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Validity of the multidimensional reputation perception scale in private universities

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University reputation is the result of the assessments that the stakeholders make of the university, especially the user of the education service, the student. The literature has shown an important impact of reputation on the student's perception of the university, and it has been related to success, competitiveness, sustainability, stakeholder decision-making and the differential of the value offer. Therefore, its evaluation has been the subject of several studies that seek to measure and assess reputation in higher education to understand how to manage it. This article evaluates the psychometric properties of the reputation scale in students at private universities in Colombia. The methodology used included an adaptation of the scale to the Spanish language, content validity analysis, reliability analysis, exploratory factor analysis and confirmatory factor analysis. The results showed the validity and reliability of the scale and, through the analyses carried out, provided evidence of the scale's robustness.

KEYWORDS

reputation, universities, high quality, validation, psychometric assessment, management

1 Introduction

University reputation, a complex construct influenced by the subjective perceptions of various stakeholders such as students, faculty, and administrators, plays a critical role in higher education institutions' (HEIs) attractiveness and competitive advantage. The management and assessment of reputation present challenges due to its subjective nature (Verčič et al., 2016), with perceptions shaped by stakeholders' expectations and the social interactions within the institution (Bromley, 2002; Rindova et al., 2005). Notably, reputation extends beyond the academic realm, encompassing media portrayals and public perception, which can significantly impact prospective students' decisions and attitudes toward universities more than the institutions' actual quality (Munisamy et al., 2014). This perceived excellence, thus, becomes a pivotal factor in student attraction and the evaluation of university quality (Davies, 2000; Gatfield, 1999).

The quality and reputation of higher education institutions (HEIs) are significantly shaped by student engagement and experiences, particularly through involvement in research activities, which influence their learning outcomes, skill development, and the institutions' standings in research and innovation (Barnett et al., 2006; Mora, 2015, pp. 29, 50–51; Vidaver-Cohen, 2007). This engagement fosters a practical understanding and application of knowledge, deemed essential for active learning and career decision-making in science fields

(Kolb et al., 2014; Lopatto, 2007). Recent findings also highlight the positive correlation between student participation in research and enhanced academic productivity, thereby affecting HEIs' rankings in prestigious global assessments like Academic Ranking of World Universities (ARWU), Times Higher Education (THE), Quacquarelli Symonds World University Ranking (QS) and the Leiden Ranking by the Centre for Science and Technology Studies (CWTS) (King-Domínguez et al., 2018; Livny, 2023). Moreover, performances in national and international standardized tests further act as benchmarks for evaluating educational quality and, subsequently, reputation, influencing student attraction and their prospects in the job market (OECD and International Bank for Reconstruction and Development and The World Bank, 2013).

For that reason, HEI administrators confront the challenge of reputation management by allocating significant resources toward cultivating favorable perceptions from both internal stakeholders (students, professors, scientists) and external ones (political figures, NGOs), with the goal of enhancing their institutions' standings through innovative strategies in core areas such as teaching, research, and knowledge dissemination (Lafuente-Ruiz-de-Sabando et al., 2018; Mora, 2015, pp. 34, 69; Verčič et al., 2016). In response to the intensifying competition for student recruitment and external research funding, universities increasingly pursue national and international accreditations and certifications of high educational quality to affirm their reputation and quality assurance (Ministerio de Educación Nacional [MEN], 2001, 2016). Furthermore, they engage with aforementioned global university ranking systems, which, despite their widespread use for measuring HEI performance, are often critiqued for methodological biases and the subjective allocation of evaluation criteria (Chen and Esangbedo, 2018; Parellada and Álvarez, 2017; Rachmadhani et al., 2018).

Moreover, efforts to enhance educational quality in Colombia have garnered attention from both international bodies like the Inter-American Development Bank (IADB), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Organisation for Economic Cooperation and Development (OECD), and the Colombian government, recognizing education as a cornerstone of economic development (Banco Interamericano de Desarrollo [BID], 2014; Ministerio de Educación Nacional [MEN], 2019; OECD, 2019; United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2015). The establishment of the National Accreditation System and entities such as the CNA and CESU aims to elevate the standard of higher education. Yet, a notable accreditation gap exists, with only 37% of universities and an even lower proportion of other educational institutions achieving high-quality certification, highlighting the voluntary nature of this process in enhancing competitive standing (Consejo Nacional de Acreditación CNA, 2006; Sistema Nacional de Información de la Educación Superior [SNIES], 2020). This scenario, compounded by reduced public educational spending and the reliance on private funding amidst familial economic constraints, exacerbates disparities in educational access and underscores the impact of institutional reputation on student perceptions and choice. Thus, the need for further research into the dynamics of higher education reputation and its management is imperative, given its significant yet underexplored role in HEI strategy (Del-Castillo-Feito et al., 2019).

In this regard, recent research has significantly advanced our understanding of the synergistic relationship between image,

legitimacy, and reputation in higher education institutions (HEIs), revealing their collective influence on strategic management and competitive positioning. Beginning with Lafuente-Ruiz-de-Sabando et al. (2018), who identified the crucial link among these elements, subsequent studies by Del-Castillo-Feito et al. (2019, 2020), further emphasized how an institution's image and perceived legitimacy directly affect its reputation. This line of inquiry highlights the importance of strategic image and legitimacy management in enhancing HEIs' reputational standing. Miotto et al. (2020) expanded this framework to demonstrate the tangible impact of reputation and legitimacy on competitive advantage, indicating that reputation significantly influences a university's market position. Further exploring reputation's broader implications, Grajales-Montoya et al. (2021) identified faculty as essential mediators between public relations and reputation, while Villamizar-Loaiza (2021) and Saavedra-Caballero and Van Belleghem (2022) explored how legitimacy perceptions and reputation mediate organizational outcomes, including internship and employment opportunities for graduates. Aledo-Ruiz et al. (2022) concluded this trajectory by linking reputation with corporate social responsibility (CSR) and emotional appeal, showcasing how ethical governance enhances external perceptions and stakeholder loyalty, underscoring the multifaceted impact of reputation on HEIs' strategic and operational dynamics.

This research positions itself at the forefront of university reputation management studies, emphasizing its vital role both theoretically and practically, as highlighted by Del-Castillo-Feito et al. (2020) and Alloza-Losana and Carreras-Romero (2021). Its significance lies in contributing to academic discourse and influencing the operational effectiveness and societal impact of higher education institutions, aiming to bolster the ongoing enhancement of educational quality, strategic decision-making, and institutional accountability in an evolving global landscape (Miotto et al., 2020). Specifically, this study seeks to enrich the field by adapting Del-Castillo-Feito et al.'s (2019) reputation perception scale to the Spanish language and the Colombian context, focusing on university students to validate the measurement model and its psychometric properties across different settings. The selection of this scale is driven by its capacity to evaluate diverse dimensions of university reputation—governance, innovation, citizenship, service, performance, and work climate—hoping to not only validate its effectiveness but also to underscore its applicability and robustness within academic circles. By analyzing the scale's impact on understanding student perceptions and categorizing the study sample into specific subgroups based on distinct characteristics, this research aims to provide a more nuanced and comprehensive understanding of how university reputation is perceived and managed, offering valuable insights for both scholars and administrators in the higher education sector.

The importance of this work lies in the identification and adaptation of a formal scale for measuring corporate reputation in universities within the Colombian context. As of the date of this research (2022), no formally established scales for this purpose were found, except for the study by Gómez-Bayona et al. (2022), which focused exclusively on the perspective of faculty, leaving a gap in the comprehensive understanding of university reputation from the perspective of other stakeholders, such as students. Additionally, universities have tended to focus on measuring student satisfaction and their perception of educational quality, rather than institutional reputation. Examples include the study by Molina-Vásquez (2022)

which evaluated the quality of programs with virtual methodology, and the study by [Moreno-Gómez et al. \(2022\)](#), which analyzed the factors influencing graduate satisfaction, considering gender as a moderating variable. Although valuable, these studies do not directly address institutional reputation in its entirety. Furthermore, it is common for both universities and the business sector to evaluate university reputation through international rankings, as previously mentioned, and national rankings such as the Monitor Empresarial de Reputación Corporativa (Merco). These rankings provide an external and quantitative view, but do not always capture the specific particularities and internal perceptions of the university context. Therefore, this work is crucial because it addresses an unmet need in the evaluation of university reputation from an integral and contextualized perspective, which will enable better management and continuous improvement of higher education institutions in Colombia.

In addition, this research delves into the critical role of reputation in the competitive landscape of private universities in Colombia, highlighting their market-driven reliance for student attraction, funding, and differentiation from public institutions. With the prevalence of private universities in the region, reputation emerges as a pivotal factor for standing out in a densely populated educational sector ([Anzola, 2017](#); [Bernhardt and Taub, 2015](#); [Ministerio de Educación Nacional \[MEN\], 2019](#)). The agility afforded by less bureaucratic structures in private universities allows for quicker adaptation to market trends and student demands, necessitating strategic reputation management to meet the high expectations tied to their typically higher tuition fees ([Altbach et al., 2009](#); [Lafuente-Ruiz-de-Sabando et al., 2018](#)). Moreover, emphasizing the student perspective on reputation underscores its significance in assessing and shaping educational quality and institutional improvement. By incorporating student demographic variables, the study aims to provide a nuanced understanding of reputation across diverse student groups, thereby informing targeted strategies for reputation enhancement and institutional development. This approach not only recognizes the varied perceptions within the student body but also aligns with the need for institutions to adapt to global educational dynamics and student needs, ensuring long-term success and relevance in the higher education landscape ([Cheng, 2017](#); [Dreher et al., 2011](#); [Rulfs and Wobbe, 2023](#); [Teeroovengadum et al., 2016](#)).

Thus, measuring reputation in universities, especially in private institutions, is an imperative that goes beyond the mere desire to enhance institutional image ([Maduro et al., 2018](#)). The reputation of a university is a critical factor that significantly influences the attraction of high-quality students and academic talent, which in turn impacts the institution's ability to compete in an increasingly saturated and competitive educational environment ([Amado and Juarez, 2022](#)). Without a rigorous evaluation of reputation, universities risk losing competitiveness and failing to adequately differentiate themselves from their competitors ([Ramezani and Ursin, 2024](#)). Moreover, the perception of quality, which is largely derived from reputation, is essential to meet the expectations of students, staff, and the broader community ([Romiani et al., 2024](#)). A strong reputation not only reflects the educational quality and services offered but also serves as an indicator of the institution's capability to effectively manage risks and threats that may arise ([Fombrun et al., 2000](#)). By measuring reputation, universities can identify critical areas for improvement, allowing them to proactively manage their image and mitigate

potential negative impacts. Therefore, reputation measurement is not merely a strategic tool but a fundamental necessity to ensure the sustainability and long-term success of private universities in the dynamic current educational landscape.

The present study seeks to address the following research question: To what extent does the university reputation scale, adapted to the Colombian context, exhibit adequate psychometric properties for assessing the perception of university reputation among students of private Colombian universities? To answer this question, the psychometric properties of the selected scale ([Del-Castillo-Feito et al., 2019](#)) will be evaluated, including the adaptation to Spanish, content validity analysis, reliability, exploratory factor analysis, and confirmatory factor analysis. This evaluation is crucial to ensure that the scale is a valid and reliable tool in the Colombian context, which will provide a better understanding of how university reputation is perceived and managed in this environment. To achieve the objective of this research, the paper is divided into four sections. First, a theoretical approach to reputation is presented, followed by a description of the methodology used, the results obtained and, finally, a discussion of the findings and conclusions.

2 Theoretical approach to reputation

Since the 1970s, the concept of corporate reputation has developed from early recognition of the importance of stakeholder evaluations and public signals affecting company performance ([Caves and Porter, 1977](#); [Spence, 1973](#)) to detailed characterizations involving a company's attributes and stakeholder perception shaping competitive standing ([Fombrun, 1996](#); [Weigelt and Camerer, 1988](#)). Later insights highlight how collective knowledge among stakeholders within the organizational sphere impacts reputation, with a company's prominence and positive evaluations strengthening its repute ([Brown et al., 2006](#); [Rindova et al., 2005](#)). This evolves further to connect past performance and marketing efforts with reputation, establishing the significance of sustaining customer loyalty for marketing success ([Chun, 2005](#); [Fombrun and Shanley, 1990](#)).

Rooted in the stakeholder approach ([Freeman, 1984, 2004](#)), the concept of reputation is shaped by the evaluations of both internal (owners, employees, managers) and external (suppliers, customers, partners, investors) stakeholders, making it a socially constructed asset that is legitimized through ongoing assessments of an organization's performance ([Carrió, 2013](#); [De Quevedo et al., 2005](#); [Lafuente-Ruiz-de-Sabando et al., 2018](#); [Rao, 1994](#)). This process, capturing customer interactions and perceptions, defines the organization's reputation ([Doorley and García, 2015](#); [Walsh and Beatty, 2007](#)).

In the academic sphere, a university's reputation significantly influences its standing in the community, the perceived worth of its degrees, and the trust of its stakeholders, thereby shaping how students connect and identify with the institution ([Khoi, 2021](#)). The importance of understanding and evaluating reputation's impact in educational settings has been underscored by research, necessitating a thorough grasp of its role in the academic landscape ([Chen and Esangbedo, 2018](#); [Heffernan et al., 2018](#); [Sontaité and Bakanauskas, 2011](#); [Verčič et al., 2016](#)).

Systematic reviews by [Amado and Juarez \(2022\)](#) and [Prakash \(2021\)](#) offer a nuanced exploration of university reputation, identifying

diverse factors such as identity, image, communication, and the intricacies of service delivery that collectively shape its broader impacts, including financing, enrollment, and labor market access. This reputation, as highlighted by [Chen and Esangbedo \(2018\)](#), serves as a strategic asset of credibility, while [Cole and Bruch \(2006\)](#) and [Alessandri et al. \(2006\)](#) view it as a collective representation, cultivated through interactions within the university community. Such interactions involve a wide range of stakeholders, from internal parties like faculty and students ([Reznik and Yudina, 2018](#); [Verčič et al., 2016](#)) to external entities including governments and accreditation agencies ([Amado and Juarez, 2022](#); [Vidaver-Cohen, 2007](#)).

Despite the lack of a fully developed framework for identifying university stakeholders, it's recognized that varied groups evaluate institutions based on their distinct understanding of the academic system ([Vogler, 2020](#)). Internal stakeholders such as employees, students, and staff crucially influence the university's image and reputation, setting the stage for external groups like prospective students and employers to form their judgments ([Bromley, 2002](#); [Del-Castillo-Feito et al., 2019](#); [Verčič et al., 2016](#)). This dynamic highlights the importance of reputation management in ensuring an institution's success by integrating administrative efforts and attracting and retaining stakeholders ([Del-Castillo-Feito et al., 2019](#); [Goldring, 2015](#); [Plewa et al., 2016](#)). A strong reputation can lead to financial benefits, enhanced brand loyalty, and improved graduate employability, underscoring the strategic need for universities to effectively manage their reputation to maintain a competitive edge and attract both students and faculty ([Drydak, 2015](#); [Fombrun, 1996](#); [Jung and Seock, 2016](#)).

Likewise, the evolution of corporate reputation measurement has advanced from the America's Most Admired Companies index [AMAC] in 1986 to sophisticated tools like the Reputation Quotient (RQ) in 1998 and RepTrak® Pulse in 2005, which evaluates emotional attachment to organizations. These tools, adapted across sectors such as banking and hospitality, have set standards in reputation research ([Fombrun et al., 2000](#); [Hutton, 1986](#); [Ponzi et al., 2011](#); [Sarstedt et al., 2013](#); [Veh et al., 2019](#); [Walker, 2010](#)). In higher education, specific adaptations like [Vidaver-Cohen's \(2007\)](#) for business schools and [Sontaitė and Bakanauskas' \(2011\)](#) model introduce reputation assessment frameworks focusing on sustainability, service quality, and governance. [Del-Castillo-Feito et al. \(2019\)](#) further refined these methods for Spanish universities, prioritizing a direct, theory-based evaluation that underscores qualitative aspects of success. This refined approach delineates six reputation determinants—performance, innovation, citizenship, services, governance, and work environment—underscoring critical reputation aspects vital for differentiation in the competitive realm of private universities ([Blanco-González et al., 2021](#); [Del-Castillo-Feito et al., 2019, 2020](#); [Pascual-Nebreda et al., 2022](#)).

Within the RepTrak Index framework by the [Reputation Institute \(2006\)](#), reputation is viewed as a formative construct, synthesized from various indicators as detailed by [Del-Castillo-Feito et al. \(2019\)](#). For the purposes of this analysis, a comparison is made of the factors and topics developed in the scales of the following three authors, [Vidaver-Cohen \(2007\)](#), the authors' original source ([Del-Castillo-Feito et al., 2019](#)), [Angliss \(2022\)](#), whose study takes up [Vidaver-Cohen \(2007\)](#) and the [Reputation Institute \(2006\)](#), as well as the scale proposed by [Del-Castillo-Feito et al. \(2019\)](#) to analyze its composition. Performance, deemed crucial for strategic reputation management by

[RepTrak \(Ressler and Abratt, 2009\)](#), is expanded by [Vidaver-Cohen \(2007\)](#) to include intellectual, relationship, and financial aspects, while [Angliss \(2022\)](#) and [Del-Castillo-Feito et al. \(2019\)](#) focus on financial and growth potential, alongside research and work practice profitability. Innovation, as per [Vidaver-Cohen \(2007\)](#), spans curricular and pedagogical enhancements, whereas [Angliss \(2022\)](#) considers product and service innovation, and [Del-Castillo-Feito et al. \(2019\)](#) emphasizes adaptability and teaching methodologies, illustrating the diverse approaches to defining reputation within the academic context.

The citizenship aspect, according to [Vidaver-Cohen \(2007\)](#), involves universities' engagement with the community and societal impact, a notion extended by [Angliss \(2022\)](#) to include sustainability practices, and further broadened by [Del-Castillo-Feito et al. \(2019\)](#) to encompass stakeholder welfare alongside societal contributions. On higher education services, [Vidaver-Cohen \(2007\)](#) focuses on graduate job placement, skills training, and value for money, whereas [Angliss \(2022\)](#) emphasizes responsiveness to stakeholder needs, and [Del-Castillo-Feito et al. \(2019\)](#) consider alignment with market trends and educational quality. Regarding governance, [Vidaver-Cohen \(2007\)](#) highlights ethical behavior and transparency, [Angliss \(2022\)](#) adds fairness in business operations, and [Del-Castillo-Feito et al. \(2019\)](#) incorporate strategic vision and stakeholder participation in decision-making. Finally, the workplace environment is analyzed by [Vidaver-Cohen \(2007\)](#) through employee welfare and equality, [Angliss \(2022\)](#) advocates for "good opportunities" for equality, and [Del-Castillo-Feito et al. \(2019\)](#) underscore faculty competence and the university's desirability as a workplace, clearly delineating each author's contributions to understanding reputation in higher education.

The selected reputation scale effectively captures the multifaceted nature of university reputation through categories like performance, innovation, citizenship, services, governance and workplace climate with specific items measuring student perceptions across various domains. This comprehensive framework enables a detailed evaluation of the university's reputation, highlighting academic excellence, social responsibility, and the overall quality of the work environment, alongside the cognitive and emotional perceptions of the university community. Such an approach ensures a deep dive into the factors that shape an educational institution's reputation, offering essential insights for strategic enhancement in a competitive academic landscape. The adaptation of [Del-Castillo-Feito et al.'s \(2019\)](#) scale, after extensive analysis and consideration of Colombia's higher education context, was chosen for its alignment with the nuanced aspects of higher education, including research effectiveness, service delivery roles, faculty engagement, market responsiveness, and the thoroughness and compatibility of the scale with established instruments, affirming its suitability for assessing and strategizing around university reputation.

3 Materials and methods

3.1 Design

The focus of this study was a quantitative cross-sectional study, which sought to adapt and validate the customer reputation scale in undergraduate students at private universities in Colombia. The research and data collection protocol were approved by the Research Ethics Committee of the Universidad del Rosario in the Social Sciences

Department. A translation and back-translation of the scale was carried out and a pilot test. Subsequently, a content validity analysis was performed, and the data collected from the surveys were analyzed by means of an exploratory factor analysis (EFA) performed in SPSS, followed by a confirmatory factor analysis (CFA) using SPSS AMOS.

3.2 Sample and participants

The questionnaire was conducted at two universities with students enrolled in undergraduate programs and of legal age. A total of 484 surveys were collected from undergraduate students in November and December 2021 and February and March 2022. For the application, teachers' support was requested. They invited their students to participate, emphasizing that participation was voluntary and anonymous, and that there would be no repercussions for those who chose not to participate. This approach was intended to mitigate selection bias by ensuring that students felt free to decline participation without fear of any negative consequences.

The sample consisted of 285 women and 199 men. The age ranges were 328 participants aged between 18 and 21 years, 88 participants aged between 22 and 25 years, and a total of 68 participants over 25 years. Most of the students who responded to the survey were in their second and third year of their degree with 170 and 125 students each, 90 students in their first year, 63 students in their fourth year and 36 students in their fifth year.

3.3 Instrument

For the assessment of reputation in the education sector, the scale proposed by [Del-Castillo-Feito et al. \(2019\)](#) was used, which evaluates the reputation of universities through six factors: performance, innovation, citizenship, services, governance and work place behavior. The instrument contains 17 items or statements, and a 10-categorical Likert scale was used. [Table 1](#) presents the codes and the translations of the items in both English and Spanish and also provides theoretical support by listing authors who have explored university reputation through these same dimensions. This inclusion enriches the scale's validation process, underscoring the alignment of our research with established academic work on the multifaceted nature of university reputation.

To adapt this scale, it was first translated into Spanish by two bilingual experts, since it was in English original presented in English. Subsequently, a back-translation into English was made and sent to two experts with doctoral degrees, who in turn reviewed the back-translations made and sent their acceptance, agreeing the back-translation with the original version. Also, a pilot test was also conducted to evaluate whether the language used was clear and lacked ambiguity and confusion to a total of 25 students, who took about 15 min to respond; however, no suggestions or comments were received on the questions or their response items beyond the length of the questionnaire.

3.4 Statistical procedures

For the analysis, a validation process was carried out in three phases. The first one corresponded to content validity the Aiken V

statistic (V); the second stage involved an exploratory factor analysis (EFA); and the third one verified the preliminary exploratory findings by means of a confirmatory factor analysis (CFA). A description of each of these stages is presented below.

The selection of this procedure differs from that of [Del-Castillo-Feito et al. \(2019\)](#) and [Del-Castillo-Feito \(2019\)](#) (*Doctoral dissertation*), who focused their work on the development of a Confirmatory Composite Analysis (CCA) through partial least squares regression (PLS-SEM), which is characterized as being associated with the exploration and development of theory, whereas CFA is more often associated with theory confirmation ([Aiken, 1985](#)), thus CFA can provide new evidence of the validation of factors and scale items. Finally, the statistical analyses described below were carried out in SPSS and AMOS.

3.4.1 Validation of content

For the validation of the content of the scale, the Aiken V statistic (V), a coefficient that computes the ratio of a data obtained over the maximum response of the difference of possible values, was used. This statistical test is the result of the evaluation of a group of expert judges on a series of aspects of a scale ([Aiken, 1980, 1985](#)). The possible results are evaluated from 0 to 1, where a value of one means perfect agreement among the judges, and zero means general disagreement. The value of this statistic is considered acceptable after values greater than 0.7 ([Merino and Livia, 2009](#)). For this study, the following aspects of the Spanish version of the scales were assessed: relevance, pertinence, response induction, sufficiency, clarity, and wording, as well as the scale of the response. In the framework of this research, a panel of eight experts, all with Master's degrees, was convened. Of this group, seven are academics in marketing or related fields, with an average research track record. In addition, one entrepreneur was included. They were asked to evaluate the scale by considering criteria such as: relevance, pertinence, response induction, sufficiency, clarity, and wording, as well as the scale of the response ([Monge-Rogel et al., 2022](#)).

3.4.2 Explanatory factorial analysis (EFA)

With the data collected from the sample, an Exploratory Factor Analysis (EFA) was conducted to determine the potential grouping of the scale items in the studied population. To verify whether the data were suitable for this type of analysis, the Kaiser-Meyer-Olkin (KMO) statistic and the Bartlett's Test of Sphericity (BTS) were used. In the case of the KMO, a value above 0.80 was considered adequate, following [Godfrey et al. \(2019\)](#), and for the BTS, it was assessed whether the Chi-square (χ^2) value was sufficiently large with a significance (p -value) lower than 0.05. Subsequently, using the criteria established by [Cronbach \(1951\)](#), [Godfrey et al. \(2019\)](#) and [Comrey and Lee \(2013\)](#), the EFA was performed using the method of components with Varimax rotation, eliminating items with factor loadings below 0.30, and fixing the exact number of factors to extract at six, as in the original scale. The decision to proceed with the factors of the original scale rather than the criterion values of eigenvalue greater than one was made due to the robust theory surrounding the constructs that make up university reputation. Furthermore, the application of Kaiser's criterion can lead to an overestimation of the number of factors. This criterion assumes that each factor must explain an amount of variance greater than what a single random variable would explain; however, in practice, this criterion may

TABLE 1 Items in English and Spanish.

Factors	Theoretical support	Code	English item	Spanish item
Performance	Van Riel and Fombrun (2007) Vidaver-Cohen (2007) Sontaité and Bakanauskas (2011) Angliss (2022)	DES1	My university has a high research level.	Mi universidad tiene un alto nivel de investigación.
		DES2	It obtains lucrative job placements.	Obtiene prácticas laborales lucrativas.
		DES3	Has growth perspectives.	Tiene perspectivas de crecimiento.
Innovation	Van Riel and Fombrun (2007) Vidaver-Cohen (2007) Sontaité and Bakanauskas (2011)	INN1	It adapts quickly to change.	Se adapta rápidamente al cambio.
		INN2	Uses innovative teaching methods.	Utiliza métodos de enseñanza innovadores.
Citizenship	Van Riel and Fombrun (2007) Vidaver-Cohen (2007) Sontaité and Bakanauskas (2011)	CIU1	Exerts positive influence on society.	Ejerce una influencia positiva en la sociedad.
		CIU2	Supports good causes.	Apoya buenas causas
		CIU3	My university cares about their stakeholders' wellbeing.	Se preocupa por el bienestar de sus partes interesadas
Services	Van Riel and Fombrun (2007) Vidaver-Cohen (2007) Angliss (2022)	SER1	The formative offer responds to market trends.	La oferta formativa de mi universidad responde a las tendencias del mercado.
		SER2	It trains competent students.	Forma a estudiantes competentes.
		SER3	It has good value for money.	Tiene una buena relación calidad-precio.
Governance	Van Riel and Fombrun (2007) Vidaver-Cohen (2007)	GOB1	There is a clear vision of the objectives that guide my university.	Hay una visión clara de los objetivos que guían mi universidad.
		GOB2	It is managed with ethics and transparency.	Se gestiona con ética y transparencia.
		GOB3	It takes into consideration its stakeholders in their management decisions.	Toma en consideración a sus partes interesadas en sus decisiones de gestión.
Workplace behavior	Van Riel and Fombrun (2007) Vidaver-Cohen (2007) Sontaité and Bakanauskas (2011) Angliss (2022)	CLIMA1	My university's professors are competent.	Los profesores de mi universidad son competentes
		CLIMA2	The administrative personnel is competent.	El personal administrativo es competente.
		CLIMA3	In general, my university is a good place to work.	En general, mi universidad es un buen lugar para trabajar.

identify factors that lack theoretical or practical significance, especially in large samples or with many variables.

The choice of the 0.30 threshold for factor loadings in the EFA was grounded in consolidated methodological criteria and the pursuit of a balance between inclusivity and precision. Hair et al. (2018) suggest that factor loadings above 0.30 are acceptable in exploratory analysis. This allows for a broader inclusion of items that significantly contribute to the factorial structure of each construct, while maintaining adequate specificity and reducing the risk of excluding items relevant to the confirmatory stage.

3.4.3 Confirmatory factorial analysis (CFA)

For the development of the CFA of the scale, the conformation of the factors of the EFA was taken as a basis. The univariate and multivariate normality of the items of each of these factors were established, where it was found that they did not fit this type of distribution. Hence, for the operationalisation of the CFA, estimates were made based on the free asymptotic distribution for the reputation scale. The bootstrap was used, i.e., 2,000 bootstrap samples with 95% confidence intervals, taking Oppong and Agbedra (2016) as a reference for this procedure.

The results of the CFA were evaluated using the following statistics: Chi-square (χ^2), minimum discrepancy ratio (χ^2/df), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI)

TABLE 2 Thresholds for model evaluation.

Statistic	Recommended thresholds
χ^2	Better the smaller and with a p -value >0.05
χ^2/df	<5
GFI	>0.80
AGFI	>0.80
RMSEA	<0.08

and root mean square error of approximation (RMSEA). According to the specialized literature of the CFA, especially the works of Marsh et al. (2004), Hooper et al. (2008) and Useche et al. (2020), the recommended thresholds for each of the statistics were defined in Table 2.

The detailed selection of parameters presented in Table 2 aimed for the Chi-square (χ^2) to be as low as possible. However, this statistic is susceptible to sample size, which is why the analysis was complemented with χ^2/df . Regarding the Goodness-of-Fit Index (GFI), a threshold above 0.80 was preferred, reflecting a satisfactory level of variance explained by the model. This slightly more lenient adjustment acknowledges potential limitations in data collection and structure, allowing for the inherent complexity of university

reputation. Following this same rationale, the Adjusted Goodness-of-Fit Index (AGFI) was set with a threshold of 0.8, which adjusts the index for the number of degrees of freedom, being more critical with complex models or those with excessive parameters. Finally, for the Root Mean Square Error of Approximation (RMSEA), a maximum value of 0.08 was chosen, as it is considered indicative of a reasonable fit of the model.

When the CFA failed to achieve the recommended threshold, particularly for RMSEA, the analysis proceeded to identify variables with standardized regression values below 0.6 for potential elimination. Additionally, adjustments were considered in the covariances of errors across the factors, prioritizing those with the largest and theoretically most parsimonious modification indices, as outlined by Marsh et al. (2004).

Subsequently, the convergent analysis of the factors of each dimension was carried out, for which the Analysis of Variance Extracted (AVE), reliability evaluated from the CR statistic (composite reliability), as well as Cronbach's Alpha (α) were determined. In the case of AVE, values greater than 0.5 were considered acceptable (Fornell and Larcker, 1981), for CR values greater than 0.7 (Hair et al., 2014), and for α values greater than 0.8 (Nunnally and Bernstein, 1994). Finally, for the divergent analysis of the factors, the Maximum Shared Variance (MSV) and the Average Shared Variance (ASV) were calculated, being considered acceptable when MVS and AVS were lower than AVE (Bagozzi and Phillips, 1991).

Following the convergent and divergent validity analysis, measurement invariance was evaluated through a multigroup analysis to ensure that the constructs were measured equivalently across accredited and non-accredited institutions. The process began by testing for configural invariance, where the same factor structure was applied across both groups without any constraints. This step confirmed that the underlying factor model was consistent across the different groups, providing a baseline for further analysis. Next, metric invariance was assessed by constraining the factor loadings to be equal across the groups. Following this, scalar invariance was tested by additionally constraining the item intercepts, ensuring that any differences in the latent mean scores could be attributed to true differences in the constructs rather than to measurement artifacts. Finally, strict invariance was evaluated by constraining the residual variances across groups.

Throughout this multigroup analysis, changes in key fit indices such as NFI, IFI, RFI (ρ_1), and TLI (ρ_2) were carefully monitored to assess whether each level of invariance was supported. This methodological approach allowed for a comprehensive examination of whether the measurement model was invariant across accredited and non-accredited institutions, providing confidence in the validity of subsequent comparisons between these groups.

4 Results

Firstly, the content validity analysis of the scale was carried out on the aspects of pertinence ($V=0.97$), relevance ($V=0.99$), response induction ($V=1.00$), sufficiency ($V=1.00$), as well as clarity and wording ($V=0.82$) the judges presented a high level of agreement, only for the response scale was the statistic considered acceptable, being equal to $V=0.71$. Due to the validity of the content of the scale, we proceeded with the development of the EFA.

For the EFA the KMO statistic was 0.95 therefore the instrument variables were partially correlated. For the Barrillett's Test of Sphericity the value was $\chi^2=11,044.73$ with p -value=0.00 hence the data were adjusted for this type of statistical analysis, since the items were able to explain the factors extracted from the present EFA. Subsequently, the six-factor conformation was able to explain 90.79% of the total variance of the extraction. The variance explaining the first factor was 73.75%, the second factor 5.15%, the third factor 4.07%, the fourth factor 3.07%, the fifth factor 2.68% and the sixth factor 2.05%. Table 3 presents the values of the factor loadings.

Based on the factor analysis, we proceeded to the development of the CFA. For the scale, the standard CFA indicated that the data showed a suitable fit without the need to eliminate variables by having factor loadings greater than 0.60, with $\chi^2=321.08$ p -value=0.00, $\chi^2/df=3.08$, GFI=0.85, AGFI=0.79 and RMSEA=0.06. While the χ^2/df , GFI and RMSEA indicators were adjusted, a better fit of the CFA was sought, thus errors between the variables GOB1 and GOB2, CIU3 and CIU2, as well as SER1 and SER3 were covaried. With these modifications the new values of the statistics were $\chi^2=281.32$ p -value=0.00, $\chi^2/df=2.75$, GFI=0.87, AGFI=0.81 and RMSEA=0.06 showing better fit results. Table 4 presents the comparison between the weights of the standardized CFA regressions obtained in this study and the loadings of the original CCA components of the scale (Del-Castillo-Feito, 2019, p. 47).

From the standardized regressions extracted (see Table 4) the Analysis of Variance Extracted (AVE), the reliability assessed from the CR statistic and Cronbach's Alpha statistic (α) were considered high. Thus, demonstrating the convergent validity of the factors. Similarly, the discriminant validity of the scale was confirmed as MVS and AVS were lower than AVE. Table 5 shows the results.

The results of the structural invariance analysis between accredited and non-accredited institutions indicate that, although the factor loadings and structural covariances are relatively consistent between the groups, significant differences are observed in the measurement errors. In particular, the fit indices show more notable variations in the model with measurement residuals (Δ NFI=0.031, Δ IFI=0.031, RFI (ρ_1)=0.011, TLI (ρ_2)=0.011, p -value <0.01), suggesting that non-accredited institutions present greater variability in the measurement accuracy of the constructs assessed. Despite this, differences in changes in fit indices are smaller in the model with restricted structural covariances (Δ NFI=0.012, Δ IFI=0.013, RFI (ρ_1), TLI (ρ_2)=0.004, p -value <0.01), suggesting that most of the discrepancies between groups are related to more subtle aspects of measurement, such as item-specific errors or unexplained variances, thus ensuring the validity of comparisons between groups. The results of the models are presented in Table 6.

5 Discussion

The validation of the reputation scale proposed by Del-Castillo-Feito et al. (2019) within the Colombian context offers substantial evidence of its validity and reliability for assessing university reputation perception. While Del-Castillo-Feito et al. (2019) employed structural equation modeling using SmartPLS—a method particularly recommended for small samples and exploratory instruments—this study adopted a confirmatory analysis approach. Despite the recognized sensitivity of the Chi-square (χ^2) statistic to sample size, as

TABLE 3 Factor loadings on the EFA reputation scale.

Code	Factor one	Factor two	Factor three	Factor four	Factor five	Factor six
DES1	0.69					
DES2	0.81					
DES3	0.72					
INN1		0.72				
INN2		0.76				
CIU1			0.75			
CIU2			0.81			
CIU3			0.74			
SER1				0.49		
SER2				0.46		
SER3				0.65		
GOB1					0.65	
GOB2					0.70	
GOB3					0.73	
CLIMA1						0.72
CLIMA2						0.81
CLIMA3						0.65

TABLE 4 Comparison of CFA and CCA reputation scale changers.

Factor	Code	CFA	CCA
Factor 1	DES1	0.93	0.42
	DES2	0.90	0.33
	DES3	0.97	0.38
Factor 2	INN1	0.96	0.38
	INN2	0.94	0.68
Factor 3	CIU1	0.97	0.43
	CIU2	0.96	0.19
	CIU3	0.98	0.53
Factor 4	SER1	0.95	0.14
	SER2	0.98	0.44
	SER3	0.98	0.52
Factor 5	GOB1	0.96	0.40
	GOB2	0.97	0.50
	GOB3	0.95	0.25
Factor 6	CLIMA1	0.97	0.28
	CLIMA2	0.98	0.22
	CLIMA3	0.91	0.60

TABLE 5 Convergent and discriminant validity and reliability analysis.

Factors	Code	α	AVE	CR	MSV	ASV
Factor 1	DES1	0.90	0.87	0.95	0.76	0.73
	DES2					
	DES3					
Factor 2	INN1	0.93	0.90	0.94	0.81	0.76
	INN2					
Factor 3	CIU1	0.96	0.94	0.98	0.92	0.86
	CIU2					
	CIU3					
Factor 4	SER1	0.92	0.94	0.98	0.92	0.83
	SER2					
	SER3					
Factor 5	GOB1	0.95	0.92	0.97	0.88	0.82
	GOB2					
	GOB3					
Factor 6	CLIMA1	0.93	0.91	0.96	0.88	0.80
	CLIMA2					
	CLIMA3					

highlighted by Merino and Livia (2009), the results demonstrate strong statistical performance. This confirms the appropriateness of the scale for evaluating university reputation in a different cultural and educational setting.

The study's outcomes reveals differences in how the reputation scale, originally applied by Del-Castillo-Feito et al. (2019) in a public university in Spain, was adapted and utilized in the present study, which focused exclusively on students from private universities in

Colombia. The scale, which is based on Vidaver-Cohen's (2007) theoretical model developed for business schools, was designed to measure six key predictors of reputation: performance, innovation, citizenship, services, governance, and workplace environment. These factors were specifically adapted to the higher education context. The original framework, informed by the Reputation Institute's Reprtrak model, introduces the Reprtrak Index and Reprtrak Pulse as central components in measuring organizational reputation.

TABLE 6 Invariance measurement for type of institution.

Model	Df	χ^2	p value	Δ NFI	Δ IFI	RFI (ρ 1)	TLI (ρ 2)
Assuming model unconstrained to be correct							
Measurement weights	11	31.014	<0.01	0.003	0.003	−0.002	−0.002
Structural covariances	32	215.676	<0.01	0.018	0.018	0.006	0.007
Measurement residuals	52	363.272	<0.01	0.031	0.031	0.011	0.011
Assuming model measurement weights to be correct							
Structural covariances	21	184.662	<0.01	0.016	0.016	0.009	0.009
Measurement residuals	41	332.258	<0.01	0.028	0.028	0.013	0.013
Assuming model structural covariances to be correct							
Measurement residuals	20	147.595	<0.01	0.012	0.013	0.004	0.004

The validation of this scale in the Colombian context demonstrates its significant potential for measuring university reputation across these identified factors. This potential is further evidenced by its alignment with other adaptations, such as [Angliss \(2022\)](#) version of the REPTRAK™ model, which incorporates the unique characteristics of universities and identifies six core factors: product/service, performance, institutional behavior, workplace behavior, leadership, and physical attributes. Additionally, the adaptation proposed by [Khoi \(2021\)](#) reinforces the scale's versatility and adaptability across different educational contexts, underscoring its broad applicability and relevance in various settings.

Analyzing the structural differences between the Spanish and Colombian educational models reveals distinct approaches that shape their respective higher education systems. The Colombian system, as outlined by [Ministerio de Educación Nacional \[MEN\] \(2020\)](#), offers a diverse array of higher education options, ranging from technical training programs to university-level degrees. All programs are required to obtain the qualified registration (*registro calificado*) from MEN as a mandatory quality standard. Additionally, institutions have the option to pursue high-quality accreditation offered by the Consejo Nacional de Acreditación (CNA), which, while optional, serves as a mark of excellence and further distinguishes institutions within the system.

In contrast, Spain adheres to the Bologna Process, emphasizing European standardization through the ECTS credit system, with quality assurance mechanisms supported by the Agencia Nacional de Evaluación de la Calidad y Acreditación [ANECA] ([Ministerio de Educación Nacional, 2017](#)). These structural differences are particularly evident in fields such as Information and Communications Technology (ICT), where Colombia has made significant advancements. However, challenges remain in fully aligning its educational programs with labor market demands and the ongoing digital revolution ([Organización de Estados Iberoamericanos OEI, 2022](#)). Meanwhile, Spain's adherence to the Bologna Process and its emphasis on standardized quality assurance have made its educational methodologies and programs appealing to Colombian students, reflecting a preference for the perceived rigor and relevance of Spanish education in an increasingly globalized and competitive environment. This comparison underscores the importance of continuous improvement and adaptation in both contexts, particularly in developing strategies that enhance educational quality and ensure alignment with industry standards and future workforce requirements.

In the context of Colombia, despite the marked cultural and social differences between Colombia and Spain, as well as the distinct composition of their respective educational models, the scale by [Del-Castillo-Feito et al. \(2019\)](#) proved to be a robust instrument, demonstrating a good fit and strong statistical results. This evidence supports the scale's suitability for assessing university reputation perception from the perspective of Colombian students. Notably, despite anticipated differences in dimensions such as governance, pedagogical innovation, and research participation—shaped by each country's educational policies—Colombian students evaluated aspects of university reputation similarly to their Spanish counterparts. This convergence suggests a potential universality in certain reputation criteria that transcend cultural and structural barriers, opening an intriguing avenue for future research. Furthermore, the scale's significant potential for application in evaluating university reputation among other stakeholders warrants detailed exploration, as it could reveal additional nuances in the perception of institutional reputation.

The results also indicate that non-accredited universities exhibit greater variability in the precision of the measurement of the constructs evaluated. This phenomenon could be attributed to several factors, including potential inconsistencies in the implementation of quality assurance processes, variations in the availability of resources, and differences in the institutional commitment to research and development. These factors might lead to fluctuations in how students perceive key elements of university reputation, particularly in areas such as research output and the quality of educational services. The higher variability observed in non-accredited institutions suggests a need for further investigation into how these institutions can enhance their reputation by stabilizing and improving their performance across these critical dimensions.

The study's focus on private universities within Colombia provides a unique opportunity to deepen the understanding of university reputation perception in a specific context, while also recognizing the importance of generalizing findings to different institutions and educational settings. Despite cultural, economic, and structural variations among global educational systems, the fundamental elements identified in this research—such as educational quality, innovation, community contribution, and research excellence—are central pillars in the management of university reputation worldwide. These components transcend the Colombian context and resonate with the priorities of universities internationally,

offering a universally applicable framework for evaluating and improving reputation strategies.

Acknowledging the myriad dimensions of university reputation shaped by diverse stakeholders, this study deliberately centers on student perceptions. This choice reflects a commitment to understanding the immediate impact of educational services on their primary recipients. Students' experiences and evaluations are recognized as critical indicators of an institution's ability to deliver on its educational promises, influencing its competitive stance in academic rankings and overall reputation. However, it is imperative to acknowledge the enriching potential of incorporating broader stakeholder perspectives, including faculty, administrators, employers, and community members, to paint a comprehensive picture of university reputation. This approach does not sideline the importance of these groups but highlights the foundational role of student feedback in this complex evaluation. The research thus serves as a springboard for future investigations, inviting a more expansive engagement with the multiple voices that collectively shape the narrative of university reputation. By adopting this inclusive outlook, the aim is to encourage a more nuanced understanding that appreciates the diverse contributions to the reputational landscape of higher education institutions.

The comprehensive validation of the reputation scale within the Colombian context has profound implications for higher education institutions, both domestically and internationally. Universities can harness this validated model to gauge and enhance their reputational standing among key stakeholders, particularly students. By employing the scale's six-factor framework, universities can identify areas of strength and potential improvement across vital dimensions such as performance, innovation, and citizenship. This can inform strategic planning, marketing, and operational decisions, ensuring that universities align their offerings with stakeholder expectations and industry standards.

The observed disparities in reputation perception between accredited and non-accredited institutions underscore the tangible benefits of accreditation in shaping student perceptions of value and quality. Universities can leverage these insights to prioritize accreditation processes or to more effectively communicate their existing accredited status, thereby enhancing their competitive positioning. Additionally, the consistent emphasis on research quality in student perceptions highlights the central role of research excellence in university reputation, encouraging institutions to strengthen their research capabilities and dissemination practices, which are pivotal in shaping institutional image and attracting prospective students and faculty. In this context, the validation of [Del-Castillo-Feito et al.'s \(2019\)](#) scale emerges as a robust tool for continuous, evidence-based reputation management in higher education. By adopting a data-driven approach to reputation assessment, universities can strategically navigate the increasingly competitive educational landscape, fostering environments that not only attract and retain students but also contribute meaningfully to the knowledge economy.

6 Conclusion

The objective of this study was to analyze the psychometric properties of the Spanish adaptation of the multidimensional reputation perception scale in university students. The statistical

results of the confirmatory factor analysis for the Colombian case confirmed the behavior of the scale evaluated in six factors, aligning with the original scale and demonstrating that it effectively explains the construct of reputation through these factors ([Del-Castillo-Feito et al., 2019](#)) while also achieving cross-cultural goodness of fit. These findings make a significant contribution to research on university reputation, the evaluations of stakeholders, especially students, and reputation management. Moreover, the study provides robust evidence on the measurement of reputation in universities, validating the theoretical approaches that can be utilized by both Colombian and foreign universities from the student's perspective, offering an adapted and validated scale for subsequent reputation studies. The scale's utility extends beyond research purposes, as it offers higher education managers a practical tool to measure students' perceptions of their university's reputation and to inform actionable strategies in reputation management.

The findings indicated that the scale presents satisfactory psychometric properties and high reliability and validity. However, considerations regarding its use are necessary, as the validation and adaptation process was based on a Colombian context and a sample of university students. Therefore, its application in other countries, including Spanish-speaking nations, may yield different results when applied to other populations or for different purposes. In this context, semantic equivalences in the translation process may have important implications, and thus a cross-cultural evaluation of the questionnaire before its use in other settings is strongly suggested.

Moreover, the study highlights the significant role that accreditation plays in ensuring consistent measurement of reputation constructs, as evidenced by the greater variability observed in non-accredited institutions. This finding underscores the need for universities to prioritize accreditation processes as a strategy to enhance their reputation. The study also emphasizes the centrality of research excellence in shaping university reputation, as reflected in student perceptions, suggesting that universities should continue to bolster their research capabilities and dissemination practices.

Additionally, research aimed at understanding how reputation impacts university rankings can provide valuable information for institutions seeking to improve their international positioning. Exploring how reputation influences student recruitment can help universities develop more effective marketing and engagement strategies to attract high-quality students. Furthermore, examining the role of government investment in shaping university reputation can shed light on the importance of public funding in maintaining high educational standards and fostering innovation.

Future research lines can also include analyzing the relationship between institutional reputation and the employability of graduates, as well as the impact of institutional communication on the perception of reputation among students, professors, and employers. Expanding the study to include perceptions of other stakeholders, such as administrative staff and parents, can offer a more comprehensive view. Additionally, investigating how educational innovation initiatives and digital marketing strategies influence university reputation is vital. Comparing reputation across different cultural contexts and evaluating the impact of academic research and publications are also promising areas. Finally, studying the role of accreditation and certification in the perception of quality can significantly contribute to the existing literature and offer practical strategies for managing reputation in higher education institutions. These research areas are

crucial for developing comprehensive strategies that enhance the competitive positioning and overall performance of higher education institutions globally.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: <https://doi.org/10.6084/m9.figshare.24282460.v1>.

Author contributions

MA: Investigation, Writing – original draft, Project administration, Validation. AG: Data curation, Formal analysis, Software, Writing – review & editing. FJ: Conceptualization, Methodology, Writing – review & editing. IR: Supervision, Writing – review & editing, Visualization.

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