beyond its theoretical contribution, the findings offer practical value by supporting the design of evidence-based financial education strategies for universities, policymakers, and financial institutions, thereby contributing to more effective financial education initiatives aimed at strengthening students' financial awareness, confidence, and decision-making capabilities.

5.3. Practical implications

The findings provide practical implications for universities, policymakers, financial institutions, and students. In emerging economies such as Colombia, where financial informality and limited banking inclusion remain significant challenges, the results support the development of contextualised financial education initiatives that combine practical learning experiences with greater access to financial services.

For educational institutions, the positive relationship between financial experience and financial planning suggests integrating experiential financial education across academic programs. Policymakers may use these findings to promote financial education through curricular reforms and initiatives that strengthen students' financial capabilities. Financial institutions can design more accessible, educational financial products tailored to university students, while students can strengthen their financial awareness and confidence by engaging in practical financial activities and adopting effective saving and budgeting practices.

Furthermore, the negative relationship between financial planning and perceived financial decision-making influences suggests that financial education initiatives should not only provide technical knowledge but also promote students' autonomy, self-regulation, and confidence in making independent financial decisions.

Finally, the study provides a basis for future research examining these relationships in different cultural and socioeconomic contexts and evaluating the effectiveness of financial education interventions.

6. Conclusions

This study identified the factors influencing perceived financial literacy among university students in Medellín and the Aburrá Valley, Colombia, providing empirical evidence on how financial experiences, access to financial services, planning practices, and perceived influences on financial decision-making interact in an emerging-economy context. The findings show that perceived financial literacy is associated not only with financial knowledge but also with the experiences, perceptions, and decision-making processes that shape how young adults manage their financial lives.

The results highlight the central role of financial planning in students' financial development. Financial experience and access to financial services and products contribute to stronger financial planning processes, suggesting that practical exposure to financial activities may be as relevant as formal financial education. Furthermore, financial planning positively influences perceived financial literacy, indicating that students who engage in planning activities tend to feel more confident and aware of their financial capabilities.

Another contribution of this study is identifying the relationship between financial planning and perceived financial decision-making influences. Contrary to the initial hypothesis, financial planning showed a significant negative association with perceived financial decision-making influences. This finding suggests that students with stronger planning practices may perceive emotional, social, and personal factors as less influential in their financial decisions, reflecting greater autonomy and self-regulation in financial management. This result highlights the importance of considering not only

financial knowledge and access to resources, but also the psychological and contextual dimensions that shape financial decision-making.

From a practical perspective, the findings suggest that universities, policymakers, and financial institutions should move beyond traditional financial education approaches focused exclusively on knowledge transmission. Instead, initiatives should promote experiential learning, financial planning skills, access to appropriate financial products, and the development of confidence and autonomy in financial decision-making, particularly among young adults in emerging economies.

This study has some limitations. The cross-sectional design, convenience sampling approach, and focus on university students from a specific metropolitan region restrict the generalisation of the findings. Additionally, perceived financial literacy was measured through self-reported indicators, which capture students' perceptions rather than objective financial knowledge. Future research should incorporate objective financial literacy measures, larger and more diverse samples, and additional variables such as financial attitudes, risk preferences, cultural factors, socioeconomic conditions, and financial awareness to further understand the mechanisms underlying students' financial decision-making.

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Conflict of interest

Authors declare no conflicts of interest.

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