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Determinants of user experience and perception of educational quality in Peruvian university institutions: A structural equation modeling analysis

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Abstract

This research aims to analyze the impact of curricular quality, academic staff competencies, infrastructure, and brand recognition on user experience and perceptions of educational quality in private universities in Peru. A quantitative study with a causal correlational design was conducted. Data were collected from 872 students from the Business School of a private university in Metropolitan Lima, using convenience sampling. The analysis employed structural equation modeling (SEM) with Smart PLS. Results indicate significant positive relationships between curricular quality and user experience ($\beta = 0.236$, $p < 0.001$) and perception of educational quality ($\beta = 0.348$, $p < 0.001$). Academic staff competencies strongly influence curricular effectiveness ($\beta = 0.731$, $p < 0.001$). Infrastructure showed significant effects on brand identification ($\beta = 0.547$, $p < 0.001$) and perception of educational quality ($\beta = 0.377$, $p < 0.001$). The study demonstrates that curricular quality, academic staff competencies, and infrastructure are key determinants of user experience and perception of educational quality in Peruvian universities. Educational institutions should prioritize investments in curriculum development, faculty professional development, and infrastructure improvement to enhance the student experience and perceived educational quality. These factors are crucial to building strong brand identification and maintaining a competitive advantage in higher education.

Keywords: Digital marketing, Educational quality, Higher education, University institutions, User experience.

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1. Introduction

The issue of quality in higher education is quite relevant in today's global context, where students are seen as dynamic consumers who demand an educational experience that not only meets their expectations but also adds value to the

marketplace. Students have moved from being passive recipients of education to active consumers who seek institutions that offer tangible value and a meaningful learning experience. This paradigm shift has led universities to adopt more student-centered approaches, seeking not only academic satisfaction but also the development of skills that are relevant in the world of work [1-3].

In today's highly competitive environment, educational institutions are forced to continuously improve the quality of their services. This quality in higher education is not considered a fixed state but a dynamic process that requires constant adaptation to the changing needs of students and the labor market. Therefore, universities must innovate in their teaching and evaluation methods, as well as in the design of programs that meet the demands of the sector while also optimizing their infrastructure and the skills of their teachers. In addition, it is essential for these institutions to strengthen their image and presence in the minds of their students, creating a deeper and more meaningful connection with them [4-6].

In the case of Peru, studies indicate that 53% of Peruvians rate the quality of education as poor, with 37% citing inadequate infrastructure as the main challenge. There is skepticism towards artificial intelligence in education, with only 34% believing in its positive impact and 38% supporting its prohibition in schools. In 2021, only 29% of young people had access to university, and 10% to postgraduate studies, with the health crisis exacerbating access difficulties. Similarly, it was noted that unemployment among young graduates increased from 6.8% to 15.5% between 2019 and 2020. Public universities have a higher selectivity, with one admission for every 5.1 applications. In terms of financing, the public budget reached 3,263 million nuevos soles in 2020, while private universities tripled their income in the last decade, surpassing 3,500 million soles [7, 8].

This high percentage attracts interest in how these universities could improve the quality of their programs and user experience to meet student expectations. The problematic reality facing Peruvian universities is complex. Access to higher education has expanded enormously, but serious challenges persist in relation to the quality of curricula and the competence of academic staff, not to mention educational infrastructure or identification with the institutional brand. The questioning of the quality of the curriculum has been pointed out in some recent studies that suggest that the non-updating and non-relevance of its contents could negatively affect the perception of the quality of the education delivered [9, 10].

Similarly, the competence of the academic staff is one of the most critical factors affecting the quality of education. Interactions between students and instructors are vital to student retention and overall satisfaction. However, many universities in Peru are hampered by the lack of continuous training and professional development of their faculty, which limits their ability to deliver quality education [10, 11]. On the other hand, the educational infrastructure contributes considerably to the user experience [12, 13]. The consumer's evaluation of quality is determined by the tangible environment of the service. In the university setting, the lack of facilities and technological resources can generate a negative effect on student satisfaction and academic performance [13, 14]. Finally, identification with the institutional brand has become an important aspect in the development of student loyalty. Aaker [15] points out that a strong brand can build trust and engagement, two very important aspects of user experience.

While there is some research that investigates each of these aspects in isolation, there is still a significant gap in the academic literature in terms of exploring how these interrelated issues affect user experience and perceived educational quality in the context of universities in Peru, especially those in the private sector. Understanding these relationships is important if educational institutions want to design effective strategies to improve student satisfaction and retention. This paper attempts to fill this gap through an in-depth analysis that examines the interactions between curriculum quality, academic staff competence, infrastructure, and brand identification, and their impact on user experience and perception of educational quality.

Therefore, the general objective of this research is to analyze the impact of these determinants on the user experience and the perception of educational quality in a private university educational institution. For this purpose, a structural equation model will be used to examine the interrelationships between these factors and their influence on the quality perceived by students. The general research question is to determine what is the impact of the quality of the curriculum, the competence of the academic staff, the infrastructure, and the identification with the brand on the user experience and the perception of educational quality in the context of a private university educational institution. How do curricular quality and academic staff competencies influence user experience and perception of educational quality in Peruvian universities? 2. What is the role of infrastructure in the formation of brand identification and perception of educational quality? 3. How does brand identification affect user experience in higher education institutions?

Thus, this article is organized as follows: First, we present a comprehensive literature review that examines the theoretical foundations and previous research on the determinants of educational quality. Next, we detail the methodology, including sampling procedures and analytical techniques. Subsequently, we present our findings and discuss their implications. Finally, we conclude with recommendations for educational institutions and suggestions for future research.

2. Review of the Literature

2.1. Curriculum Quality in Peruvian University Institutions: User Experience, Educational Quality and Academic Staff Competence from the Theory of Perceived Quality

The curriculum is any planned and guided learning interaction that students can carry out in groups or individually through instructional content, materials, resources and processes to evaluate the achievement of educational objectives [16]. According to El-Astal [17] the curriculum is "the prescriptive content that illustrates what will be taught in a given educational program, who will teach, who will be taught, with what tools and in what context, to what effect, and how students will be assessed" (p. 188). In this way, curriculum quality reflects the degree to which students perceive the curriculum to be of high quality [16].

The quality of the curriculum in conjunction with the quality of the services provided in higher education is critical to attracting and retaining students, improving academic achievement, and maintaining the reputation of the institution Wider, et al. [18]. Fagrell, et al. [19] mention indicators such as the quality of teachers and the relevance of learning environments through the combination of pedagogical skills and expertise of teachers are seen as essential to ensure educational quality. Thus, it is likely that a higher perceived quality of the curriculum will lead to higher student satisfaction given that, in Peruvian university institutions, the quality of the curriculum and the competence of the academic staff are aspects that can significantly influence the student experience and perception of quality.

From the perspective of the Perceived Quality Theory, the quality of the curriculum is considered to be one of the basic factors in the comprehensive evaluation of educational quality. This theoretical framework assumes that students evaluate the quality of the curriculum through a comparison between their initial expectations and actual experiences in terms of content, relevance, pedagogical methods, and evaluation practices. In this analysis, factors such as the reliability and reactivity of the teaching staff must be considered, along with the relevance of the materials and resources used [20, 21]. Therefore, the following hypotheses are proposed:

H_1: Curriculum quality positively influences user experience.

H_2: The quality of the curriculum positively influences the perception of educational quality.

H_3: The competence of the academic staff positively affects the quality of the curriculum.

2.2. Institutional Brand Identification and User Experience from a Social Identification Theory Perspective

Universities operate predominantly in an evolving market and aim to attract prospective students by establishing a strong and favorable brand image over time [22]. Therefore, innovation is essential to developing strong brands, being simultaneously associated with improving the quality of educational service, promoting brand image, and increasing customer (student) loyalty for organizational success [23]. Brand identification implies that students identify better with universities that possess specific brand personality characteristics for their identification. According to social identification theory, intergroup behavior, and communication are based on the inherent value that humans place on membership in social groups and their desire to view their specific social groups in a positive light [24]. This premise explains how students perceive and relate to the institutional brand of universities. By fostering a sense of belonging and a positive image, universities can strengthen their brand, increase student loyalty, and improve their responsiveness in the educational marketplace [25, 26]. In this way, the brand capable of providing a unique and distinctive experience builds brand identification and loyalty and even generates evangelization, i.e., the consumer spreads the word to others and is a way to attract new consumers. Therefore, the following hypothesis arises:

H_4: Identification with the brand positively influences the student experience.

2.3. Infrastructure and Competencies of the Teaching Staff: Factors of Identification of the Brand in Educational Quality from the Theory of Resources and Capabilities

A university's buildings and facilities are useful resources, but only if they are used properly. Experience in the use of facilities (such as classrooms, laboratories, and libraries) along with the technology provided can also improve students' ratings of services. Proper management ensures high-quality services, which gives students an advantage leading to satisfaction. Student judgment of service delivery is very important because of its impact on gaining an advantage in today's educational marketplace: student loyalty to the school [27-30].

Of even greater importance for the study of university infrastructure and its potential as a determinant of educational quality, the Theory of Resources and Capabilities is fundamental in providing a conceptual framework for identifying and effectively managing physical and technological resources. In this sense, this theoretical perspective opens the way for universities to develop sustainable competitive advantages based on the efficiency of their basic facilities: classrooms, laboratories, and libraries. It also encourages investments in better, more flexible, and innovative infrastructure, in order to raise the quality of educational services and respond to the needs of students [31-33].

Another important aspect of educational quality is the capabilities of teachers, manifested in what they know, what they are able to do, and how they think, are an important resource that affects the quality of the curriculum and the perception that people have of the quality of education [34, 35]. In this context, the Human Capital Theory shows the importance of investing in the development of these skills, since it argues that the human capital of teachers will not only improve the teaching and learning process but also the competitiveness among educational institutions [36, 37].

In the context of Peruvian higher education institutions, it is relevant to discuss the relationship between infrastructure and academic staff competencies in relation to the evaluation of educational quality, considering that they are factors under institutional control to improve the student experience. Infrastructure and academic staff competencies are basic indicators that can have a significant influence on the evaluation of educational quality in Peruvian universities and, therefore, on the identification of the institutional brand. Based on the above, the following hypotheses are proposed:

H_5: Infrastructure positively affects academic staff competence.

H_6: Infrastructure positively affects brand identification.

H_7: Infrastructure positively affects the perception of educational quality.

2.4. Perception of Educational Quality: User Experience and Brand Identification According to the Co-Creation Process

User experience in the context of university institutions refers to the perception and response of students to their interactions with the university. This experience encompasses elements such as ease of use of services, perceived usefulness, and overall satisfaction with academic and administrative activities [4, 38]. On the other hand, the perception of educational

quality is based on the comparison between the students' previous expectations and the real experience they have in the institution, considering aspects such as reliability, responsiveness, and empathy in the service [39, 40].

User experience and perception of educational quality are closely linked to institutional brand identification. According to theorists, the process of co-creation of identity is an effect of the brand on the identity of individual consumers [41, 42] The brand of an educational institution not only reflects its values and attributes but also influences the way students perceive the quality and prestige of the institution. Students' identification with the university brand can be strengthened through positive and consistent experiences, which generates a greater sense of belonging and loyalty to the university [12, 26, 43]. In this context, it is essential to analyze how user experience, perception of educational quality, and brand identification interact with each other. These variables are determinants not only for student satisfaction and loyalty but also for the competitive positioning of universities in an increasingly demanding environment [20, 21]. Therefore, the following hypotheses are proposed:

H_8: Perception of educational quality positively influences user experience.

H_9: Perception of educational quality is positively related to brand identification.

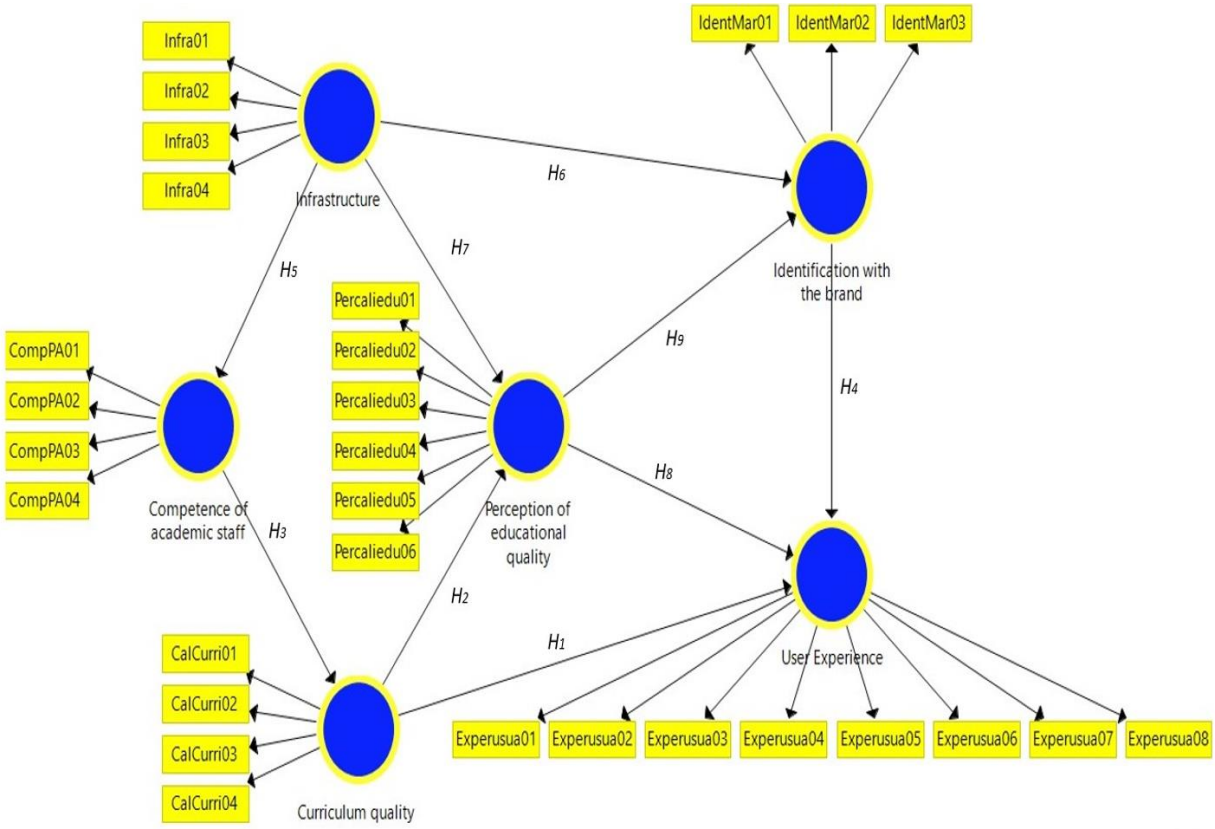

Figure 1.
Hypothetical theoretical model.

3. Materials and Methods

3.1. Research Design

3.1. Research Design

The present research was carried out under a quantitative approach, given that data collection and analysis were used to test the hypotheses proposed [44, 45]. In this context, a correlational-causal design was adopted, since it sought to analyze the relationship between independent variables such as curriculum quality, academic staff competence, infrastructure, and identification with the brand, and the dependent variables, which include user experience and perception of educational quality. The design was non-experimental and cross-sectional. This implies that the variables involved were not manipulated and that data collection was carried out at a single point in time [46].

3.2. Population and Sample

The target population of the study consisted of 1,500 students currently enrolled in the School of Business Sciences of a private university in Metropolitan Lima, Peru, specifically in Marketing, Management and Entrepreneurship, Management and Corporate Finance, International Business, Economics, and Administration. Within the inclusion criteria, only students who were actively enrolled in these programs were considered. The sampling was done by convenience, given that students were selected who were available and willing to participate. To administer the survey, approval was obtained from the university authorities, specifically from the aforementioned faculty, and a self-administered questionnaire was used. Informed consent was guaranteed, participation was voluntary, and no incentives to participate were offered. Respondents had the right to withdraw from the survey at any time if they did not wish to continue.

3.3. Data Collection Instrument

Data were collected through an online survey using Google Forms. To facilitate access to participants, class representatives were used to promote the survey. Of the 1,500 surveys distributed, 872 valid responses were obtained, representing approximately 58.1% of the total population. This approach was chosen for its practicality and efficiency, allowing access to a representative sample of the student population in a limited time.

3.4. Data Analysis Technique

Subsequently, to analyze the relationships between the study variables, a structural equation model (SEM) was used using the Smart PLS 4.0 software. The evaluation of the measurement model was initially carried out through Convergent Validity, which was analyzed using the average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha (CA) [47]. Discriminant Validity was verified using the Fornell-Larcker Criterion, ensuring that the square root of the AVE was greater than the correlation between the variables, as well as using the Heterotrait-Monotrait Ratio (HTMT) [48, 49]. In addition, the Variance Inflation Factor (VIF) was evaluated to detect multicollinearity, considering that a VIF of less than 10 indicates the absence of multicollinearity problems [50]. For the structural model, the R-squared value (R^2) was used to assess the robustness of the model performance.

4. Results and Discussion

The profile of the respondents is mainly composed of 559 women (64.1%) and 313 men (35.9%), indicating a female majority. In terms of age, the vast majority belong to Generation Z (1997-2012), with 815 participants (93.5%), while Millennials (1981-1996) account for 56 (6.4%), and only 1 (0.1%) corresponds to Generation X (1961-1980). In terms of careers, marketing students are the most represented with 305 (35.0%), followed by 242 (27.8%) in International Business and 134 (15.4%) in Administration. Regarding the year of study, the majority are in the 5th year (292, 33.5%) and 4th year (287, 32.9%), while 1st and 2nd year students represent a smaller percentage, with 39 (4.5%) and 60 (6.9%), respectively. Almost all respondents were Peruvian, with 868 (99.5%), and only 4 (0.5%) were of other nationalities. Regarding the use of social networks, Instagram is the most used, with 359 (41.2%), followed by WhatsApp (246, 28.2%) and TikTok (189, 21.7%); while, when following the university's social networks, Instagram also stands out with 632 (72.5%), evidencing a marked preference for this platform.

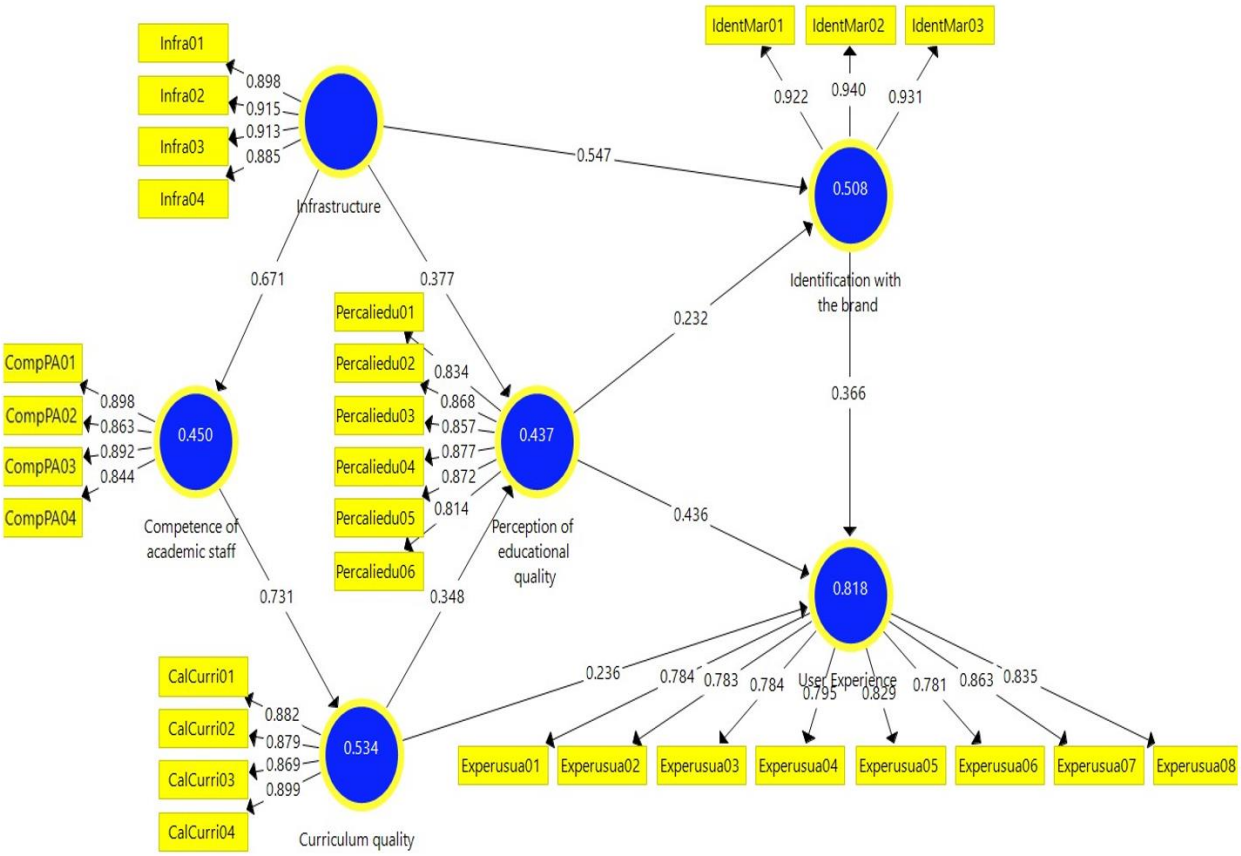

Figure 2.
Internal model.

Table 1.
Quality Criteria of the Internal Model: R table and adjusted R table.

Construct	R squared	R squared adjusted
Curriculum Quality	0.534	0.534
Academic Staff Competence	0.45	0.449
User Experience	0.818	0.817
Brand Identification	0.508	0.506
Perception of Educational Quality	0.437	0.436

The analysis of the data presented in Table 1 reveals that the quality of the curriculum in university institutions has an R-squared (R^2) of 0.534, indicating that the model explains 53.4% of the variability of this construct. This suggests that student experience is critical to identifying the multifaceted intersections of experience, which ensures that investment in institutional change, such as the implementation of a large-scale quality curriculum, is effective [51]. In addition, curriculum quality assessment is essential to improve both classroom instruction and the student experience. Establishing a scientifically sound assessment framework is critical to fostering a robust educational ecosystem and creating a sustainable mechanism for long-term educational advancement [52].

As for the academic staff competence construct, with R^2 of 0.450, it indicates that 45% of the variability is explained by the variables of the model, which suggests a significant impact, although less than that of curriculum quality. This result is based on what was expressed by Akareem and Hossain [53] when it indicates that addressing the training of current and future teachers is critical and will ultimately result in higher-quality education. Shukla [54] Efforts to increase teacher competence should be a priority to improve confidence and effectiveness in the classroom. It is important to note that the impact of personal competence may vary according to the context and the specific characteristics of each institution, which may moderate teacher development through curriculum and training.

The user (student) experience presents an R^2 of 0.818 (81.8%), showing great relevance in the educational environment. According to Idkhan and Idris [55], educational institutions should implement key strategies, such as investing in user-friendly technology, maintaining up-to-date and accessible educational content, and providing effective support and interaction. In addition, the perceived quality of the educational service and value for money are factors that influence student experience [38] Competency acquisition and skill development, along with teaching methods, faculty, course management, and classroom infrastructure are variables that significantly impact student satisfaction [4]. These elements contribute to a more enriching learning experience and are determinants for academic success and student retention in educational institutions.

The elements described above lead to an identification with the brand, represented by an R^2 of 0.508, which indicates that 50.8% of the variability in this construct can be explained by the variables in the model. This may suggest an emotional connection of the students with the institution, significantly influencing their commitment and academic performance. From the point of view of Naheen and Elsharnouby [22], the sincerity and lively facets of the university brand personality play a vital role in students' identification with the university. In addition, higher education marketing focused on delivering excellent academic experiences will be more effective in developing strong brand identification over time, which, in turn, leads to greater brand loyalty and support [26].

As for the perception of educational quality, this construct in the model explains 43.7% of the variability given an R^2 of 0.437. This result supports the findings of the study by Guillén Perales, et al. [56] in which he points out that students prefer a quality educational system based on the capacity of the teaching staff and individualized attention, rather than on aspects related to facilities and content management. On the other hand, the perceived quality of service is a key factor in explaining students' cognitive learning outcomes, and in turn, these fundamental factors influence satisfaction and affective learning outcomes as assessed by university institutions [57].

Continuing with the analysis of the model presented in Figure 2 and given the results in Table 2, the quality criteria of the internal model are shown in terms of reliability and construct validity, which allowed us to evaluate the strength and consistency of the relationships established between the different variables of the model. Cronbach's alpha, rho_A, composite reliability, and Average Extracted Variance (AVE) values for each of the constructs of the model showed the assessment of the reliability and convergent validity of the measurements performed. The results indicate that all constructs meet the recommended thresholds, suggesting that the scales used are reliable and valid for measuring the concepts of curriculum quality, academic staff competence, user experience, brand identification, infrastructure, and perception of educational quality. Cronbach's alpha and composite reliability values above 0.7, as well as AVE values above 0.5, are evidence of adequate internal consistency and convergent validity of the instruments applied. This implies that the scales not only consistently measure the constructs, but also adequately reflect the theoretical dimension they represent, supporting the robustness of the analysis [47, 48].

Table 2.
Internal Model Quality Criteria: Reliability and Construct Validity.

Variables	Cronbach's alpha	rho_A	Composite reliability	Mean extracted variance (AVE)
Curriculum quality	0.905	0.906	0.934	0.778
Competence of academic staff	0.897	0.899	0.929	0.765
User Experience	0.923	0.925	0.937	0.652
Identification with the brand	0.923	0.924	0.951	0.866
Infrastructure	0.924	0.924	0.946	0.815
Perception of educational quality	0.926	0.927	0.942	0.729

The results of the constructs presented in Table 2 show that, curriculum quality has a Cronbach's α of 0.905 and an AVE of 0.778, implying that this construct is perceived as highly reliable and relevant by the respondents. This finding highlights the benefits of curriculum development for students in terms of relevance and real-world application, as well as in meeting needs and interests, and in improving critical thinking and problem-solving skills [58].

On the other hand, the competence of the academic staff shows a composite reliability of 0.929 and an AVE of 0.765. This result reflects a positive student perception of faculty quality. Studies such as those conducted by Qingyan, et al. [59] show that teacher quality evaluated according to quality management criteria such as classroom management, teacher qualification, and in-service training is a practical and effective strategy to cultivate qualified students, underlining the importance of having competent academic staff.

Likewise, user experience in university educational institutions presents an AVE of 0.652, which, although slightly lower than other constructs, is still acceptable, reflecting the importance of the educational experience in the general perception of quality. For Matus, et al. [40], the student experience encompasses all the physical and emotional perceptions that a student experiences in response to engagement with products, systems, or services provided by the institution. However, students may have different expectations of the levels of service quality that they expect to encounter while undertaking their training program [39].

Regarding identification with the brand and with the infrastructure, high levels of reliability and validity are observed, with AVE of 0.866 and 0.815, respectively. This suggests that emotional identification with the institution and the quality of the facilities are critical aspects to be considered by students. In this regard, the importance of branding and infrastructure in the choice of educational institutions is emphasized, which highlights their role in the perception of quality. Irpansyah, et al. [43]. branding is one of the strategies that can be carried out by educational institutions, for the creation of brand awareness, brand identification, and perceived quality. For their part, Palmer, et al. [26]. indicates that, remembered academic and social experiences significantly influence brand identification, and that brand identification is a good predictor of brand loyalty and brand support from alumni. Whereas, the need for proper planning and effective management of educational facilities can ensure an optimal, quality educational process that enables students to identify with the institutional brand [12].

Finally, the perception of educational quality has an AVE of 0.729, indicating that students perceive quality in their education. This finding supports the notion that educational quality is a multidimensional factor that should be evaluated from different perspectives. From the point of view of Loza, et al. [60], students consider that the teacher plays an important role in achieving educational quality by focusing on helping to understand the essential principles for a dignified life, as well as and respect for rights and duties in the educational process. Similarly, Hussain, et al. [61] conclude that faculty expertise, the teaching-learning process, curriculum, institutional infrastructure, effective teaching methods, and transparent evaluation systems are key indicators of student satisfaction and reflect their perception of and satisfaction with quality education.

Table 3.
Quality criteria: discriminant validity.

Construct	Curriculum Quality	Competence of academic staff	User Experience	Identification with the brand	Infrastructure	Perception of educational quality
Curriculum Quality	**0.882**	0.809	0.854	0.853	0.724	0.651
Competence of academic staff	0.731	**0.875**	0.801	0.784	0.735	0.584
User Experience	0.783	0.733	**0.807**	0.796	0.85	0.844
Identification with the brand	0.781	0.716	0.796	**0.931**	0.688	0.609
Infrastructure	0.662	0.671	0.788	0.688	**0.903**	0.608
Perception of educational quality	0.598	0.535	0.784	0.565	0.657	**0.854**

Note: Table 3 presents the discriminant validity (FL) values and the Heterotrait-Monotrait Ratio (HTMT) for each construct. Discriminant validity values are highlighted in bold on the main diagonal, while HTMT values are displayed in the remaining cells.

As for the results presented in Table 3 related to discriminant validity, they suggest that each of them effectively measures different concepts and does not significantly overlap with others. Highlighting the discriminant validity (FL) values of

curriculum quality (0.882) and brand identification (0.931) with a greater ability to discriminate between different dimensions. This finding is consistent with the results found by Chairunnisa [6] which indicates that the combination of brand image and quality of service has a significant impact on student satisfaction with a coefficient of 78.1%, which may suggest that both factors contribute to the development of quality education.

On the other hand, HTMT values provide additional perspective on the relationship between constructs. This is evidenced in the HTMT of curriculum quality with user experience (0.854) and brand identification (0.853), suggesting that there is a significant correlation between these elements, implying that an improvement in curriculum quality can positively influence brand perception and user experience [62]. From the Romaniuk & Sharp point of view [63] educational institutions must work on building a solid and multifaceted brand image, where the quality of the curriculum is a key component that contributes to the overall perception of the brand.

However, it is critical to consider that although HTMT values are relatively high, they do not exceed the critical threshold of 0.85 [48], indicating that, despite correlations, each construct maintains its distinctiveness. Such is the case of the HTMT between infrastructure and perception of educational quality, which is 0.657, indicating a moderate relationship. This finding is considered relevant and supports the hypothesis that educational infrastructure is a factor to be taken into account in the general perception of quality, which is an aspect widely discussed in the literature [64].

In conclusion, the results obtained reinforce the validity of the analyzed constructs and suggest that improvements in the quality of the curriculum and infrastructure can have a significant impact on the user experience and identification with the institutional brand. These findings not only contribute to the existing body of knowledge but also offer practical implications for educational institutions, which should focus on strengthening these aspects to improve their students' satisfaction and performance.

Table 4.
Quality criteria: collinearity statistics.

Construct	Variables	Average VIF (Value)
Curriculum Quality	CalCurri01 (2.628), CalCurri02 (2.700), CalCurri03 (2.396), CalCurri04 (3.014)	2.753
Academic Competence	CompPA01 (3.031), CompPA02 (2.329), CompPA03 (2.788), CompPA04 (2.129)	2.745
User Experience	Experusua01 (2.322), Experusua02 (2.376), Experusua03 (2.544), Experusua04 (2.579), Experusua05 (2.699), Experusua06 (2.208), Experusua07 (3.636), Experusua08 (2.705)	2.655
Brand Identification	IdentMar01 (3.246), IdentMar02 (3.873), IdentMar03 (3.395)	3.29
Infrastructure	Infra01 (3.075), Infra02 (3.640), Infra03 (3.508), Infra04 (2.684)	3.228
Perception of Educational Quality	Percaliedu01 (2.620), Percaliedu02 (2.933), Percaliedu03 (3.087), Percaliedu04 (3.056), Percaliedu05 (3.227), Percaliedu06 (2.531)	2.86

The analysis of the FIV (Variance Inflation Factor) values of the external model present in Table 4 reveals information on the collinearity between the variables of the study. In general, FIV values above 5 indicate a concern about collinearity, while values above 10 suggest severe collinearity that could affect the interpretation of the results. In the case of the present study, it is observed that most of the variables have FIV values below 5, which shows that there is no significant collinearity that compromises the validity of the model [47, 65].

However, it should be noted that some notable exceptions were identified within the external model. As is the case with the variables IdentMar02 (3.873) and Experusua07 (3.636), they have the highest values, although they are still below the critical threshold of 5. This shows that, although these variables are correlated with others in the model, the collinearity is not high enough to generate impactful problems in the estimation of the parameters. Similarly, the variables CalCurri04 (3.014) and CompoPA01 (3.031) also have relatively high values, which may indicate some redundancy in the information they provide. This finding suggests that care should be taken when interpreting the effects of these variables, since their interrelation could influence the robustness of the results. Finally, it can be indicated that most FIV values indicate an absence of significant collinearity and that higher values should be monitored to ensure that they do not affect the interpretation of the results.

Table 5.
External Loads and Psychometric Properties of the Structural Equation Model.

	Curriculum Quality	Competence of academic staff	User Experience	Identification with the brand	Infrastructure	Perception of educational quality
CalCurri01	0.882					
CalCurri02	0.879					
CalCurri03	0.869					
CalCurri04	0.899					
CompPA01		0.898				
CompPA02		0.863				
CompPA03		0.892				
CompPA04		0.844				
Experusua01			0.784			
Experusua02			0.783			
Experusua03			0.784			
Experusua04			0.795			
Experusua05			0.829			
Experusua06			0.781			
Experusua07			0.863			
Experusua08			0.835			
IdentMar01				0.922		
IdentMar02				0.940		
IdentMar03				0.931		
Infra01					0.898	
Infra02					0.915	
Infra03					0.913	
Infra04					0.885	
Percaliedu01						0.834
Percaliedu02						0.868
Percaliedu03						0.857
Percaliedu04						0.877
Percaliedu05						0.872
Percaliedu06						0.814

The data presented in Table 5 reflect a positive perception in various dimensions related to educational quality and user experience in a university academic context. First, the values associated with the quality of the curriculum are between 0.869 and 0.899, which indicates that students consider the curriculum as a relevant and appropriate aspect to their needs in the educational institution. Therefore, the influence of curriculum quality leads to a change in the quality perceived by students; moreover, directly in loyalty and indirectly in loyalty through satisfaction [16].

Similarly, when analyzing the competence of the academic staff, values ranging from 0.844 to 0.895 were found. This result is based on the importance of teaching competence as a critical factor in student satisfaction, directly influencing their motivation and commitment [5]. As for the items of the user experience construct, the values show remarkable variability, with a range from 0.781 to 0.863. While some indicators are relatively low, others show a positive experience. This diversity

may reflect differences in students' interactions with educational resources, infrastructure, brand image, and other important factors that determine students' effective learning [66, 67].

Likewise, the values of identification with the brand are remarkably high, ranging between 0.922 and 0.940, which suggests that students feel strongly identified with the institution. This identification can translate into loyalty and a sense of belonging to the institution, which can be translated into student retention and the reputation of the institution [25, 26] With regard to infrastructure, the values are equally positive, with a range of 0.885 to 0.915. This indicates that students consider that university infrastructure is adequate to support their learning However, the quality of the physical and technological infrastructure is essential to reflect educational quality, which directly impacts student performance and satisfaction. However, the development and maintenance of these physical assets is a complex and expensive process, and ensuring their quality while meeting global standards is a major challenge [13, 14]

Finally, the values of the educational quality perception construct are between 0.814 and 0.877, showing that, although all values are positive, there is a lower range that suggests areas that could benefit from improvements. The above results reflect that there is a positive perception in all the dimensions analyzed; however, it also indicates the need for attention in certain aspects, especially in the perception of the users and the competence of the academic staff. Therefore, it is essential that educational institutions take these perceptions into account to implement continuous improvement strategies.

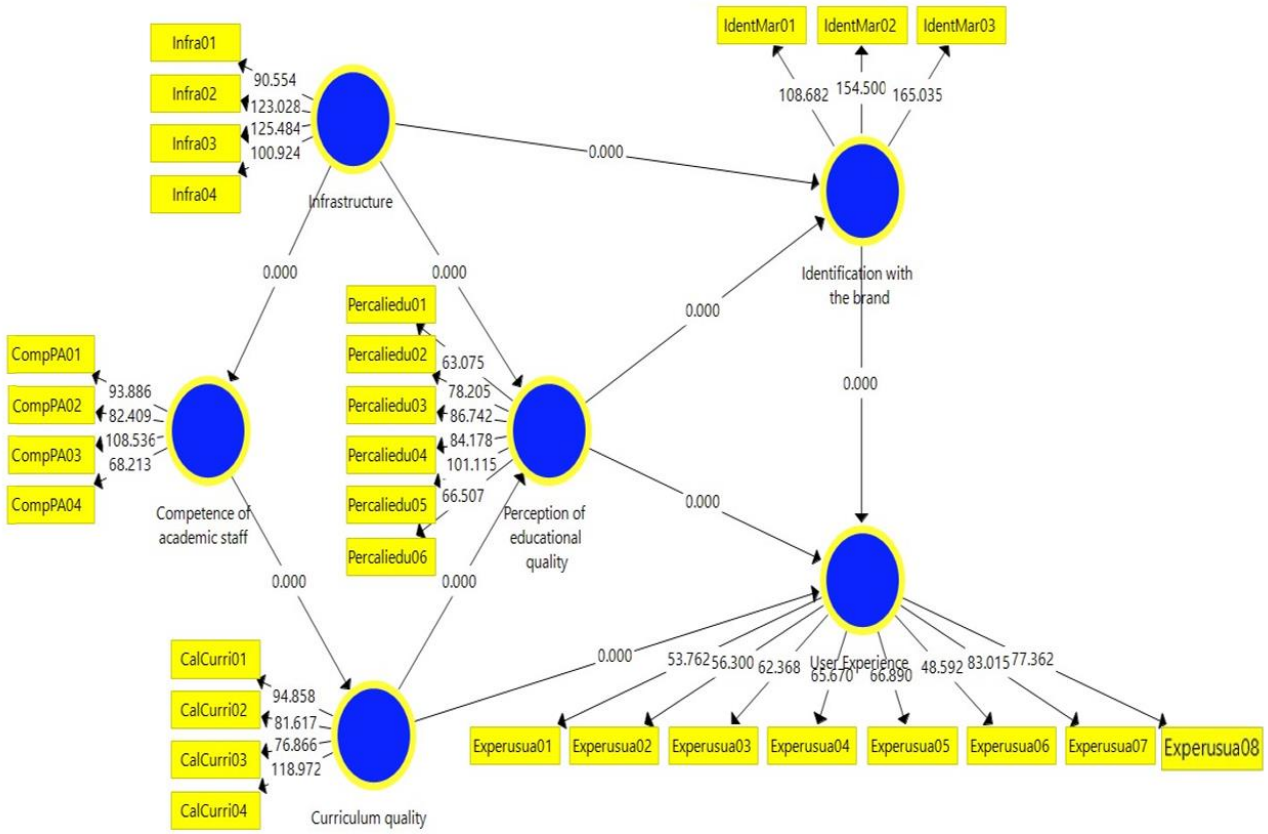

Figure 3.
External model.
Note: Own elaboration based on the results of the Smart PLS Software version 3.2.9.

In Figure 3 and Table 6, the values obtained for the path coefficients and the hypothesis testing proposed in the study are presented, indicating that Hypothesis H^1 shows that the quality of the curriculum has a positive influence on the user's experience, with a coefficient of ($\beta = 0.236$, $p < 0.001$). This result suggests that a well-structured, flexible, comprehensive curriculum contributes to a more satisfying experience for students and greater competency development [58]. Likewise, H^2 confirms that the quality of the curriculum is related to the perception of educational quality, with a coefficient of ($\beta = 0.348$, $p < 0.001$), which reinforces the idea that a quality curriculum improves the general perception of educational quality in the university institutions [60, 61].

On the other hand, H^3 relates the competence of the academic staff with the quality of the curriculum, showing a remarkable coefficient of ($\beta = 0.731$, $p < 0.001$). This result indicates that, the competence of the academic staff is fundamental to guarantee the development of an effective curriculum, highlighting the importance of having teachers trained in aspects such as: pedagogical, investigative, communicational skills, among others that evidence their competencies [59]. Furthermore, hypothesis H^4 links brand identification and user experience, with a coefficient of ($\beta = 0.366$, $p < 0.001$). Suggesting that strong brand identification improves user experience, implying that students who feel connected to the institution have a more positive experience.

Table 6.
Path coefficients and hypothesis testing.

Hypothesis	Coefficient	Standard Error	R-value	p-valor	Acceptance
H^1 The quality of the curriculum positively influences the user experience.	0.236	0.031	7.701	p < 0.001***	Accepted
H^2: The quality of the curriculum positively influences the perception of educational quality.	0.348	0.039	8.837	p < 0.001***	Accepted
H^3: The competence of the academic staff positively affects the quality of the curriculum.	0.731	0.023	31.234	p < 0.001***	Accepted
H^4: Brand identification positively influences user experience.	0.366	0.026	13.85	p < 0.001***	Accepted
H^5: Infrastructure positively affects the competence of academic staff.	0.671	0.021	32.435	p < 0.001***	Accepted
H^6: Infrastructure positively influences brand identification.	0.547	0.041	13.394	p < 0.001***	Accepted
H^7: Infrastructure positively affects the perception of educational quality.	0.377	0.045	8.406	p < 0.001***	Accepted
H^8: Perception of educational quality positively influences user experience.	0.436	0.023	19.232	p < 0.001***	Accepted
H^9: La percepción de la calidad educativa se relaciona positivamente con la identificación con la marca.	0.232	0.038	6.153	p < 0.001***	Accepted

Note: Own elaboration based on the results of the Smart PLS Software version 3.2.9. Significance levels: * p < 0.05; ** p < 0.01; *** p < 0.001.

Regarding the infrastructure construct, H^5 shows a coefficient of (β = 0.671, p < 0.001), indicating that an infrastructure serves as a foundation and supports the development of academic staff competence by providing adequate tools and spaces for their teaching functions [5]. Similarly, H^6 establishes that infrastructure strengthens identification with the brand, presenting a coefficient of (β = 0.547, p < 0.001). This demonstrates that adequate infrastructure strengthens the emotional connection of students with the institution [26]. In addition, H^7indicates that infrastructure impacts the perception of educational quality, being accepted with a coefficient of (β = 0.377, p < 0.001), which points out that infrastructure has a direct effect on how students perceive educational quality [13, 14]. For its part, H^8establishes that the perception of educational quality is related to user experience, showing a coefficient of (β = 0.436, p < 0.001). Finally H^9 points to an identification with the brand that positively influences the perception of educational quality with a coefficient of (β = 0.232, p < 0.001).

Es importante destacar que todas las hipótesis planteadas en el estudio mostraron un nivel de significancia estadística muy alto (p < 0.001), lo que indica un grado de confianza excepcional en los resultados obtenidos. Este nivel de significancia, representado como ***, es el más elevado en la escala estadística convencional, lo que fortalece la robustez y validez de las relaciones identificadas entre los constructos del modelo. La consistencia en este alto nivel de significancia a través de todas las hipótesis (H1 a H9) proporciona una base sólida para las conclusiones del estudio y refuerza la confiabilidad de las relaciones causales establecidas entre las variables analizadas en el contexto de la educación superior.

5. Conclusion

5.1. Findings and Practical Implications Practices

Research on user experience and perception of educational quality in Peruvian university institutions has revealed important interrelated findings. The results show that curricular quality positively influences user experience (β = 0.236, p < 0.001) and perception of educational quality (β = 0.348, p < 0.001). Academic staff competence showed a significant influence on curricular quality (β = 0.731, p < 0.001), while student identification with the institutional brand emerged as a crucial determinant of user experience (β = 0.366, p < 0.001).

Likewise, educational infrastructure proved to significantly influence both academic staff competence (β = 0.671, p < 0.001) and perception of educational quality (β = 0.377, p < 0.001). Additionally, the results confirm that the perception of educational quality directly influences user experience (β = 0.436, p < 0.001) and is positively related to brand identification (β = 0.232, p < 0.001).

5.2. Limitations of the Study

Regarding limitations, it is important to point out that the present research is limited to the specific context of Peruvian universities, which could restrict the generalization of the results to other educational environments. On the other hand, the cross-sectional design of the study does not allow us to observe the temporal evolution of the variables analyzed. In addition, the quantitative approach used, although robust in statistical terms, may not capture some relevant qualitative aspects of the student experience that could enrich the understanding of the phenomenon studied.

5.3. Suggestions for Future Research

Regarding future lines of research, it is essential to develop longitudinal studies to evaluate how the identified relationships evolve over time. Likewise, it would be valuable to expand the research to different geographical and cultural contexts to validate the generalizability of the findings. In this sense, the incorporation of mixed methodologies could allow for a deeper understanding of the factors that influence educational quality.

Additionally, it is suggested to explore the impact of emerging variables such as digital transformation and institutional adaptability on the educational experience. Similarly, it would be pertinent to further investigate specific strategies to strengthen identification with the institutional brand and its impact on student retention.

5.4. Conclusions and Practical Implications

The findings of this research suggest important implications for university management. First, it is essential that educational institutions keep their academic programs updated and relevant, responding effectively to the needs of the labor market. Secondly, it is crucial to implement systematic teacher training programs aimed at strengthening the pedagogical and communication skills of academic staff.

On the other hand, strategic investment in infrastructure and technological resources emerges as a determining factor to support the teaching-learning process. At the same time, the development of branding strategies that strengthen the sense of institutional belonging is presented as a key element to improve the user experience. Finally, the need to establish systems for continuous monitoring of educational quality and student satisfaction is evident, thus allowing for more effective management aimed at the continuous improvement of educational services.

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