Service quality for continuing higher education in online learning environments *

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Abstract

This paper aims to identify the factors that influence the perceived quality of service for continuing higher education in online learning environments. To that end, a quantitative descriptive study, which was applied to 4,735 students in continuing higher education courses, who were given a self-administered scale online. The instrument was constructed considering the following factors: teaching skills, teachers' attitudes and behavior, administrative and support team, the navigation platform, curricula, and the organization of courses for continuing education. The results show that the scale of perceived service quality for continuing virtual education from the students' perspective is a two-dimensional construct. The first factor includes administrative support, content, educational aspects, and the interface, which constitute virtual education facilitators. The second factor involves the teaching skills necessary to guide a online learning course. The findings contribute to decisions in the management and development of continuing online learning, whose growing demand warrants a review of ways to satisfy users, allowing the modality to be viewed with a more positive perception.

Keywords
Service quality, continuing education, higher education, online learning environments.
JEL classification
I21, M30

Recibido: 06/02/2018 **Aceptado:** 31/05/2018

http://dx.doi.org/10.18041/1900-3803/entramado.2.4730
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Cómo citar este artículo: ROJAS-BERRIO, Sandra Patricia; ROBAYO-PINZÓN, Óscar Javier; QUIJANO-CAICEDO, Jesús Enrique. Service quality for continuing higher education in online learning environments. En: Entramado. Julio- Diciembre, 2018. vol. 14, no. 2, p. 22 - 34 http://dx.doi.org/10.18041/1900-3803/entramado.2.4730

Calidad del servicio para la educación superior contínua en entornos virtuales de aprendizaje

Resumen

Este estudio tiene como objetivo identificar los factores que influyen en la calidad de servicio percibida para la educación superior continua en entornos de aprendizaje virtuales. Con ese fin, se realizó un estudio cuantitativo descriptivo, con una muestra de 4,735 estudiantes de cursos de educación superior continua, a los que se les aplicó un cuestionario en línea. El instrumento se construyó teniendo en cuenta los siguientes factores: habilidades de enseñanza, actitudes y comportamiento de los maestros, equipo administrativo y de apoyo, la plataforma de navegación, planes de estudio y la organización de cursos para la educación continua. Los resultados muestran que la escala de calidad de servicio percibida para la educación virtual continua desde la perspectiva de los estudiantes es una construcción bidimensional. El primer factor incluye el apoyo administrativo, el contenido, los aspectos educativos y la interfaz, que constituyen facilitadores de la educación virtual. El segundo factor involucra las habilidades de enseñanza necesarias para guiar un curso de aprendizaje en línea. Los hallazgos contribuyen a las decisiones en la gestión y el desarrollo del aprendizaje en línea continuo, cuya creciente demanda justifica una revisión de las formas de satisfacer a los usuarios, lo que permite ver esta modalidad de aprendizaje con una percepción más positiva.

Palabras clave

Calidad del Servicio, educación continuada, educación superior, entornos virtuales de aprendizaje.

Códigos JEL

I21, M30

Qualidade de serviço para ensino superior contínuo em ambientes virtuais de aprendizagem

Resumo

O objetivo deste estudo é identificar os fatores que influenciam a qualidade de serviço percebida para o ensino superior continuado em ambientes virtuais de aprendizagem. Para tanto, foi realizado um estudo quantitativo descritivo, com uma amostra de 4.735 estudantes de cursos superiores de ensino superior, aos quais foi aplicado um questionário online. O instrumento foi construído considerando os seguintes fatores: habilidades de ensino, atitudes e comportamento dos professores, equipe administrativa e de apoio, plataforma de navegação, planos de estudo e organização de cursos para educação continuada. Os resultados mostram que a escala de qualidade de serviço percebida para a educação virtual na perspectiva dos estudantes é uma construção bidimensional. O primeiro fator inclui suporte administrativo, conteúdo, aspectos educacionais e a interface, que são facilitadores da educação virtual. O segundo fator envolve as habilidades de ensino necessárias para orientar um curso de aprendizado on-line. Os achados contribuem para as decisões na gestão e desenvolvimento da aprendizagem online contínua, cuja demanda crescente justifica uma revisão das formas de satisfação dos usuários, o que nos permite enxergar essa modalidade de aprendizagem com uma percepção mais positiva.

Palavras-chave

Qualidade de serviço, educação continuada, ensino superior, ambientes virtuais de aprendizagem.

Classificações JEL

I21, M30

Introduction

Online learning programs promoted by UNESCO (1998) are part of the so-called fifth generation of distance education (McKee, 2010), whose distinctive feature is the advantage of the interaction that the Internet offers, in addition to the inclusion of varied and innovative technological devices provided by Web 2.0, those conditions had enabled students to develop intercultural dynamism and skills to improve their employability through practical, intercultural learning, business development, and the management of online learning teams (Duss & Cooray, 2014). Zapata Zapata (2002) indicates that at the beginning of online learning education in Colombian institutions, universities had worked in an isolated manner and that there were no alliances between the universities or with foreign entities to offer academic programs. In turn, the Ministry of Education for the Republic of Colombia (2006) has conducted a study on online learning models in Colombian institutions of higher education and, based on the use of Information and Communication

Technology (ICT), classifies them into the following four types: vanguard, cooperative, self-sufficient and skeptics; in the first group, the majority are from the private sector, whereas in the last group, the majority are from the public sector. Moreover, the first group establishes the use and sets standards for the use and development of ICT, the second includes the use of ICT in its institutions' plans and have the resources to implement them; Self-Sufficient institutions are characterized as having online learning courses but limited, and the skeptics are institutions that have scant use of digital services.

It is also important to note that the National Learning Service – SENA – (2013, 2015) is a public institution that initiated online learning in 2003 with short, 40-hour continuing courses– or so called further education courses –. Online learning environments are one of the strategic pillars that enabled SENA to grow 263% in the first four years, growing from offering a total of 1,142,798 openings in its various learning programs in 2002 to 4,148,809 positions in 2006. In 2014, it maintained a goal of 3,251,070 openings. The institution has been able to benefit Colombians in 1,045 municipalities and nationals in 71 different countries.

One of the main concerns in the educational system in Colombia has been to seek improvements in quality and coverage, and one of the strategies has been through online learning. However, this modality has permanently been questioned in terms of quality due to various aspects, such as the effort that must be made for control and monitoring because it requires a significant ICT infrastructure. The factor that is highlighted the most is that the student is outside the conventional educational environment (Rodríguez Albor, Gómez Lorduy, & Ariza Dau, 2013). However, the quality of educational institutions and their modalities (both in-person and online learning) can be viewed from different perspective; thus, it is necessary to investigate what students perceive as quality because they are the individuals who receive the education and the consequences (Vega Garcia, 2014; Martínez Argüelles, Blanco Callejo, & Castan Farrero, 2013).

Therefore, it is important that institutions of higher education that offer programs in the online learning mode verify how they are working in terms of strategies and review their processes and structures to make good decisions that differentiate their offerings based on higher levels of quality (DeShield, Kara, & Kainak, 2005). According to O'Neill & Palmer (2004) and Stodnick & Rogers (2008), in this sense, the literature indicates that the quality of service perceived by students is increasingly important. Similarly, Martínez Argüelles et al. (2013) found that the quality of service perceived by students is a construct composed of four factors primarily defined by teaching, which covers the knowledge, experience, and teaching skills of teachers, their interaction with students, feedback, and rapid problem solving. The second factor is defined by the facilitators or administrative services, which include services that help the core service of teaching, such as the resolution of administrative questions, registration, and complaints and claims. The third factor concerns support services that are not required but help provide good services, such as video conferencing, chats, in-person tutorials, and discussion groups. The fourth factor, which is very important, is defined by the user interface, which touches on aspects such as the speed of navigation, file downloads, the ease of connection with the campus, and simplicity in navigation.

Moreover, authors such as Owlia & Aspinwall (1996) and Mishra (2007) also consider teaching to be a factor in service quality with regard to the skills that the teacher should have in knowledge, experience, and practical and theoretical knowledge. Finally, the organization of courses is viewed as a determining factor of the perceived quality of service because it defines the educational resources and organization, which are designed to contribute to student learning through activities conducted throughout the course, such as practice, work, exercises and discussions (Duart, Lara, & Saigí, 2005). In this regard, Frankola (2001) claims that aspects of online learning courses, such as lack of supervision, motivation, problems with technology, gaps in support for students, inadequate design in online courses and inexperienced teachers, are fundamental causes of students' dropping out from online learning courses.

It is important to realize that, although previous research has examined online learning in relation to marketing management (Hansen, 2008), having ICT is a factor in institutions of higher education that generates new possibilities of offering more educational services, both in online learning and in-person (Akareem & Hossain, 2012). This leads to a broad competitive horizon in the higher education market, making universities revise their marketing and processes at the global level to have a competitive strategy to differentiate themselves from competitors in their educational offerings (Joseph, Yakhou, & Stone, 2005) – cited by Martínez Argüelles (2006) –. However, it can be observed that in online learning environments, rules, procedures, and strategies that do not follow a systematic process of measuring quality are established, as noted by Harvey (2001).

It has also been observed that there are previous studies concerning how perceived service quality can act as an indicator of factors that can determine some failures in education services. There are other issues that can be addressed in educational management, but this work focuses on the perceived quality of service because previous studies

have addressed this issue in general for online learning higher education but not for the case of continuing online learning, for which there are no studies in the literature.
In addition, this study contributes to the knowledge about the perceived quality of service for the continuing education in virtual environments, which is of great interest for the educational sector given the growth that has been evidenced for this type of modality in the last years. Also, at a social level, it offers information that can help not only educational institutions but also government authorities to set policies for monitoring educational quality, based on the perception of users of this type of academic programs. In this way, indicators for academic quality can be established based on the factors identified and the perceived quality levels found in this study.

Given the above considerations, the purpose of this study is to identify the factors that influence the perceived quality of service by users of higher education in online learning environments in Colombia. This study aims to contribute to knowledge about perceived quality in the case of continuing online learning and to contribute to marketing management in general in institutions of higher education.

This paper is structured as follows: Section 2 provides the theoretical framework. The aim of this section is to present overviews of the theory behind this research, which is based on the theoretical discipline approach. Then, the observation of the determinants of service quality in continuing online learning program are addressed. This section is divided into the definitions of service, perceived service quality and the measurement models for service quality. In the following section, online learning is defined, with all the elements that constitute it. Then, Section 3 explains the methodological strategy applied to obtain the necessary data to answer the research problem proposed. Section 4 discusses the results; and finally, Section 5 offers conclusions, recommendations for practice and research, as well as the limitations faced during the research process.

1. Literature review

1.1. Perceived Service Quality (PSQ)

Service is defined as "the work, activity, and/benefits that produce consumer satisfaction" (Duque Oliva, 2005, p. 2). Other concepts claim that services have two fundamental characteristics, intangibility, no differentiation between production and delivery, and the inseparability of production and consumption. Additionally, one of the notable distinguishing characteristics between tangible products and services is that they cause differences in determining the quality of service. Therefore, one cannot assess services and tangible products in the same manner. The recognized characteristics are intangibility, heterogeneity, and inseparability (Parasuraman, Zeithaml, & Berry, 1985).
In this context, Perceived Service Quality is subjective because it is evaluated by customers based on their perceptions. It can also be explained as an attitude regarding the superiority of one service that is composed of multiple dimensions (Duque Oliva, 2005; Colmenares & Saavedra, 2007).

The measurement models of PSQ that are relevant to this study are, in one hand, the American School one named SERVQUAL, which is proposed by Parasuraman et al. (1985). These authors "departed from the disconfirmation paradigm, similar to Grönroos, to develop an instrument to measure perceived service quality" (Duque Oliva, 2005, p. 9). However, some authors disagree that the disconfirmation paradigm measures the cognitive process because it appears very simple. Instead, they propose assessing only user perceptions, this assessment would surely give a result with greater validity and reliability (Van Dyke, Kappelman, & Prybutok, 1997); Cronin & Taylor (1994) conduct empirical studies that are performed in different service organizations that lead them to conclude that the model proposed by Zeithaml, Parasuraman, and Berry on service quality (SERVQUAL) is not the most appropriate for evaluating service quality.

On the other hand, there is the SERVPERF model, proposed by Cronin & Taylor (1994), who base it solely on the evaluation of perceptions. The evaluation is similar to the SERVQUAL model, which has evaluations of expectations and perceptions (Duque Oliva, 2005, p. 9). This model received this designation because it focuses on evaluating performance (SERVice PERFormance).

1.2. Dimensions of PSQ in online learning

Both in-person education and online learning demonstrate the existence of studies that evaluate the performance in PSQ, based on students' perceptions, which have been developed using standardized scales such as SERVQUAL and SERVPERF. Additionally, there are scales of items that have focused on teachers and independent models, such as HEdPERF.

In a study on the measurement of service quality in higher education, Abdullah (2005) compares the HEdPERF and SERVPERF models, showing that his model is a new industry scale whose significance is education with increased performance. The author intended to show that the instrument is based on capturing the real determinants of service quality in the education sector with respect to design, methodology, and approach and that it had a

superior measurement capability. Technically, with "one-dimensionality, reliability, and validity, HEdPERF explains the variance in higher education institutions better compared to SERVPERF". However, the same author states that the research was only applied in a national environment and in a single industry, meaning that the proposition that the model is superior cannot be generalized.

There are also other studies that seek to compare instruments to measure the quality of service in higher education. In this sense, Brochado (2009) – cited by Torres Moraga & Araya Castillo (2010) – conducts comparisons of five recognized scales in such studies, namely, SERVQUAL, SERVPERF, SERVQUAL weighted by importance, SERVPERF weighted by importance, and HEdPERF. In the conclusion, the author emphasizes SERVPERF and HEdPERF but does not identify which is the best for measuring service quality in higher education.

It is important to note that the service provided in online learning is pure to the extent that it cannot be measured by specific transactions, meaning that the service provided is part of a lasting interaction within a given time (Martínez Argüelles et al., 2013). Furthermore, there are other studies that work with item scales for PSQ in education but that only review specific aspects such as libraries (O'Neill & Palmer, 2003).

To address this issue, Martínez Argüelles et al. (2013) study PSQ in higher education and conclude that determining student needs and expectations is the first step of the process and is fundamental to provide excellent service. On the other hand, O'Neill & Palmer (2004) state that many PSQ initiatives are burdened by an overemphasis on technical aspects or dimensions of quality, such as academic performance and research activity, at the expense of functional aspects that are more related to PSQ and satisfaction, aspects that can be used to create a competitive advantage.

Nath & Zheng (2004) note that it is important to know the types of attributes that students recognize to assess the quality of educational services and to establish their relative importance. Zeithaml, Parasuraman & Malhotra (2002) state that the need for evaluation and conceptualization is critical in online services, considering that they are intangible and impersonal means. They also refer to the difficulties that one may have regarding the proposal of tangible indicators. It is noted in this literature review that the expansion of online learning (e-learning) (Weller, 2007) and the competition that occurs have caused a growing concern about the quality of this service. In this regard, the contribution by Martínez Argüelles et al. (2013) is important because the study on the dimensions of PSQ in online learning higher education seeks to develop systems, models, and scales that will generate valid, reliable, and consistent measures of the quality of educational services provided in online learning learning settings (Ortiz, 2007). In the study that these authors use as a literature reference on PSQ and as their methodology, they use a scale consisting of 24 items, which are composed in a broader set of four dimensions, namely, the essential service (teaching), facilitators or administrative services, support services, and the user interface, which are used as a reference for this research.

In this literature review, contributions were found on the PSQ in educational settings in environments other than online learning environments, understanding that in classroom environments, there are common factors with online services. In this regard, these studies take aspects of classroom education that contribute to this research. The authors present a study whose purpose is to build a high degree of reliability, validity, and dimensionality, a scale that measures the service quality of universities in the Chilean context.

Following this study, we present in greater detail the studies by Martínez Argüelles et al. (2013), Torres Moraga & Araya Castillo (2010), and Owlia & Aspinwall (1996) because, in terms of PSQ in online learning, in their contributions there are factors that are relevant for this study. The details are shown in Table 1.

For Martínez Argüelles et al. (2013), PSQ by students in a Online Learning Environment is a multi-dimensional construct formed by four factors: Essential service: teaching; Facilitators or administrative services; Support services; and The user interface. Moreover, Torres Moraga & Araya Castillo (2010, p. 99) argue that quality of service in higher education depends on the adequate management of interrelated factors. Namely, the author states that there are six identified dimensions that refer to the attitude of the teacher, teacher competence, the curriculum, the administrative staff, facilities, and the organization of the course.

The conclusions from the studies by Martínez Argüelles et al. (2013) and Torres Moraga & Araya Castillo (2010) agree that, when evaluating service quality, students focus their attention on the dimension of teaching. Martínez Argüelles et al. (2013) argue that, in this dimension, the teachers' knowledge, experience, and teaching skills are key. They also analyze the quality of feedback that is given for the activities presented by students, in addition to the speed and effectiveness of teachers' responses to students' questions. Torres Moraga & Araya Castillo (2010) state that the factors to consider in teaching are the attitude and behavior of

Table 1.
Theoretical framework of PSQ in higher education with a focus on continuing online learning

Theoretical reference	Dimension	Martínez Argüelles *et al.* (2013)	Eduardo Torres Moraga, Luis Araya Castillo (2010)	Owlia & Aspinwall (1996) and Mishra (2007)
Teacher's skills	Teaching	X	X	X
	Attitude and behavior	X	X	X
	Learning activities	X		
	Resolution of questions	X		X
	Feedback on presented activities	X		X
	Evaluation	X	X	
Learning program	Program structure	X	X	
	Program objectives and plan	X	X	X
	Content			X
Administrative and support staff	Administration	X		
	Support	X		
	Complaints and claims	X		
	Resolution of administrative questions	X		
User interface	Navigation	X		
Organization of courses	Educational resources	X		

Source: Prepared by authors

teachers and their skills. The implication is that they must have clear knowledge and clearly transmit it to students. Additionally, it is important that they show concern for student learning, encourage participation in classes, and show a positive attitude and respect for students.

With regard to the quality of administrative services and the interface, Martínez Argüelles et al. (2013) say that they are factors that influence user satisfaction in terms of speed in resolving administrative and information problems and, regarding complaints, that ease performing them. On the other hand, they also affect fast navigation and connection to Online Learning Environment by users.

In the study by Torres Moraga & Araya Castillo (2010, p. 12), the administrative staff is viewed as fundamental in PSQ to the extent that "they must attend to students respectfully, with equal treatment, find the best solution, and show a sincere interest in solving students' problems."

Additionally, for Torres Moraga & Araya Castillo (2010, p. 12), aspects such as the curriculum are relevant; it is indicated "that the course has adequate duration and that there is an appropriate combination of theoretical and practical content so that the different subjects of the curriculum will allow students to develop their skills and prepare them for the labor market."

On the other hand, Torres Moraga & Araya Castillo (2010) consider another important factor, the organization of courses, in which there is a good combination of content and programs of study help students develop good skills that enable them to perform well in their jobs.

Other contributions to the literature on PSQ in education, such as Owlia & Aspinwall (1996), claim that the dimensions of service quality in higher education should be measured from the perspective of students, using the six dimensions shown below:

- Tangibility, which concerns proper equipment and facilities;
- Teaching competence, which refers to experience and practical and theoretical knowledge;
- The teacher's attitude, in which we observe an understanding of students' needs, politeness, personal care, willingness to help, etc.

- The content, from the practical perspective of the curriculum, its interdisciplinary nature and cognitive flexibility, etc.;
- The teacher's performance in terms of effective presentation, feedback for students, and student motivation; and
- Reliability, which involves trust, handling complaints, and troubleshooting.

Table 1, presents the theoretical framework of PSQ in online learning for educational institutions prior to this work and, as described in this section based on the summary above, the factors of the dimensions of teacher competence, the educational program, staff and support, the user interface, and the organization of courses with their respective representatives that have explained them in this context.

2. Methodological strategy

This section describes the process conducted in this study to identify an appropriate scale for measuring PSQ in continuing online learning. First, this study is based on the pragmatic paradigm, is not experimental, is descriptive, and has a non-probability quota sample design. Similarly, the target variable of this work is PSQ, the dimensions of which correspond to those proposed previously in the literature by Martínez Argüelles et al. (2013), Torres Moraga & Araya Castillo (2010), Owlia & Aspinwall (1996), and Mishra (2007).

Second, the population is composed of students from SENA in continuing online learning. These students, ranging in age from 18 to 54 years old, enrolled in September 2015 in continuing online learning programs. The test was applied to online courses with 80 students, which is the standard for SENA (2003 a 2014), was sent via the Internet, and used a database with 240,000 students and a type of quota sampling based on the regions in Colombia, distributed as follows: 57% from the Andean region, 19% from the Caribbean area, 13% from the Pacific area, 8% from the Eastern Plains and 1% from the Amazonia and Insular region (San Andrés). There were 4,735 students who responded, corresponding to a response rate of 2%.

The scope of the study was limited to students who took continuing courses in the five regions of Colombia in 2015 in a period of one month (40 hours of additional education) to determine whether the factors that affect PSQ are those indicated in the literature, namely, teaching, administrative and support services, educational programs, the organization of courses, and the user interface.

Based on the literature review, the dimensions for the measurement instrument were identified (Churchill, 1979) for PSQ in continuing online learning. Based on this process, they were defined and are presented in Table 2. Thus, using the definition of the dimensions, items, and scaling, a list was made to capture the domain specified and we proceeded to choose the scaling technique (Zapata Rotundo & Canet Giner, 2008), with the Likert scale chosen for this study.

Therefore, to guarantee the validity of the content, a strategy of a pilot project directed at the population of this study was applied (Zapata Rotundo & Canet Giner, 2008); it obtained a Cronbach's alpha of 0.75 and led to adjustments in the wording of the items.

The design of the instrument is based on the relevant literature for the evaluation of the SERVPERF, SERVQUAL perceived quality, and scales from previous literature with a focus on online learning (Martínez Argüelles et al., 2013; Torres Moraga & Araya Castillo, 2010; Owlia & Aspinwall, 1996; Mishra, 2007; Parasuraman, Zeithaml, & Maholtra, 2005), with the implementation of surveys with a Likert response scale ranging from 1 to 5, with 1 being strongly disagree and 5 fully agree. The instrument consisted of 24 items and was sent in a digital format online. Next, the factor analysis derived from the scores of the participant responses were presented (n = 4735).

Parallel analysis was used to select the number of factors to retain by comparing the eigenvalues observed, extracted from the correlation matrix, with those values obtained from the randomly-generated, uncorrelated, and normal variables. The analysis was conducted using a syntax file developed by SPSS. The results support a solution with two factors.

The data analysis was conducted by exporting the Excel database with the responses from the sample to the statistical program SPSS® Statistics 22, in which we proceeded to apply the factor analysis to 25 items to reduce the number of variables to find the dimensions that explain all of them well. The purpose was to find the minimum number of dimensions that explain the maximum amount of information contained in the data. This technique was also performed to examine the reliability of the instrument and to check whether the correlations support the construct under study.

The principal component method with varimax rotation was used to extract the factors, and those factors with eigenvalues greater than 1.00 were retained. To assign items to factors, factor loadings equal to or greater than 0.50 were considered.

3. Results

In order to identify the factors that compose the perceived quality by students of continuing education in virtual modality, a factor analysis was applied. This type of analysis allows to establish which aspects, represented by the statements contained in the questionnaire, are grouped together to form dimensions or factors that allow interpreting the perception of quality that they have regarding the virtual continuing education service they have received. To achieve this, first, the reliability measurement from Cronbach's alpha was obtained, with a result of 0.941, which is suitable for a scale in marketing (Bruner, 2012), and the result does not improve by deleting items. Similarly, the results of confirmatory factor analysis with varimax rotation and the principal component extraction method generate two factors that meet the criteria defined for this study (see Table 3), the same that subsume the 24 attributes of the scale from which it was initially started. It is important to realize that they explain 64.5% of the variance.

Consequently, the first factor corresponds to the dimension of administrative and operational aspects of the course. Within this factor, the aspects related to the response that the students obtain from the personnel of the service and support areas stand out in the first place. The experiences associated with a quick and friendly response to a problem or requirement are part of the perception of quality.

Likewise, the elements that compose the direct experience they have with the virtual platform turned out to have a greater number of items within this factor. Among them are the speed of downloading content, the organization of content and ease of navigation on the platform, also, the contents and activities of the courses must generate a significant experience for students, while the motivation generated is an important aspect in the interest to finish the courses.

Whereas the second factor corresponds to the teacher's mediation in the classroom. Within this factor are the characteristics that are perceived by the students with respect to the performance and profile of the teachers or tutors within these virtual courses. These includes, the teacher's experience, the level of knowledge about the contents found within the platform for each module, the rapid response of the teacher to the doubts sent by the students and, in relation to the latter and in an interestingly way, it is noted that for students' it is more important a complete feedback compared to a quick response by the teacher.

Therefore, these two features summarize the perception of service quality in the case of continuing online learning. These results are limited to characterize the aspects that compose the perceived quality by the students of virtual continuing education, through the reduction of a set of items into two factors, which explain 64.5% of the variance observed. These results can be complemented with future research that tests the factors found against conceptual models of perceived quality in virtual learning environments. This would allow a better understanding of the phenomenon on which this type of academic research is being developed.

4. Discussion

Although the literature, such as Martínez Argüelles et al. (2013), Torres Moraga & Araya Castillo (2010), Owlia & Aspinwall (1996), and Mishra (2007), shows five dimensions, this work shows that for the field of continuing online learning in Colombia, there are two factors that influence PSQ. The first consists of administrative support services, content, teaching, and the interface, which constitute the facilitators of online learning, and the second is teaching as an essential service.

The first factor is formed by 14 indicators (see Table 3). Contents and teaching Martínez Argüelles et al. (2013) contribute the most to this dimension and involve the presentation, organization, comprehensibility, clarity, variety, and combination of texts and multimedia. Next are support services, which relate to the behavior of the administrative staff in aspects such as speed in solving problems, amicability in the face of complaints and claims, and interest in addressing problems with access to online learning courses. Finally, in this first factor, to a lesser though still very important extent, we observe the interface (Zeithaml, Parasumaran, & Maholtra, 2002; Martínez Argüelles et al., 2013), which refers to good navigation through the materials and easy loading and access to the platforms of the online learning courses. This first dimension reflects both administrative and academic facilitating and ancillary services (Gronross, 1990), which are essential for online learning services. This factor has high internal consistency reliability, with a Cronbach's alpha of .961.

The second factor (see Table 3) consists of four indicators, which are interrelated in aspects of the teacher's skills (Torres Moraga & Araya Castillo, 2010; Martínez Argüelles et al., 2013; Owlia & Aspinwall, 1996). They include the teacher's academic management and aspects of teaching, such as knowledge, experience, and teaching skills, "followed closely by the return that students get from their activities (feedback) and, third, the rapidity and effectiveness in resolving questions related to teaching" (Martínez Argüelles

Table 2.
Questions from the Likert scale measurement instrument for PSQ in continuing online learning

Teaching skills	
1-	The professor's (teacher's) command of knowledge about the contents allows a good development of online learning courses.
2-	The rapid resolution of questions by the professor (teacher) is important for easily conducting courses.
3-	The teaching experience of the professor (teacher) allows better advice to more effectively develop course activities.
4-	Complete feedback on the learning activities submitted by the student is more important than how quickly the teacher responds.
5-	Evaluations should not necessarily agree with what the professor (teacher) advised and taught in the course.
Teacher's attitude and behavior	
6-	The motivation of professors (teachers) is a factor that contributes to students giving a higher grade to the course
7-	The interest of the professors (teachers) in learning does not necessarily cause students to be more motivated by the course
8-	The professor's amicability in the course contributes to students' desire to complete the course
	Educational program
9-	The course contents should combine textual and multimedia documents to make the assimilation of topics more agreeable.
10-	Solely textual documents in the course contents are tedious and boring with regard to reading and assimilation.
11-	The course content should be clear to facilitate the development of learning activities in the course.
Administrative and support staff	
12-	The rapid response of the administrative staff to place people in a course after enrollment is not necessarily a factor that makes a person interested in starting the course.
13-	The interest of the administrative and support staff in addressing problems with access to the online learning course contributes to a person's interest in completing the course.
14-	The friendly response of team and the administrative staff to complaints and claims contributes to people's desire to continue taking online courses.
15-	Giving the best solution to the administrative problems with online courses contributes to people being more willing to develop them.
	Navigation
16-	The rapid download of the online learning course's contents is essential for students to like the appropriation of the course topics.
17-	Quick and easy navigation through the online learning course does not necessarily keep students interested in the course development.
18-	Easy loading and good navigation of interactive materials in the online course encourage the development of learning activities.
19-	An easy connection to the online learning platform influences people's desire to develop the online course.
Organization of the courses	
20-	The learning activities for the development of the online learning course should be easy to understand.
21-	The variety of educational resources available in the online learning course encourages students to develop the course.
22-	The good presentation and organization of content, activities, and other tools in online learning courses provide good management by students.
23-	The course's learning activities should be meaningful for the student to value the course.
24-	The fact that there are too many students in a course positively affects the good service that the teacher can give the group of people in the course.

Source: Prepared by authors

et al., 2013, p. 13). This factor had high internal consistency reliability, with a Cronbach's alpha of .889.

The structure is similar to the study by Martínez Argüelles et al. (2013) in the dimensions of teaching as an essential factor of education, administrative and support services, and the user interface. On the other hand, factors such as the content and teaching are similar to those found in the study by Torres Moraga & Araya Castillo (2010) in their dimension curriculum versus the combination of theoretical content. Teaching, content, pedagogy, and administrative services are considered to be what is offered in online learning, and the interface is the means through which the service is provided. In comparison with the studies cited, the dimensions of the

Table 3.
Factor analysis of the 24 items. Factors influencing PSQ in the case of online learning in Colombia.

Item	Factor	
	1	2
Giving the best solution to the administrative problems with online courses contributes to people's being more willing to develop them.	.813	.188
Easy loading and good navigation of interactive materials in the online course encourage the development of learning activities.	.810	.256
The good presentation and organization of content, activities, and other tools in online learning courses provide good management by students.	.809	.316
The variety of educational resources available in the online learning course encourages students to develop the course.	.799	
The rapid download of the online learning course's contents is essential for students to like the appropriation of the course topics.	.792	.233
The friendly response of team and the administrative staff to complaints and claims contributes to people's desire to continue taking online courses.	.792	.164
The learning activities for the development of the online learning course should be easy to understand.	.782	.241
An easy connection to the online learning platform influences people's desire to develop the online course.	.781	.206
The course content should be clear to facilitate the development of learning activities in the course.	.756	.294
The interest of the administrative and support staff in addressing problems with access to the online learning course contributes to a person's interest in completing the course.	.730	.138
The course's learning activities should be meaningful for the student to value the course.	.720	.241
The course contents should combine textual and multimedia documents to make the assimilation of topics more agreeable.	.661	.307
The motivation of professors (teachers) is a factor that contributes to students' giving a higher grade to the course.	.628	.519
The professor's amicability in the course contributes to students' desire to complete the course.	.610	.451
The teaching experience of the professor (teacher) allows better advice to more effectively develop course activities.	.521	.694
The professor's (teacher's) command of knowledge about the contents allows a good development of online learning courses.	.549	.664
The rapid resolution of questions by the professor (teacher) is important for easily conducting courses.	.536	.664
Complete feedback on the learning activities submitted by the student is more important than how quickly the teacher responds.	.356	.650

Source: Prepared by authors based on SPSS Factor Analysis

teachers' attitude and behavior, which take into account "the relationship between teachers and students regarding the students' interest in learning and encouraging their participation in class and showing a positive attitude and respect for them" (Torres Moraga & Araya Castillo, 2010, p. 12), were not confirmed by the students studied in this research. This also occurred with the organization of the courses, which involves educational resources and their organization (Martínez Argüelles et al., 2013), the number of students, and the weekly sessions (Torres Moraga & Araya Castillo, 2010), in which only the ease of understanding the learning activities was considered important by the students.

5. Conclusion

The factors in PSQ in online learning have become a differentiator in the strategic aspects of education institutions. Today, there are few studies that contribute to this theoretical issue (Parasuraman *et al.,* 2005). Therefore, this research makes an important contribution to the knowledge about online learning in Colombia, becoming a benchmark for future research in higher education regarding the factors that also impact the quality of service that can be offered to students, including the curricular designs for online learning, the minimum number of students whom a teacher must serve, the duration of the courses, and aspects of the teachers' attitude and behavior with respect to their students, which are aspects that were not confirmed in this study.

The results of this research lead both public and private institutions that offer continuing online learning courses to confront challenges to plan and manage their decisions by understanding what users perceive as service quality to reach a level of service quality expected by students. Therefore, value will be generated for this group of online education users, thereby establishing more solid and lasting relationships with institutions.

Conflict of interests

The authors have no conflicts of interest to declare.

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