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Relationship between perceived value, student experience, and university reputation: structural equation modeling

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Research regarding university management from the field of marketing has been increasing, as well as the differential strategies designed by universities to attract and retain both students and teachers. One of them is obtaining high-quality accreditations. Its impact on the process and purchasing behavior of educational services is recognized. For this reason, this research aims to relate the three constructs in higher education institutions and compare their behavior both in high-quality accredited universities and in non-accredited ones in order to identify the incidence of accreditation. The research used an analysis of the data by structural equations model and the results showed that both the student's experience and the perceived value influence reputation. Meantime, the student's experience influences the perceived value and no differences are evident in the model because of the accreditation in high quality.

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Introduction

The effects of changes in the provision of higher education services, coupled with a highly competitive environment (Del-Castillo-Feito et al., 2019), have created significant challenges for Higher Education Institutions (HEIs). In terms of outcomes, the landscape of Higher Education (HE) in Ibero-America has shown enrollment growth figures with an increase in the participation of private HEIs. According to the Ibero-American Observatory for Science, Technology, and Society [OCTS *by its Spanish acronym*] (2023) of the Organization of Ibero-American States [OEI *by its Spanish acronym*], (both in Ibero-America and Latin America, there is substantial variability among the young population enrolling in higher education programs. Countries like Chile and Spain stand out, a second group of countries fall below the average, including Uruguay and Colombia, and the countries with the lowest averages are El Salvador and Honduras.

In this context, another study conducted by the OEI (2022) reveals that among the studied Ibero-American countries, Colombia has made significant progress in transforming its university structure. This has resulted in increased enrollments in both public and private universities. Moreover, there has been an increase in scientific publication output in Scopus and total education-related GDP expenditure. Similarly, the same OEI study (2022) highlights the incorporation of internationalization as an evaluated aspect of the high-quality accreditation model granted by the Ministry of Education in Colombia. However, this report also indicates that, despite improvements in the education sector, an increasing number of students are seeking higher education opportunities abroad.

Additionally, Fedesarrollo (2022) points out that challenges persist in terms of high dropout rates across the entire Colombian education system, and in terms of quality, only HEIs categorized as universities opt for high-quality accreditation. Similarly, demographic trends indicate a decline in birth rates (OEI, 2022), and issues of inequality, poverty, exclusion, polarization, and job uncertainty, among other factors, remain pressing concerns (Herrero-Villarreal et al., 2023). On the other hand, UNESCO & IESALC (2021), in its report on the future of higher education in Latin America and the Caribbean, presents six calls to action for those interested in higher education, namely, advocating for the right to higher education, addressing barriers to participation, opening access to knowledge, preparing the next generations, striving for greater relevance in higher education, and considering the future.

These challenges compel HEI executives to rethink how to address them and formulate various strategies to position themselves and attract increasingly scarce students with different needs and expectations for their professional education. Some strategies implemented by HEIs for differentiation and market positioning focus on a more commercial approach, while others emphasize relationship-building. Furthermore, some HEIs concentrate on acquiring certifications and high-quality accreditations. Common strategies like referral programs (highly profitable and efficient for some HEIs) continue to be prevalent, alongside more contemporary approaches that involve digital marketing and artificial intelligence.

The first group of strategies focuses on developing and strengthening the HEIs' brand and communicating it to their stakeholders (Hemsley-Brown and Goonawardana, 2007). However, managing education with a commercial approach becomes increasingly complex (Maringe and Gibbs, 2009, p. 4), as it involves marketing strategies to attract and retain both students and teachers (Plewa et al., 2016; Christensen and Gornitzka, 2017). A second group of strategies focuses on implementing relationship programs with the private and public sector (Friedman and Deek, 2003), securing resources for research (Morphew et al., 2016), obtaining spaces for business internships (Del-Castillo-Feito et al., 2019), engaging with other HEIs for internationalization processes and student and faculty exchange (Plewa et al., 2016), and strengthening collaborative networks in research and pedagogy (Morphew et al., 2016). A third group of HEIs opt for high-quality national accreditation (Consejo Nacional de Acreditación CNA (2006); Ministerio de Educación Nacional MEN (2001)). In this regard, of the HEIs categorized as universities, 71% have high-quality accreditation (MEN, 2022), but this is not the case with other categorizations such as, for example, University Institutions or Technological Schools, where only 27% have high-quality accreditation. This indicates that the accreditation certificate is not a strategic bet for a large number of HEIs, which opt for other more commercial and niche strategies.

Similarly, within this third group, some HEIs focus on obtaining international accreditations, both institutional and program-specific (e.g., European Quality Assurance Agency [EQAA], The Association to Advance Collegiate Schools of Business [AACSB], and Accreditation Council for Business Schools and Programs [ACBSP]). A smaller proportion of HEIs aim to compete and position themselves in the leading international reputation rankings. These include the Academic Ranking of World Universities (ARWU), commonly known as the Shanghai ranking, the British Times Higher Education (THE) ranking, and the Quacquarelli Symonds (QS) ranking. Each of these rankings employs different indicators and distribution percentages in their measurements (Parellada and Álvarez, 2017). As of 2022, only two Colombian universities managed to enter the Shanghai ranking: the National University of Colombia and the University of the Andes (Shanghai Ranking (2022)). For the Times Higher Education (THE) ranking, 27 Colombian universities entered, with 15 entering directly into the ranking and the remaining 12 classified as young universities (Times Higher Education, 2023). Lastly, in the QS ranking for 2022, 25 universities entered (QS Quacquarelli Symonds, 2023). Despite progress and achieved results, greater efforts are needed to attain higher rankings, as Colombian universities do not rank at the top positions in global rankings, and it has been demonstrated that various stakeholders, especially students, value the achievements of HEIs.

In this context, prospective or customer-like future students consider such distinctions as relevant criteria for their decision-making regarding their career and HEI choices (Plewa et al., 2016). They understand that these factors will influence their educational journey and their integration into the labor market (Drydakis, 2015). This is where HEI reputation, student experience, and perceived value play a significant role in establishing a competitive edge vis-à-vis other national and international HEIs (Miotto et al., 2020).

As will be further explored in the literature review, there are numerous studies that link two of these variables. For example, the relationship between experience and perceived value (Prahalad and Ramaswamy, 2003), perceived value and reputation (Caruana and Ewing, 2010), and experience and reputation have been examined. However, this relationship is typically presented unequivocally, as reputation requires a customer experience to be evaluated. In this regard, Grunig and Hung (2002) differentiate primary and secondary reputations based on participation and personal experience with organizations. Indeed, individual experiences influence the reputational nature of an organization (Sung and Yang, 2008). Nevertheless, there is a lack of research that interrelates all three variables and considers student experience as a construct rather than a prerequisite for research participation.

Hence, this research recognizes the importance of understanding these relationships and their implications for HEI management. It aims to relate the three constructs—student experience, perceived value, and reputation—with two comparison groups: HEIs categorized as "universities" holding high-quality accreditation granted by the Ministry of National Education in Colombia, and non-accredited universities. The goal is not only to discern the relationships among the studied variables but also to comprehend the influence of accreditation on student perception. To achieve this objective, this article proceeds with a literature review that particularly focuses on defining the focal constructs and the proposed conceptual model. Subsequently, the methodology employed is explained, encompassing sample selection, data collection, measures, and methods. Next, the conducted analyses are presented, and finally, the conclusions, discussion, and managerial implications are provided.

Literature review

Focal construct definitions

University reputation. The concept of university reputation has been adapted from the original concept of corporate reputation (Amado and Juarez, 2022). In this sense, corporate reputation is defined as "the perceptual representation of a company's past actions and future expectations that describes the overall appeal to all its key constituents compared to other rivals" (Fombrun, 1996, p. 72). Similarly, the reputation of universities corresponds to the impressions gained from stakeholders' interactions with the universities over time (Alessandri et al., 2006), as reputation is understood as the sum of perceptions and evaluations various stakeholders have about an HEI (Chen and Esangbedo, 2018).

Characterized by its multidimensionality (Verčič et al., 2016), reputation is a product of the perception (Maduro et al., 2018) that stakeholders (Finch et al., 2015) have of an organization's performance and outcomes (Fombrun et al., 2000) over time (Sung and Yang, 2008). Moreover, reputation is influenced by variables such as identity and image, communication, research, indices and rankings, risks and management, value, brand, and symbols. Simultaneously, it affects variables like funding, evaluations and behavior, enrollments and registrations, preferential recognition and loyalty, student decisions, and graduates' access to the job market (Amado and Juarez, 2022). Some research has interchangeably used the concepts of corporate identity, corporate image, and reputation, yet they remain separate constructs, albeit correlated due to perceptions of both internal and external stakeholders, where opinions often intertwine. It's recognized that image and identity are components of reputation (Walker, 2010; Bankins and Waterhouse, 2019). However, studies indicate that analyzing these three factors yields several benefits focused on attracting more skilled customers and human talent (Bankins and Waterhouse, 2019). In clarifying the concepts, Chun (2005) argues that corporate identity is intentionally designed by the organization and evaluated by internal stakeholders based on their perception of the organization. Meanwhile, the image is external and corresponds to general and prior perceptions of external stakeholders.

Other authors specify that university reputation is the reflection or outcome of all internal actions undertaken by a university, which translate into the image projected to different stakeholders (Van Vught, 2008). Furthermore, university reputation serves as a substitute for the quality of educational services, influencing the decisions of prospective students (Hemsley-Brown, 2012) and faculty when selecting and evaluating the university they will join (Wolf and Jenkins, 2018). In summary, "reputation is the result of the assessment made by both internal and external stakeholders of the performance and outcomes achieved in the management of their substantive functions, namely, teaching, research, and extension over a period of time" (Amado and Juarez, 2022).

The benefits of reputation are extensive, including reducing uncertainty in stakeholders' decision-making, thereby fostering trust (Miotto et al., 2020; Munisamy et al., 2014), enhancing graduate hiring (Morley and Aynsley, 2007), increasing student satisfaction and loyalty (Plewa et al., 2016; Liu et al., 2017), creating entry barriers (Lafuente-Ruiz-de-Sabando et al., 2018), decreasing risks and management costs (Christensen and Gornitzka, 2017), attracting investors, and establishing a sustainable competitive advantage (Marginson, 2016; Pfarrer et al., 2010). Due to its significance, it's crucial to manage reputation by considering stakeholders' assessments, especially those of students, who are the direct users and creators of their educational experience through all touchpoints of their educational journey (González-Marcos et al., 2016).

Student experience. The concept of student experience, similar to university reputation, originates from the adaptation of the customer experience concept, defined as the "journey" a customer takes with a product or service, focusing on the cognitive, emotional, behavioral, sensory, and social responses of a customer to a company's offerings (Lemon and Verhoef, 2016). In the context of higher education, student experience refers to the value a student derives from their overall university life (D'Uggento et al., 2023), considering that education is an experience that cannot be evaluated until it is experienced (Alves, 2011). For this study, student experience is understood as the subjective and objective evaluation that a student makes of the tangible and intangible aspects of their educational journey, which is intentionally designed by the university's administrators and faculty. This journey begins with their choice of program, where they are recognized as customers, and extends through their role as students and co-creators of knowledge, until their completion as graduates of the academic programs offered by the university.

The construct of student experience also shares the characteristic of being multidimensional (Lemon and Verhoef, 2016). This is because the experience demands attention and management at different points along the student's journey, ranging from career and university decision-making processes to student retention, as this affects the perceived value and satisfaction of the student (Nadiri et al., 2009) with their educational process and their success in entering the job market (Kertechian et al., 2022) or developing their entrepreneurship skills, particularly in business schools. Studies such as Chandra et al. (2018) have identified that enhancing student experiences is important as they are linked to the quality of educational services. Diagonally, Temple et al. (2016) propose the "student journey" consisting of four elements: application experience, academic experience, campus experience, and postgraduate experience. Table 1 provides an overview of the dimensions of student experience from previous studies.

Furthermore, it has been recognized that the student experience goes beyond the teaching and learning process. It also requires students' commitment to their educational journey and an active role within it, as well as engagement with well-being processes managed by HEIs, from which students benefit (Matus et al., 2021). Given that the educational experience is a lengthy process depending on the educational level, it implies continuous management and review of processes and activities to identify improvement opportunities, ensuring quality service throughout the journey (Yap et al., 2022), enhancing student perceptions, and consequently, the success of HEIs (Shapiro et al., 2017).

The complexity of measuring and managing student experience, along with its multidimensional nature, is closely related to the duration of educational services, the number of interactions

Table 1 Found dimensions of student experience.

Concept	Dimensions	Authors
The student journey	1. The application experience 2. The academic experience 3. The campus experience 4. The graduate experience	Temple et al., (2016)
Student experience	**Aspects:** 1. Learning and teaching 2. Student engagement 3. Student well-being. **Dimensions:** • Social • Educational • Personal	Matus et al., (2021)
Student experience	1. Student-centered service. 2. Diversity and global citizenship. 3. Co-production of the learning experience 4. Teacher dependence 5. Accountability 6. whole-person development.	Xu et al., (2018)
Measure of the student experience is the "earnings" resulting from the quality of service	1. Academic development 2. General education 3. Professional preparation, and 4. Personal development	Clemes et al., (2013)
Student experience attributes	1. The professionalism and competence of teachers, 2. The quality of academic services and support facilities 3. The interpersonal connections and external considerations, 4. The program design and course content, 5. The physical environment and facilities	Yap et al., (2022)
Student experience categories	**The institutional network:** The student feedback, graduation, curriculum design, communication with service staff, rigor. **The learning situation:** Grading, classroom behavior, classroom studies, individual studies, teaching methods, course design.	Koris y Nokelainen (2015)
The overall quality of the university experience	1. Motivation to attend HEIs and enroll in study program 2. Expectations in relation to future work 3. Perceived quality of support facilities 4. Perceived quality of teaching and administrative staff 5. Value of university experience, 6. Loyalty and career, 7. External effectiveness of the training program in relation to work 8. Training measuring the external effectiveness of the degree issued by HEIs in relation to the need for further training.	Bertaccini et al., (2021)

Dimensions developed from the study conducted by Amado et al. (2022).

with various elements and stakeholders with whom the student interacts (Xu et al., 2018), and the diverse roles students assume during their studies that extend beyond the customer role (Dropulić et al., 2021). To create a unique experience, HEIs strive to engage students in the co-creation of their educational experiences (Pinna et al., 2023). Universities have recognized its importance and developed institutional education policies that focus on student experience, resulting in various enhancement proposals (Calma and Dickson-Deane, 2020).

Among the benefits of experience management is an increase in repurchase intentions and word-of-mouth referrals (Kumar et al., 2007). It has also been pointed out that effective management can lead to a differential advantage, especially in service organizations (Sujata, 2014). Xu et al. (2018) argue that listening to students is crucial for improving the student experience, and this can be achieved through various channels to enhance educational services and cater to their needs. In this regard, Nel (2017) states that students play a vital role in the pedagogical transformation process and the use of new technologies to make their experiences more meaningful and better. It is also recognized that competencies in the educational model represent the value that students derive from their university experience. The acknowledgment of these benefits by institutional leaders has led to the development of strategies such as improving teaching-learning processes, supporting diversity, ensuring sufficient learning resources, classroom design, and achieving learning outcomes (Calma and Dickson-Deane, 2020), among others.

Perceived value. Despite various research efforts into the concept of perceived value, challenges regarding different interpretations in the literature still persist (Amado et al., 2023). Additionally, there is a diversity of terms used to refer to the same concept, such as purchase value, consumption value, experience value, among others (Sánchez-Fernández and Iniesta-Bonilla, 2007). However, the most commonly used definition of perceived value in research is the one given by Zeithaml (1988), who defines it as the consumer's evaluation of a product or service based on their perception of the exchange outcome between what they give and what they receive. On the other hand, Holbrook (1994) states that

value is the result of an evaluative judgment, while the term "values" refers to the standards, rules, criteria, objectives, or ideals that serve as the basis for that evaluative judgment. Ledden et al. (2007) describe perceived value as the result of evaluating the utility of a product or service through the perception of benefits obtained in comparison to the cost.

Value is also the outcome of the process of enhancing perceptions of the student experience (Ledden and Kalafatis, 2010). It requires special attention as it encompasses both tangible aspects like physical facilities and intangible aspects like teaching and research processes that frame educational activities (Sultan and Wong, 2010), placing students in an active role (Ledden et al., 2011). This challenges institutional leaders to develop value-centered management strategies for students' perceived value (Pinna et al., 2023; Khalifa, 2004), where students evaluate their educational journey based on what they give and what they receive in return (Usman and Mohd, 2017). For the purposes of this study, perceived value by the student will result from their experience, evaluated through tangible and intangible elements of the educational service. It will be measured based on the importance each student assigns to these elements, considering a balance between positive perceptions of what they receive from the university and the economic efforts and dedication they invest.

Similar to reputation and student experience, value is a multidimensional construct highly correlated with other variables. For instance, the study by Doña-Toledo et al. (2017) demonstrated that quality determines perceived value, which in turn determines satisfaction. Other authors such as Ivy (2001) found that students mentally construct an image of the university based on perceptions of strengths and weaknesses as a result of the value they perceive from the evaluation. A direct relationship between perceived value and satisfaction was also identified (Ledden et al., 2007). In this regard, Sánchez-Fernández and Iniesta-Bonilla (2007) suggest that satisfaction is idiosyncratic to a specific educational offering of an institution, whereas value is generic to all educational offerings, which has important implications for measuring each construct.

One of the main benefits of educational service perceived value is that it enables students to build trust and loyalty toward the institution (Hashim et al., 2015). It implies, based on preference, the outcome of a received compensation and an interaction between the student and the institution. In summary, Sánchez-Fernández and Iniesta-Bonilla (2007) describe perceived value as interactive, relative, perceptual, of high abstraction, and cognitive-affective, as it is based on the traditional outcome of the price-quality relationship. Alves's work (2011) is also acknowledged for providing an extensive review of literature on perceived value in higher education.

In the overall assessment process, marketing activities have a significant influence on decisions related to repurchase, word-of-mouth transmission of experiences, satisfaction and loyalty, among other behaviors (Doña-Toledo et al., 2017; Ledden et al., 2007). Similar to reputation and student experience, perceived value is a multidimensional construct, and its measurement is complex. It is influenced by various variables and, in turn, influences others, such as satisfaction, word-of-mouth, and loyalty.

Conceptual model

Relation between student experience and perceived value. The relationship between customer experience and perceived value has been analyzed in empirical research across various economic sectors. One study tested a model that considers the effects of factors such as price and variety on perceived value, which in turn were assumed to determine customer experience (Baker et al., 2002). Furthermore, it was found that value creation is defined by the customer experience, in a specific moment and place, within the context of a particular event (Prahalad and Ramaswamy, 2003). Basic principles of customer experience measurement indicate that it is evaluated as a perception of the overall value of using a service, including emotions and third-party influences. It begins before the encounter and continues after the encounter has occurred, evaluating all channels (Maklan and Klaus, 2011; Klaus and Maklan, 2013). Fitzsimmons and Fitzsimmons (2006, p. 11) mentioned that experiences should "add value by engaging and connecting with customers in a personal and memorable way."

It is also evident that the concept of perceived value is a multifaceted construct that considers the functional aspects of the customer experience in higher education (Ledden et al., 2007). Similarly, students' emotions and their comparisons with other alternatives are taken into account (Dlačić et al., 2014). Gupta and Vajic (2000, p. 34) stated that "an experience occurs when a customer has some sensation resulting from some level of interaction… created by the service provider." The concept of Total Customer Experience (TCE) is also recognized in the literature, introduced by Petre, Minocha, and Roberts (2006, p. 189), who argue that it influences customer perception of value and service quality, and consequently, loyalty.

Other studies, such as the one conducted by Shahijan et al. (2018), found that the total experience of international students in both public and private universities influences individually perceived value and service quality. This total experience is composed of the prior experience, including the university's image, students' expectations, previous students' experiences, sources of information, and service quality; the during experience, which includes satisfaction level and perceived performance by students; and the post-experience, which encompasses international students' intention to continue studying. The authors also note that the experience can be social, emotional, or physical. On the other hand, a study by Doña-Toledo et al. (2017) investigated the value perceived by graduates, taking into account their initial expectations versus the university experience in terms of benefits achieved in exchange for the sacrifice and effort put into obtaining their degree. Among their main findings, they discovered that the perceived quality of the university experience had a significant influence on graduates' perceived value.

Other authors have found that student loyalty depends on the support provided by administrators to address the difficulties students face during their educational experience. This support increases perceived value and allows for professional development. They suggest that focusing on designing effective educational programs requires continuous and adequate monitoring of students' perceptions of their educational experience (de Oliveira Silva et al., 2020). It was also found that students' experience in a particular course was valued considering previous experiences, which influenced the value perceived by students (Jones et al., 2017). Based on the above, the following hypothesis is proposed:

Hypothesis 1. Student experience has a positive influence on perceived value.

Relation between student experience and university reputation. Research on the relationship between student experience and university reputation is more prominently conducted in contexts outside of education. One study examined the moderating effect of customer experience on the relationship between reputation and price, finding that customers with different levels of experience may have varying reputation assessments. This suggests that more experienced customers are less likely to pay a premium price and rely on reputation systems (Yang et al., 2019). Another study conducted in Pakistan found that customer experience,

analyzed through factors like environment assessment, moments of truth, frontline staff, and product offerings, significantly and positively influences corporate reputation and word of mouth (Fida et al., 2023). Similarly, a study in Indonesia focused on the banking sector and found a positive and significant relationship between customer experience and bank reputation, with product advantage and trust also contributing to reputation (Abdullah, 2022).

Moreover, some research does connect experience with reputation within the higher education sector. For instance, a study by Handayani (2019) concluded that experiential marketing has a positive and significant effect on the reputation of private universities. White (2015) investigated the emotions experienced by students in the classroom and determined that these emotions influence satisfaction and loyalty to the institution. The study emphasized that better understanding and management of student experience could lead to improved reputation and higher enrollment. Another study highlighted the relationship between these two variables, stating that a consumer's experiences with a company, its products, and/or services, including reputation assessment, contribute to the perception of the company as trustworthy and respectful (Bhattacharya and Sen, 2003). Similarly, it was found that unique, engaging, and lasting experiences create a source of competitive advantage that aims to establish an emotional connection with the customer through tangible and intangible elements. This interaction ultimately contributes to reputation building (Terblanche, 2009).

A study by D'Uggento et al. (2023) emphasized the importance of universities developing and maintaining a strong reputation, involving students in order to ensure a positive experience with the institution. This generates pride in being part of the institution and encourages word of mouth. Another study by Wilkins et al. (2022) found that a new university campus strongly influences positive perceptions of the student experience. However, factors like university reputation and teaching quality carry more weight than campus and facilities in students' institution selection. Additionally, Khoshtaria et al. (2020) discovered that student experience is influenced by two factors: core service referring to the learning experience and support services. Both of these factors subsequently influence university reputation. They suggest that educational services offered by universities should be based on student experiences to effectively communicate essential features. Considering these findings and conclusions linking these constructs, the following hypothesis is proposed:

Hypothesis 2. Student experience has a positive influence on university reputation.

Relation between perceived value and reputation. The relationship between perceived value and reputation in higher education has been investigated with growing interest in the consulted publications, revealing significant contributions. For instance, Caruana and Ewing (2010) examined the interaction of perceived value and reputation, establishing a significant relationship between both dimensions. In the work conducted by Tournois (2015) on reputation conceptualization, various antecedents of reputation were identified, including attachment, satisfaction, and value. Similarly, in the research by Kaushal et al. (2021), it was found a significance of indirect relationships in their proposed model involving perceived quality, image, perceived value, satisfaction, attachment, and reputation. However, this study found that perceived value is not directly related to reputation.

Furthermore, the image projected by universities has been considered as a motive for students to make their choice. The image that students have before entering their chosen university often holds more importance than the image they form once their time at the university has concluded (Ahmed et al., 1997; Matherly, 2012).

Additionally, evidence of the relationship between quality and perceived value was found. In the value equation, which encompasses the majority of conceptualizations of the "receive" component, consumers can implicitly include abstract factors such as prestige, related to reputation, and convenience (Doña-Toledo et al., 2017). In fact, when choosing a university major, students consider not only costs but also the school's and program's reputation, job opportunities, curriculum, class sizes, and faculty interaction ease. Hence, universities strive to create comprehensive experiences that add value to students and meet institutional goals (Goh et al., 2017; Dredge et al., 2012; Xu and Wu, 2018). This relationship also asserts that quality is a precursor to perceived value, perceived value is a significant determinant of satisfaction, perceived quality determines perceived value, and this influences satisfaction (Doña-Toledo et al., 2017). It has also been argued that perceived value positively affects the development of customer relationships (Kant et al., 2019). Given the above, the following hypothesis is proposed:

Hypothesis 3. Perceived value has a positive influence on university reputation.

In Fig. 1, the conceptual model is presented, visualizing the three variables that will be interconnected in this study.

Methodology

The proposed study is a quantitative and cross-sectional investigation aimed at establishing relationships among the three constructs outlined in the conceptual model (Fig. 1) within two categorized universities—one holding high-quality accreditation and the other lacking such accreditation—in Colombia. The research protocol and data collection methodology were approved by the Research Ethics Committee of Universidad del Rosario on September 22, 2021.

Sample selection and data collection. A questionnaire was administered in two universities targeting undergraduate students of legal age. The accredited university had a total of 8900 enrolled undergraduate students in the year 2020, while the non-accredited university had 14,300 enrolled undergraduate students (MEN, 2022). The sample was designed to ensure a minimum of 7 participants per item, as recommended by Hair et al. (2018), which is considered an appropriate sample size for hypothesis testing using structural equation modeling. A total of 484 surveys were collected. The questionnaire was administered with the collaboration of faculty members who invited their students to participate, and those who were willing responded voluntarily.

The sample comprised 216 students from the accredited university and 268 from the non-accredited university. Of all respondents, 285 were female and 199 were male. The age distribution included 328 participants between 18 and 21 years old, 88 between 22 and 25 years old, and 68 participants above 25 years old. Most of the participating students were in their second and third years of study, with 170 and 125 students respectively. Additionally, 90 students were in their first year, 63 in their fourth year, and 36 in their fifth year.

Instruments. Given the complexity of the analyzed constructs—student experience, perceived value, and reputation—the decision was made to employ validated scales for each construct to ensure accurate assessment, comparability, and theoretical and conceptual support. Using validated scales offers various empirical benefits, such as utility, precision, replicability, reliability, generalizability, robustness, and reduced bias in results.

Fig. 1 Conceptual model. The image identifies the relationships of the constructs, perceived value, student experience and university reputation, with their respective factors and items.

For the study of student experience, the instrument proposed by Xu et al. (2018) was employed, adapted for the higher education context. This instrument identifies six dimensions: student-centered service, diversity and global citizenship, co-production of the learning experience, trust in instructors, responsibility, and holistic personal development. The instrument consists of 24 statements and uses a Likert scale with five categories. This instrument was previously validated in the Colombian higher education context (Amado et al., 2022).

To measure perceived value, the instrument developed by Ledden et al. (2007) was adopted. This instrument divides the concept of value into two dimensions and eight factors. The first dimension, "what is received," evaluates six factors: functional value, epistemic value, social value, emotional value, conditional value, and image. The second dimension, "what is given," assesses two factors: monetary and non-monetary sacrifice. The instrument comprises 26 items and uses a Likert scale ranging from 1 to 7. This instrument was previously validated in the Colombian higher education context (Amado-Mateus et al., 2023).

To assess university reputation, the scale proposed by Del-Castillo-Feito et al. (2019) was utilized. This scale evaluates university reputation through six factors: performance, innovation, citizenship, services, governance, and work environment. The instrument contains 17 items and employs a 10-point Likert scale. This instrument was previously validated in the Colombian higher education context. The supplementary material includes the instruments with variables, factors, and items.

Data analysis. Data analysis was conducted using Structural Equation Modeling (SEM). Given the nature of this type of model, the analysis of results was divided into two parts. The first part aimed to evaluate the measurement model, while the second part tested the structural model and hypotheses for both

Table 2 Reliability and validity of the student experience scale.

Factor	Item	Factor loading	α	AVE	CR	MVS	AVS
Student-centers service	SCE1	0.81	0.91	0.73	0.91	0.60	0.32
	SCE2	0.88					
	SCE3	0.85					
	SCE4	0.88					
Diversity and global citizenship	DYC1	0.68	0.89	0.65	0.90	0.60	0.49
	DYC2	0.82					
	DYC3	0.86					
	DYC4	0.84					
	DYC5	0.80					
Co-production of experience and learning	CPEA2	0.78	0.86	0.62	0.86	0.49	0.40
	CPEA3	0.83					
	CPEA4	0.75					
	CPEA5	0.78					
Teacher dependence	DDM1	0.70	0.88	0.68	0.89	0.59	0.47
	DDM2	0.88					
	DDM3	0.83					
	DDM4	0.86					
Accountability	RES1	0.70	0.87	0.73	0.89	0.49	0.35
	RES2	0.94					
	RES3	0.90					
Whole-person development	DIP2	0.91	0.91	0.84	0.91	0.51	0.47
	DIP3	0.91					

accredited and non-accredited institutions. The AMOS software was employed for these analyses.

Measurement model. Each scale was subjected to Confirmatory Factor Analysis (CFA) based on factors defined in the studies by Xu et al. (2018), Ledden et al. (2007), and Del-Castillo-Feito et al. (2019). It was determined that the data did not follow a normal distribution, either univariate or multivariate, for each evaluated item. Therefore, AFC was performed using asymptotically distribution-free estimation methods. Additionally, the Bootstrap method was used to ensure result reliability, generating 2,000 bootstrap samples with a 95% confidence interval. This procedure was carried out according to Oppong and Agbedra (2016).

CFA results were evaluated using goodness-of-fit statistics, including the ratio of chi-square to degrees of freedom (X^2/df), Goodness-of-Fit Index (*GFI*), Adjusted Goodness-of-Fit Index (*AGFI*) and Root Mean Square Error of Approximation (*RMSEA*). Thresholds defined by Useche et al. (2021) and Escobedo et al. (2016) were considered: X^2/df less than 5, *CFI*, *NFI*, *TLI*, *IFI*, *GFI* and *AGFI* greater than 0.8, and y *RMSEA* less than 0.08.

When the CFA did not yield a good fit, particularly in terms of RMSEA, variables with standardized regression values below 0.6 were evaluated for elimination, as well as modification indices for error covariances of each item. Covariances of the largest and theoretically most parsimonious indices were applied, as described by Marsh et al. (2004).

Subsequently, convergent and discriminant analyses were performed for each factor of the instruments. Convergent validity was assessed using Average Variance Extracted (AVE), reliability through the Composite Reliability (CR) statistic, and Cronbach's Alpha (α). Acceptable thresholds were set at AVE values above 0.5, CR values above 0.7, and α values above 0.8. For the discriminant analysis of factors, Maximum Shared Variance (MSV) and Average Shared Variance (ASV) were calculated, considering these acceptable when both MSV and ASV were lower than AVE.

Structural model. Given that each construct (reputation, student experience, and perceived value) comprises multiple factors, a second-order model was developed. To test the hypotheses, the goodness of fit of the proposed model was evaluated, while retaining the statistics and thresholds from the measurement model stage. If necessary, covariance of the largest and theoretically most parsimonious modification indices was applied. Hypothesis testing was performed using the adjusted model, with acceptance when the p-value of Beta (Estimated) was less than 0.05. Likewise, hypotheses were contrasted for student groups from accredited and non-accredited HEIs following the aforementioned procedure.

Results

Measurement model. Regarding the scales, efforts were directed toward ensuring the reliability and validity of these measures before proceeding to test the hypotheses through the structural model. This was done in order to ascertain which factors explained the evaluated construct for each instrument. In light of this, for the student experience scale, the CFA indicated a good fit with $\chi^2/df = 3.99$, $CFI = 0.93$, $NFI = 0.91$, $TLI = 0.92$, $IFI = 0.93$, $GFI = 0.87$, $AGFI = 0.82$, and $RMSEA = 0.07$. The AVE, reliability assessed through the CR statistic, and Cronbach's Alpha were all considered high, confirming the convergent validity of the instrument. Similarly, discriminant validity of the scale was confirmed as both MVS and AVS were lower than the AVE. Table 2 presents the reliability and validity statistics of the student experience scale.

Regarding the perceived value scale, the CFA demonstrated a satisfactory fit with $\chi^2/df = 3.81$, $CFI = 0.94$ $NFI = 0.92$, $TLI = 0.93$, $IFI = 0.93$, $GFI = 0.85$, $AGFI = 0.81$, and $RMSEA = 0.07$. It was identified that the scale exhibited appropriate convergent validity for all factors. However, concerning divergent validity for the social value and image factors, there were high correlations with other factors as indicated by MSV being greater than AVE. Yet, this observation should not be conclusively interpreted since ASV was smaller than AVE. Table 3 presents the reliability and validity statistics of the perceived value scale.

Finally, for the reputation scale, the CFA indicated an acceptable fit, with the following statistics: $\chi^2/df = 0.27$, $CFI = 0.80$ $NFI = 0.73$, $TLI = 0.73$, $IFI = 0.81$, $GFI = 0.87$, $AGFI = 0.81$, and $RMSEA = 0.06$. While NFI and TLI are below the evaluation thresholds, the results suggest that the model maintains a reasonable level of fit to the study's data. Based on the factor loadings (see Table 4), the AVE, reliability assessed by the CR statistic, and Cronbach's Alpha statistic were considered high. This demonstrates the convergent validity of the factors. Similarly, discriminant validity of the scale was confirmed, as MVS and AVS were smaller than AVE.

Structural model. Regarding the fit of the structural model, it was deemed acceptable with the following statistics: $\chi^2/df = 2.90$, $CFI = 0.85$, $NFI = 0.78$, $TLI = 0.84$, $IFI = 0.85$, $GFI = 0.58$, $AGFI = 0.56$, and $RMSEA = 0.04$. While *NFI*, *TLI*, *GFI* and *AGFI* are slightly outside the thresholds, it's important to highlight that the structural equation model still exhibits a reasonable level of agreement with the observed data. Table 5 presents the hypothesis testing results.

Hypothesis contrast between groups. The model for students in the accredited institution demonstrated an acceptable fit, with the following statistics: $\chi^2/df = 2.66$, $CFI = 0.83$, $NFI = 0.75$, $TLI = 0.82$, $IFI = 0.83$, $GFI = 0.53$, $AGFI = 0.50$, and $RMSEA = 0.07$. Although it is recognized that some of the statistics are outside the threshold, holistically the model presents a reasonable degree

Table 3 Reliability and validity of the perceived value scale.

Factor	Item	Factor loading	α	AVE	CR	MSV	ASV
Functional value	TYTUC1	0.91	0.94	0.84	0.94	0.74	0.52
	TYTUC2	0.94					
	TYTUC3	0.90					
Epistemic value	ECDC1	0.91	0.95	0.81	0.95	0.74	0.54
	ECDC2	0.95					
	ECDC3	0.97					
	ECDC4	0.90					
	OFRCC1	0.78					
Social value	TCROP1	0.83	0.90	0.65	0.89	0.83	0.55
	TCROP2	0.85					
	TCROP3	0.80					
	TCROP6	0.83					
Emotional value	TCPS1	0.91	0.91	0.79	0.92	0.67	0.49
	TCPS2	0.86					
	TCPS5	0.90					
Non-monetary sacrifices	LSHSC2	0.91	0.91	0.84	0.91	0.07	0.05
	LSHSC3	0.93					
Monetary sacrifices	LSHSC5	0.86	0.90	0.83	0.90	0.66	0.40
	LSHSC6	0.96					
Image	LPAU1	0.67	0.92	0.70	0.91	0.83	0.53
	LPAU2	0.72					
	LPAU3	0.85					
	LPAU4	0.88					
	LPAU5	0.90					
	OFRCC2	0.72					
	OFRCC3	0.65					

Table 4 Reliability and validity of the reputation scale.

Factor	Item	Factorial load	α	EVA	CR	MSV	ASV
Performance	DES1	0.93	0.90	0.87	0.95	0.76	0.73
	DES2	0.90					
	DES3	0.97					
Innovation	INN1	0.96	0.93	0.90	0.94	0.81	0.76
	INN2	0.94					
Citizenship	CIU1	0.97	0.96	0.94	0.98	0.92	0.86
	CIU2	0.96					
	CIU3	0.98					
Services	SER1	0.95	0.92	0.94	0.98	0.92	0.83
	SER2	0.98					
	SER3	0.98					
Governance	GOB1	0.96	0.95	0.92	0.97	0.88	0.82
	GOB2	0.97					
	GOB3	0.95					
Workplace behavior	CLIMA1	0.97	0.93	0.91	0.96	0.88	0.80
	CLIMA2	0.98					
	CLIMA3	0.91					

of correspondence with the data. This same situation is present in the students from non-accredited HEIs where the statistics were $\chi^2/df = 2.71$, $CFI = 0.82$, $NFI = 0.74$, $TLI = 0.81$, $IFI = 0.82$, $GFI = 0.55$, $AGFI = 0.51$, and $RMSEA = 0.08$. With this, it was identified that for both the group of students affiliated with non-accredited and accredited institutions, H1, H2, and H3 were accepted (refer to Tables 6 and 7).

Discussion and conclusion

The results of the factor analyses for each of the scales demonstrated their reliability and validity. The general structural equation model exhibited an acceptable fit, and the three hypotheses were confirmed. The student experience influences perceived value (H1), as similarly found in studies by Ledden et al. (2011) and Ng and Forbes (2009), who consider value from the student's perspective, where their own experience is both the object of consumption and the consumer and co-creator. The study by Shahijan et al. (2018) also confirmed the relationship and highlighted the importance of social, emotional, and physical aspects, which were likewise affirmed in this study through the measurement factors of the observed constructs. Similarly, Doña-Toledo et al. (2017) found that perceived quality resulting from the university experience had a significant influence on the perceived value among graduates. Aparicio-Ley et al. (2019) discovered that meeting student expectations and providing positive experiences influenced the perceived value of the university, which in turn directly impacted satisfaction.

Likewise, the relationship between student experience and university reputation (H2) was confirmed, mirroring research conducted by Wilkins et al. (2022), Khoshtaria et al. (2020), and Chen and Esangbedo (2018), who view university reputation as an outcome of the comprehensive educational service experience for students. This aligns with definitions by authors like Qazi et al. (2021), who suggest that reputation arises from shared experiences among various university stakeholders and its performance, along with Wende's (2017) observations in the context of Building Universities' Reputation (BUR), where students are active participants in their own experiences and play a pivotal role in the institution's reputation. The management of university reputation also entails experiential activities such as volunteering, which significantly influence institutional performance (Akova and Kantar, 2021).

Furthermore, the influence relationship between perceived value and reputation (H3) was confirmed. This relationship is understood as discussed in the literature review, where perceived value is the result of the user's service experience (Helkkula et al., 2012, p. 59), and in this sense, perceptions regarding the fulfillment of student expectations could positively or negatively affect university performance, thus impacting reputation and retention rates (Gillis et al., 2022). Caruana and Ewing's study (2010) also evidenced the relationship between perceived value and reputation, as did the results of Doña-Toledo et al. (2017). However, this contrasts with the findings of Hashim et al. (2015), who found that institutional image or reputation has a positive impact on perceived value. It is worth noting that in this study, perceived value was measured using 2 items and reputation/image using 5 items, which may be insufficient to measure these constructs comprehensively. Another study aimed at identifying dimensions of service quality in higher education took reputation as a possible influencing factor but found that university reputation was not a determining factor (Asnawi and Setyaningsih, 2020), highlighting the importance of a more careful analysis of the understanding of value and reputation, considering theoretical and empirical relationships found in scientific literature.

Regarding the comparative model analyzing the implications of high-quality accreditation on student experience, perceived value, and reputation, it was found that the model behaved similarly in both types of institutions. Despite both models accepting the hypotheses, a slightly lower level of significance was observed in the relationship between perceived value and reputation for accredited universities. However, statistically, the values confirmed the hypothesis. These findings suggest that high-quality accreditation can be a factor in university selection, but it does not influence the relationship between the studied variables—student experience, perceived value, and reputation. In line with Vidaver-Cohen's proposition (2007), accreditation certifies educational service quality, but students might perceive other institutional factors as fundamental to their educational journey. Similarly, as Rybinski (2022) addresses, the student experience could exert a greater influence.

Table 5 Hypothesis testing results of the model.

Hypothesis	Estimate	S.E.	C.R.	*p*-value	Result
H1 (EXP > VP)	1.23	0.06	19.87	***	Accepted
H2 (EXP > REP)	1.59	0.13	11.67	***	Accepted
H3 (VP > REP)	0.85	0.08	10.48	***	Accepted

Hypotheses were accepted when *p*-value <0.05. *** indicates significance with *p*-value <0.001.

Table 6 Hypothesis testing for students in non-accredited institutions.

Hypothesis	Estimate	S.E.	C.R.	*p*-value	Result
H1 (EXP > VP)	0.88	0.08	10.77	***	Accepted
H2 (EXP > REP)	1.48	0.14	10.48	***	Accepted
H3 (VP > REP)	0.96	0.10	9.54	***	Accepted

Hypotheses were accepted when *p*-value <0.05. *** indicates significance with *p*-value <0.001.

Table 7 Hypothesis testing for students in accredited institutions.

Hypothesis	Estimate	S.E.	C.R.	p-value	Result
H1 (EXP > VP)	1.72	0.93	18.47	***	Accepted
H2 (EXP > REP)	2.21	0.41	5.37	***	Accepted
H3 (VP > REP)	0.48	0.20	2.35	0.01	Accepted

Hypotheses were accepted when *p*-value <0.05. *** indicates significance with *p*-value <0.001.

Theoretical implications. With the confirmation of the hypotheses, the literature in higher education reputation management was strengthened by providing empirical evidence of relationships involving more than two variables. This is also because the findings contribute to the theoretical, conceptual, and methodological development of reputation from a multivariate and multidimensional perspective. Furthermore, considering the principles of the Theory of the Logic of Dominant Service (SDL), which seeks a better understanding of the value creation process and acknowledges the importance of focusing on the service beneficiary and the co-creation of value (Vargo and Lusch, 2016), this study contributes to the understanding of the science of service, and in this particular case, the field of higher education services.

Managerial implications. The findings revealed in this research hold significance for various stakeholders of universities, particularly for managers, as they pinpoint factors that warrant deeper consideration in the management of institutional resources. Among the findings, the importance of managing the student experience before, during, and after the delivery of educational services is highlighted. In this regard, all private universities can formulate promotional strategies to attract students to their diverse academic programs, promising excellence and quality regardless of high-quality certification. However, when the customer's role shifts to that of an active student, their experience within the institution can be either positive or negative. This experience can either confirm or negate the student's prior expectations, and this in turn shapes their perception of value. When combined with evaluations from other students and stakeholders, this perception contributes to the university's reputation.

Therefore, while high-quality accreditation might serve as a distinguishing factor, it is not necessarily definitive in influencing student perceptions. This does not mean that HEIs should forego pursuing these accreditations; beyond the certificate itself, what's crucial is to legitimize actions and demonstrate coherence between the conveyed message and actual practices. Efforts should be directed toward providing a differentiated and innovative service that fosters the holistic development of the student as an individual. Central to this approach should be the design and delivery of educational experiences, placing student-centric service as the primary strategy. All of this should be carried out within the framework of complying with high-quality standards across the tangible and intangible aspects constituting the educational service.

Additionally, a competent faculty is needed to generate such strategies, along with administrative staff capable of navigating the challenges within the higher education sector. This staff should be aligned with student needs in various roles, business sector requirements, regulatory demands, and the interests of both internal and external stakeholders.

Furthermore, alignment should exist between the institution's strategic focus, academia, and supporting administrative departments such as marketing, communication, relationship management, and student well-being. While these departments may not be directly involved in pedagogical approaches, they play a significant role in student attraction, experience, and retention. Through these departments, positive perceptions can be cultivated, creating an environment where interactions with various social interest groups are promoted. Involving students in socially supportive activities linked to their professional and personal development and connecting them to future work scenarios can enhance their experiences. This alignment can also validate the differential aspects projected by the institutional image. This way, universities can attain a sustainable competitive advantage, with rankings becoming an outcome rather than a primary focus.

Limitations and future research. For future studies, it is recommended to continue testing the proposed model in order to provide additional evidence that supports its population fit, as GFI and AGFI parameters are outside the thresholds. Likewise, implementing longitudinal methodologies is advised to measure the student experience at different stages of their educational journey (initial, middle, and final semesters) and in their various roles, considering

that this study was cross-sectional. This approach would facilitate the identification of elements that might have a more significant influence on the student experience and perception of value. It's important to consider that the maturity level of the student could play a substantial role in their perceptions. Therefore, first-generation studies that are more descriptive in nature could provide complementary insights into the variables and the object of study.

Moreover, expanding the scope of the study to include new student populations, such as those pursuing postgraduate degrees, is valuable, given that this study exclusively focused on undergraduate students. Incorporating other stakeholders, such as faculty and administrative staff, could also offer valuable insights into the factors that influence institutional performance and, consequently, university reputation. Additionally, considering the inclusion of new variables or constructs, such as satisfaction, loyalty, and legitimacy, among others, would contribute to expanding knowledge in this field and provide additional elements for improved institutional management.

Data availability

The data presented in this study are available at: https://doi.org/10.6084/m9.figshare.24282460.v1.

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Author contributions

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Competing interests

The authors declare no competing interests.

Ethical approval

This study was approved by the Research Ethics Committee in the Social Sciences Room and it was performed in line with the principles of the Declaration of Helsinki.

Informed consent

The informed consent was obtained from all participants.

Additional information

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