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Service quality dimensions and customer satisfaction in a Brazilian university context

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Abstract

Purpose – The purpose of this paper is to identify and assess the perception of customers (students) about the services provided by Brazilian universities, through the identification of the attributes that impact on customer satisfaction and the dimensions or factors related to quality in services. This may generate a better management and seek more competitive edge in graduate courses.

Design/methodology/approach – The research method was developed in two phases: the first one is characterized by a qualitative and exploratory approach and the second one as a quantitative research of conclusive character. In the qualitative phase, in-depth interviews were implemented with a semi-structured approach. A survey was performed in the final phase and a multivariate statistical technique was used for the data analysis.

Findings – The results echoed in a set of 40 analyzed attributes (variables), distributed in six dimensions of quality in services, in the graduate courses (second cycle) of administration, which could serve as a basis for orienting other Brazilian universities.

Research limitations/implications – The data analysis did not include crossed techniques that could have enriched the analysis process. Another limitation that can be pointed out is the fact of having only adopted a factor analysis method to identify the dimensions of service quality that influence customer satisfaction (students). In addition, data collection was cross-sectional, which does not allow any change verification of the respondents' perception.

Practical implications – Taking into account the current scenario of increased competition between the Brazilian universities to attract and retain students, the knowledge of student's preferences and the dimensions of quality service can effectively contribute in the development of strategies and actions for an effective graduate programs management (second cycle), and for their consolidation in the Brazilian market.

Social implications – The development of more adequate courses, in terms of level of quality and relevancy.

Originality/value – The identification of the attributes that represent the quality dimensions, related to the services provided, can assist any Brazilian university to prioritize its strategies and actions and to contribute to excellence in education. In addition, it may encourage customer retention (students) and consolidate its market position. Moreover, the study can contribute as a source of empirical data for transferability and benchmark strategies in other contexts for Brazilian universities.

Keywords Benchmarking, Customer satisfaction, Educational services, Customer retention, Service industry, Quality dimensions

Paper type Research paper

Introduction

Economic development has generated increased importance for the service sector, which has provoked a change in behavior by the awareness of the importance of the "act of serving." Due to the increasing demand of consumers, companies are incorporating in their organizational cultures concern for quality, customer service and the "personified" attitudes in their operation, with the objective of maintaining a constant pursuit of customer satisfaction and retention. Based on that, it appears that one of the great challenges for university managers is to identify and to implement the

most appropriate methods to assess the quality of their services (O'Neil and Palmer, 2004). From that logic arises the importance of seeking continuity in revenue and competitiveness, considering the perspective of the customer (student), through a better understanding of their needs, capabilities and demands.

According to Hennig-Thurau *et al.* (2001), the theory of quality of relationships positively influences the process of teaching. The students, by being loyal to their university, actively participate in a process of motivation and commitment, which contributes to the construction of the atmosphere that stimulates learning. In this context, it appears that recent studies highlight the importance of building strong relationships with students in order to increase their satisfaction, retention and loyalty (Helgesen, 2008; Senthilkumar and Arulraj, 2011).

Graduate studies in Brazil, according to Lopes *et al.* (2007), are considered as the result of a design that has its roots in specialized studies, such as medicine, with an outdated profile originated from the 1930s. It was only in the 1940s that the term "graduate studies" was formally used in a Law, in Art. 71 on the "Statute of the University." In 1965, with the Report 977/65 of the Federal Council of Education, were formally deployed the graduate courses in Brazil (Martins, 2002). Brazilian graduate studies were originally created on the basis of an education focussed in science and technology and, even though it was developed with extended resources difficulties, it became one of the best program in the southern hemisphere that has effectively contributed to the development of the country. In that context, the model of graduate studies, proposed by PNGP (2005-2010), aims to strengthen scientific, technological and innovative spheres of knowledge, to train teachers at all levels of education and to qualify professionals from non-academic markets. Graduate studies in Brazil have been characterized by a rapid expansion in terms of numbers, however, it has much to do to cope with the country's demands and challenges for the twenty-first century; in search of solutions to the current problems in order to open horizons for a better future of the Brazilian society (Lopes *et al.*, 2007).

Universities provide mass services to their clientele and need to have knowledge of the main aspects that influence the decision-making process of potential students, especially when they choose an institution and their respective course (Tsiakkiros and Pashiardis, 2002). This requires from the universities a constant monitoring of the level of satisfaction of students, so that they can retain them, making them feel part of the institution and its programs (Grey, 2004).

In that context, Camp (1989) points out that benchmarking is a method that can help companies achieve higher levels of services provided to customers. Also, Helgesen (2008) points out that because of the growth of competitiveness in the higher education sector, there is a requirement to gain a greater control of the quality indicators. These benchmark activities generate more transparency within the organization and between different institutions, and therefore become necessary for institutional changes in management. Sreekumar and Mahapatra (2011) point out that academic manager should focus on recognizing the needs of students. Therefore, researchers could try to reveal the attributes and the most important dimensions of quality from the point of view of the students and, how these dimensions are more likely to impact on their overall satisfaction (Rowley, 1997). Furthermore, the search for quality must be a constant and the university managements should go beyond the standards set by regulatory agencies.

The topics presented and defined in this study are justified because the literature shows a disproportion between quality of services and other issues such as retention

and customers loyalty (Sultan and Wong, 2013). Furthermore, it appears that researches on quality of services realized through the years have not brought any consensus on its dimensions, showing in a gap to be filled, since quality of educational services has become an important matter to be discussed worldwide (Gallifa and Batallé, 2010; Sultan and Wong, 2014). This study sought to identify the dimensions and attributes related to the quality of services that impact on student satisfaction in university milieus, which may contribute to the retention of graduate students (second cycle) and any other programs offered by the institution. The Northeast Region of the state of Rio Grande do Sul, is economically responsible for over 30 percent of the State GDP (Câmara da Indústria, Comércio e Serviços de Caxias do Sul (CICS), 2012) and is the second most developed region in terms of industrial establishments, which are composed by traditional and innovative activities, such as metal-mechanic, furniture, plastics, textile, clothing and food industries.

Theory
Quality in services
The discussion about quality for the services sector began in the early 1980s. Both the academia and the business sector sought a definition covering the expectations and the perceptions of customers and organizational strategies (Gummesson, 1994). According to Parasuraman *et al.* (1985, 1988) and Zeithaml *et al.* (1990), quality in services can be defined as the magnitude of the discrepancy between perceptions (perceived performance) and customer expectations.

Grönroos (1990) and Fornell (1991) argue that the definition of quality in services is made from the perspective of the customer, because what counts is what he perceives as quality. Gibson (2003) comments that the focus on quality starts from the judgment of its suitability for any purchase or consumption, and the perception of quality is one of the previous functions on the products and services that must be met. For Albrecht and Bradford (1992), quality in services is the capacity of an experience in services or any other factor related to it, which may satisfy a need or a desire or solve a problem or provide benefits to someone.

Therefore, distinction must be made between service quality and customer satisfaction; where constructs are interrelated but distinct. The concept of quality can be understood as a current perception of a customer about a performance of a product or service, whereas satisfaction is based on past experiences (Anderson *et al.*, 1992). Furthermore, Grönroos (1998) points out that the perceived quality of a service is the result of the relationship between perceptions and expectations, being a construct prior to customer satisfaction; which is based on the value attributed to the experienced level of quality. Broadening the discussion, a quality in services is perceived by a client when a company has the ability to meet the needs and desires of such customer and is able to build or maintain a competitive advantage through such strategy (Yoo and Park, 2007; Gallifa and Batallé, 2010).

According to Hudson *et al.* (2004), the measurement of service quality by a customer is done by comparing the differences between the results of perception (service performance) and expectations (confirmation or disconfirmation) (Oliver, 2010; Turner and Krizek, 2006). In terms of quality services in higher education, Rowley (1997) points out that any attempt to measure quality should take into account the perspectives of the various stakeholders. Srikanthan and Dalrymple (2003) commented that the studies on quality management in universities generally focus on "education" and exclude other factors that influence students' perceptions.

Finally, in terms of evaluation tools for quality in services, Abdullah (2006) proposes the HedPerf (higher performance) scale as a tool for quality assessment in higher education, which includes the dimensions such as the academic level of teachers, the reputation of the university and the course curricula. In this sense, an approach to quality in education means a degree to which an institution fulfills its mission or its rationale (Harvey *et al.*, 2008), arguing that quality should not be measured by the difference between expectation and performance, but as a perception that leads to customer satisfaction (Sultan and Wong, 2012, 2014).

Determinants of quality services

When it comes to quality, several authors have contributed to the original dimensions proposed by Garvin (1987), which reflect the challenges of quality performances perceived established for service providers. From the eight dimensions of quality proposed by the author, two of them fit in the nature of services. Performance, which constitutes a primary benefit desired by customers and, perceived quality, where the provision of a service requires the participation of a customer; which rise concerns regarding quality levels (interactions) that are established during the production and the use of a service.

By the fact that customers do not always have complete information about a service provider and its proper offer, the quality of service perceived by a client is basically evaluated in two dimensions: technical and functional (Grönroos, 1984, 1990). The technical dimension concerns the quality of the results desired by a customer, more specifically, about what a customer receives through its interactions with an organization. In contrast, the type of service also influences the user, or else, how the service is rendered and what rather experience the process of production and consumption were simultaneously given (Parasuraman *et al.*, 1985). It is relevant to mention that the functional dimension of quality is related to the functions of a service provider and to the customer perceptions of the provided service (Dagger *et al.*, 2007).

In addition, several studies present constructs determinants of service quality, one of the most relevant referring to the work developed by Parasuraman *et al.* (1985). The authors consider the factors that influence the evaluation of the perceived quality of customers by involving both technical quality and functional quality. The five determinants of service quality presented in this paper are as follows: reliability, responsiveness, security, empathy and tangibility (tangible elements).

Otherwise, Denton (1991) identifies three determinants of service quality: first, reliability, related to ensuring customer satisfaction; second, responsiveness, linked to the immediate response (speed) to provide the service expected by a customer; and third, uniqueness, which is the task of identifying what customers want, providing a unique experience for the customer. Another study to be considered is the one developed by Albrecht (1994), which identified four determinants: care/attention, spontaneity, problem solving and disaster recovery; where the functional dimension was emphasized with an only problem solution related to technical quality.

In reference to higher education, the approach suggested by Grönroos (1984) considers two dimensions; one concerning the results (technical) and the other one concerning processes (functional quality). When it comes to quality educational services, Hill (1995) related quality with the variability of expectations of students throughout their academic lives, adopting 16 determinants of quality services, which include academic, financial and accommodation factors.

Joseph and Joseph (1997) identified seven elements of quality measurement at the moment of choosing a university, which are: academic reputation, career opportunities,

and schedule of courses, duration and costs of courses, physical, location of institution and indication third party. Sohail and Shaikh (2004) state that the factors that influence the level of quality of a university are the teachers, the physical evidence and the reputation of the institution, showing that for each type of service, there may be a specific set of key quality services determinants.

Links between perceived quality, satisfaction, customer retention and loyalty
Several authors define customer satisfaction with a focus on quality, since both concepts have their origin from the disconfirmation paradigm (Oliver, 1980). However, the difference between the concepts of perceived quality and customer satisfaction makes no unanimity in the literature. Bloemer and Kasper (1995) and Bolton and Drew (1991) propose that perceived quality of services is formed by customer satisfaction. In contrast, Oliver (2010) distinguishes between the short- and long-term aspects of these concepts, highlighting that the client processes the evaluation of the perceived quality associated with a specific transaction shortly after experiencing the purchase or consumption, thus becoming an antecedent of satisfaction. Fowdar (2007) points out those highly satisfied customers are likely to forgive any wrong situation, being complaisant because of past experience with excellence in services rendered, and highly understanding about the failure occurred just as an event from the usual quality of the company.

In this context, customer satisfaction is necessary to the survival of a business. Some authors advocate the thesis that customer satisfaction should be a managed factor, as a way to leverage the success of organizations (Anderson *et al.*, 1994). Thus, Oliver (2010) states that customer satisfaction can also be highlighted when companies can provide additional attributes that customers do not expect to find in the service, encouraging repeat purchase and person-to-person positive influence factors, crucial to success in various types of organizations, which constitute an indicator of profitability.

Based on this, for Kotler and Fox (1995), customer retention is important for several reasons, since a market-based institution that looks for a maximum level of satisfaction is also expecting less loss of satisfied customers. In this direction, Oliver (2010) and Jones and Sasser (1995) configured customer satisfaction as a necessary basis for the retention and the formation of a possible customer loyalty.

According to Vavra and Pruden (1995), the main factor for the success of the new millennium is customer retention, regarded as the most important component in the consolidation of market share, turnover, profit and profitability of enterprises. Several studies show the relationship between satisfaction and customer retention, where increased levels of satisfaction may result in increased intentions to repeat purchase, consumption or use of a product and/or service thus increasing their intention to remain effectively retained (Reichheld *et al.*, 2000; Griffin, 2002; Huang, 2008; Guo *et al.*, 2009).

In that context, Caruana (2004) distinguishes loyalty from customer retention, considering it as a psychological state, with greater resistance to competitive pressures; as it implies some kind of emotional bond with the consumer brand or some particular offer (product/service), while customer retention is seen as a strategy to be implemented by organizations based on repeat purchase or consumption. Reinforcing this line of thinking, Gee *et al.* (2008) postulate that retention and loyalty are enhanced by multiple experiences over time and that satisfaction becomes important element because these multiple experiments must be satisfactory to lead to a positive long-term loyalty predisposition.

As a process of evolution of concepts, Oliver (1999) draws attention to what he calls the "fall of the dynasty of satisfaction surveys," with emphasis on retention and especially for customer loyalty as a strategy to leverage business success. The author also suggests that loyalty should be seen as a deep commitment of repeat purchase or use of the same brand, company, products and/or services, creating barriers and preventing migration to competition.

Since several studies show a relationship between quality, satisfaction, retention and customer loyalty, it can be stipulated that benchmarking on quality of service becomes an indicator of long-term relationships and serves as a guarantee that the service provider will meet expectations, thereby reducing levels of uncertainty (De Cannie're et al., 2009).

Benchmarking practices in universities
The benchmarking activity has emerged in the 1970s, by the Xerox Corporation, where it was defined as a continuous process of measuring products, services and practices in relation to the main market competitors or companies recognized as market leaders (Saravanan and Rao, 2006; Galoro et al., 2009).

In the case of higher education institutions, as service providers, benchmarking practices may assist in the investigation of the new dynamics of their market scope, giving them a business status. For this, the application of management tools to assist university management teams in decision making is required, reinforcing the need for managers to have more business knowledge, aiming to develop more effective strategic planning

A literature survey shows that benchmarking practices in services are more complex than in the industry because the quality indicators identified allow self-assessment and indicate the strategic aspects that need changes (Motwani and Sower, 2006; Narayan et al., 2008), compared with the indicators of successful companies in a given market. Therefore, benchmarking tools for university management are useful and applicable in business routines because they provide accurate information about the relative performance of different processes, making it an important practice that helps to achieve a better management. However, participants engaged in benchmarking programs need to focus on obtaining and providing the necessary information, as well as critically analyze the results produced to optimize organizational processes.

According to Camp (1989), by defining the measures of comparison, the practices of benchmarking do not necessarily need to present the same type of product and market. Benchmarking provides an opportunity for organizational learning and encourages creativity and cognitive ability, as it allows useful changes in an organization. But to gain competitive advantage, it needs to identify what it can do differently, what will trend and perhaps even redefine or invent the "rules of the game"; whereas significant differences from the competition can be a source of potential actions for strategic organizations (Blank et al., 2012). Complementing this idea, Moriarty (2011) points out that benchmarking is an organizational practice that seeks to explain how the actions work whereas a benchmarking process will only be effective when identifying potential improvements, increasing the well-being of all involved through processing paradigms. Related to this, a study by Björklund (2010) points out that despite the benefits, benchmarking is rarely applied in organizations due to lack of internal tools, which are often unstructured to compare their business practices with the practices of other companies.

There are differences in defining the concept of benchmarking, but the common categories are: performance, comparing companies and lines of similar products; product; and market (Camp, 1989). In addition, Williams *et al.* (2012) refer to various dimensions of business to explain such practice, namely: strategy; finance; and operations.

Williams *et al.* (2012) developed a literature review on the subject of benchmarking, for the period 2005-2010 and specifically on service companies, and found that there is a reluctance against this method considering the concerns about the strength of benchmarking practices and the lack of resources to effectively implement it. Furthermore, comparative analysis is significant and positive when associated with quality performance. In order to compete in the market, benchmarking procedures help to improve organization's performance, and increase the satisfaction of the needs of its clients (Talib and Qureshi, 2013).

To facilitate the understanding of the themes developed in the theoretical framework, Table I shows a summary of the principal authors that served to sustain this study.

Method
The research environment is composed of a regional Brazilian university located in the northern part of the State of Rio Grande do Sul. The region accounts for over 17 percent of the State's GDP (CICS, 2012). The institution has most of its operations in more than

Theoretical themes	Main definitions	Main authors
Quality in services	Is the result of the relationship between perceptions and expectations (Grönroos, 1998)	Parasuraman *et al.* (1985, 1988) Grönroos (1998) Hudson *et al.* (2004) Harvey *et al.* (2008) Gallifa and Batallé (2010) Sultan and Wong (2014)
Determinants of quality services	Considers the factors that influence the evaluation of the perceived quality of customers, by involving both technical quality and functional quality (Parasuraman *et al.*, 1985)	Parasuraman *et al.* (1985) Grönroos (1994, 1990) Joseph and Joseph (1997) Sohail and Shaikh (2004) Dagger *et al.* (2007)
Satisfaction, retention and loyalty	Customer retention is important for several reasons, since a market-based institution that looks for a maximum level of satisfaction is also expecting less loss of satisfied customers. In this direction, customer satisfaction as a necessary basis for the retention and the formation of a possible customer loyalty (Oliver, 2010)	Vavra and Pruden (1995) Caruana (2004) Huang (2008) Guo *et al.* (2009) Oliver (2010)
Benchmarking practices in universities	In the case of higher education institutions, as service providers, benchmarking practices may assist in the investigation of the new dynamics of their market scope, giving them a business status (Sreekumar and Mahapatra, 2011)	Camp (1989) Saravanan and Rao (2006) Motwani and Sower (2006) Galoro *et al.* (2009) Sreekumar and Mahapatra (2011) Williams *et al.* (2012) Talib and Qureshi (2013)

Source: Prepared by the authors

70 municipalities of Serra Gaúcha, which includes nine university hospitals, 13 distance education centers and 792 laboratories. It is a regional community education institution, which currently offers more than 75 undergraduate courses and more than 70 graduate courses. This institution represents a community of almost 40,000 people, and as the biggest university institution south of the city of São Paulo, it deserves a community of more than two million people.

Thus, the study aims to: first, identify the attributes (dimensions) of the service that impact on student satisfaction in relation to services rendered; second, investigate the relationship between the overall student satisfaction and the variables analyzed (service attributes); and third, examine the possibility of repurchase of services and the indication of the institution to third parties.

This study was conducted in two phases: the first one is characterized as qualitative and exploratory and the second one as a quantitative survey (Malhotra *et al.*, 2012; Remler and VanRyzin, 2011). In the qualitative exploratory phase, in-depth interviews were implemented with a semi-structured approach that served as a guide for the interviews, which was applied to 16 respondents, with the aim of identifying the attributes related to services (Hennink *et al.*, 2011; Scott and Garner, 2013). The sample was thus comprised of five employees (C) linked to graduate students of the organization and 11 (A) for various graduate programs. The basic criteria for the selection of the interviewees were: gender, age and the nature of graduate program.

All interviews were recorded electronically and transcribed to facilitate the process of data analysis and interpretation (King and Horrocks, 2010). All interviews had an average duration of 40 minutes.

In the final phase, a quantitative research a survey was carried out by applying a structured questionnaire (Malhotra *et al.*, 2012) with the intention of measuring student satisfaction, resulting in the dimensions (factors) the quality of services. To assess student satisfaction, a seven points Likert scale was used, looking for the extremes, from (1) "totally dissatisfied" to (7) "totally satisfied." An exploratory factor analysis (EFA) procedure was used for the treatment of data, since the dimensions (or factors) to be found were not established a priori (Hair *et al.*, 2010). Afterwards, in order to find a model that showed only the significant variables to explain the overall satisfaction, a method of multiple linear regression analysis was used, through a stepwise method, to examine the contribution of each independent variable to the regression model (Hair *et al.*, 2010).

The attributes were established through content analysis, from a theorical framework related to benchmarking practices in universities, and a list of 49 relevant attributes was incorporated for the second phase of the research. Multivariate statistical techniques were used for data processing, in order to verify the repurchase student intents and multiple regression analysis was implemented to study the possibility of referral to third parties (Mulaik, 2010).

Results
The study population included full-time graduate students. The 2012 UCS Report on Graduate Studies show that 1,015 students were enrolled as a total and the current research was applied to a sample of 521 students, considering a confidence interval of 95 percent with a maximum associated error of 3 percent.

For that, a stratified sampling was used (Malhotra *et al.*, 2012). The sample population was stratified with respect to knowledge areas and their courses, to contemplate the factors that are related to student's behavior and the profile of students

from various areas. After that, the proportions of the population were determine in different sub-groups or extracts, as shown in Table II.

From the structure of the questionnaire, a pre-test was subjected to ten graduate students and was implemented in order to verify the clarity and scope of the questions, completing the answers and possible improvements (content and form) to be merged.

The data collection process was conducted over a period of 30 days, due to the flexible schedules of the courses (see Table II). As the questionnaires were being applied, they were being analyzed and processed. Each questionnaire was given a control number (code) and inspected one by one for data entry. Finally, a thorough review of data was carried out before data processing and statistical analyses.

The survey data were tabulated with a Microsoft Excel 2007 Office release and procedures for descriptive statistics and multivariate analyses (Statistical Package for Social Sciences 20.0 Software). The data preparation included verifications on the characteristics and the suitability of data with the intention the different types and the missing data, which could compromise the quality of the analysis (Remler and VanRyzin, 2011). The use of multivariate data analysis must include a rigorous control on the effects of missing data over the outcome of the research, in order to minimize their negative effects and impacts on the sample size available for analysis. All variables exceeding 10 percent of the sample with "missing" were excluded (Enders, 2010; Hair *et al.*, 2010).

Consequently, it was decided to eliminate the attribute 01 (courses), 07 (service), 18 (availability of teachers for extra-class consultation with students), 28 (incentives for scientific activities), 41 (recognition of the course in the market) and 49 (volume of extra-class activities). The method of allocation was used to replace the average value of the variable "I do not know" remaining in the database, by calculating the mean of each variable and replacing the missing values, as proposed by Hair *et al.* (2010).

Factor analysis was implemented to identify the dimensions of service quality in the study, which seeks to identify the basic constructs related to data and to reduce the number of dimensions of analysis (Mulaik, 2010). A components method with orthogonal rotation (Varimax rotation) was used in order to facilitate the interpretation of each one and to minimize the number of variables with "high loading" on a factor, to reinforce their interpretation (Malhotra *et al.*, 2012) and to maximize the variance of the load factor (Johnson and Wichern, 2007). It showed that the correlation matrix is the appropriate analysis technique. The factors identified are shown in Table III.

An eigenvalue $\geqslant 1$ was adopted to define the factors, without any present amount of factor loadings $\geqslant 0.30$, due to a sample size bigger than 350 valid cases (Hair *et al.*, 2010; Mulaik, 2010), as shown in Table III.

Areas of knowledge	Population (%)	Respondents
Accounting, economics and administration	38	198
Law	09	115
Humanities and communication	22	36
Philosophy and education	07	47
Exact sciences and technologies	11	57
Biological and health sciences	09	47
Arts and architecture	04	21
Total	100	521
Source: 2012 UCS report on Graduate Studies		

Table II.
Sample

The EFA showed that the variables were better to be grouped into six factors. A confirmatory factor analysis was done with the six factors based on the factorial loadings (correlation between variables and factors). It is important to note that some adjustments of the attribute related to the factors identified were necessary, given their loads to a more appropriate arrangement according to its content or meaning (Hair *et al.*, 2010). The attribute "agility of support services" was repositioned from F5 (0.606) to F4 (0.439), being more related to the construct "service" than to construct "environment"; and the attribute "workload of disciplines" was repositioned from F4 (0.478) to F1 (0.450), due to its proximity to the construct "teachers/level." The dimensions or factors identified, with their attributes, are presented in Table IV.

Again, some adjustments of the attribute related to the factors identified were necessary, given their loads to a more appropriate arrangement according to its content or meaning (Hair *et al.*, 2010; Mulaik, 2010). The factors identified (quality dimensions) and their attributes are presented in Table I. Thus, the attribute "agility of support services" was repositioned F5 (0.606) for the F4 (0.439), being more related to the construct "service" than to construct "environment"; and workload attribute of disciplines was repositioned the F4 (0.478) for the F1 (0.450) due to proximity to the construct "teachers/level" (Table V).

However, the variables of the first factor (F1) identified in the research on "teachers/teaching" directly related to the construct "reliability" proposed by Parasuraman *et al.* (1985), according to which such dimension deals with the ability to provide the promised service in a reliable manner; which is directly related to satisfaction guaranteed (Yeo, 2008; Sultan and Wong, 2013). The second factor (F2), called "structure/image," is related to the construct "academic reputation," as presented in the work of Joseph and Joseph (1997), which identifies the dimensions of quality services in universities. The same context applies to factor (F3) "planning and development of the course," where the number of subjects should be reconciled with each other in order to form a theoretical and applicable framework, compatible with the needs forming each specific area (Hill, 1995; Joseph and Joseph, 1997; Yeo, 2008; Angell and Megicks, 2008). In addition, factors (F4) and (F5), named as "service" and "environment" are to construct "tangibility," as proposed by Parasuraman *et al.* (1985), which address the physical evidence such as facilities, equipment and personnel. It is observed that the variables that make up these factors are common to virtually all studies discussed in the theoretical framework of this work (Talib and Qureshi, 2013; Gallifa and Batallé, 2010). The sixth factor (F6) "cost vs benefit" grouped the attributes price and payment method, where in general, students realize that they receive an intermediate level of return, where according Vavra and Pruden (1995), customers understand the quality services such as the encounter of their needs at a price they are willing to pay.

Factors	Total	Eigenvalues Variance (%)	Cumulative (%)
F1	17,795	44,489	44,489
F2	2,293	5,733	50,222
F3	1,695	4,237	54,458
F4	1,346	3,365	57,824
F5	1,148	2,869	60,693
F6	1,053	2,634	63,326

Table III.
Factors and their eigenvalues

Source: Results from the data analysis

Attributes related to service	Factor 1 (44.49%)	Factor 2 (5.73%)	Factor 3 (4.24%)	Factor 4 (3.36%)	Factor 5 (2.87%)	Factor 6 (2.63%)
14	0.733					
22	0.695					
17	0.693					
16	0.680					
32	0.657					
05	0.585					
06	0.581					
24	0.565					
39	0.549					
33	0.489					
13	0.444					
07	0.450			0.478		
36		0.721				
37		0.698				
26		0.594				
23		0.560				
28		0.549				
34		0.532				
40		0.521				
35		0.504				
29		0.350				
38		0.417				
15			0.783			
09			0.759			
21			0.733			
31			0.663			
25			0.644			
27			0.514			
12				0.677		
10				0.664		
08				0.659		
11				0.514		
02					0.767	
04					0.688	
18					0.651	
03				0.439	0.606	
01					0.493	
20						0.714
19						0.677
30						0.675

Source: Results from the data analysis

Table IV.
Identification of
the dimensions
or factors

Another way to determine the veracity of the factorial analysis is from sampling adequacy tests, or through a Kaiser-Meyer-Olkin test or the Bartlett sphericity test. These tests provide the statistical probability to demonstrate if the data matrix used has significant correlations between the variables (Johnson and Wichern, 2007; Hair *et al.*, 2010; Mulaik, 2010). According to the results of both tests, it was found that the factor analysis is a suitable technique for this study, as presented in Table VI.

A Cronbach's α coefficient was used to evaluate the reliability of the measures and internal consistency of the data. It is noticed that the coefficients of all six factors or

Factors	Designation	Related attributes to service
F1	Teachers/qualification	14 – teacher's performance
		22 – teacher's ability to arouse interest
		17 – balance between theory and practice
		16 – teacher's content knowledge
		32 – course quality
		05 – knowledge applicability
		06 – content actuality
		24 – integration between the disciplines of the course
		39 – teacher's qualification
		33 – quality of support material
		13 – compliance with discipline schedule
		07 – course hourly load
F2	Structure/image	36 – reputation of the institution
		37 – security at the premises of the institution
		26 – location of the institution
		23 – brand image of the institution
		28 – other services of the institution
		34 – relationship between students
		40 – exchange of ideas between coordination, teachers and students
		35 – relevance of the disciplines of the course
		29 – teachers' punctuality
F3	Planning and course development	15 – availability of the course coordinator
		09 – confidence in the course coordinator
		21 – coordination ability in problem solving
		31 – coordination concern about the quality of the course
		25 – integration between coordination, teachers and students
		27 – course schedule maintenance
F4	Additional services	12 – friendliness of the staff
		10 – trust in employees
		08 – staff competence
		11 – convenience of class schedule
F5	Education environment	02 – adequacy of classrooms
		04 – environment conducive to study
		18 – equipment
		03 – agility of support services
		01 – access to services
F6	Cost vs value benefits	20 – payment method
		19 – parking at the institution
		30 – price

Source: Results from the data analysis

Table V.
Factors identified
(quality dimensions)
and their attributes

dimensions of quality identified were above 0.7 (Churchill, 1979; Hair *et al.*, 2010) and were considered satisfactory, as shown in Table VII.

Finally, six dimensions (or factors) in quality of services were identified. From the perspective of the participants, a university can achieve high levels of customer satisfaction and customer retention, by strategically working on the increase of indication to others, either through positive propaganda of common word-of-mouth activities (Reichheld *et al.*, 2000; Zeithaml *et al.*, 1990; Oliver, 2010). Furthermore, a university should also re-explore the image that it has consolidated in the market, through benchmark activities, to strengthen "cost-benefits ratios"; which highlights to

the students the advantages of choosing a specific course in a recognized market, considering its excellent infrastructure and the qualification of its teachers.

In other terms, consumer satisfaction may become an important source of competitive strategy for organizations that do practice benchmark activities, because they constantly need to know the source of satisfaction and dissatisfaction of their audiences and through new ways to evaluate them in their actions, in order to increase retention and loyalty of their students. Such argument corroborates with the position exposed by Anderson and Mittal (2000), which proposes the level of quality, customer satisfaction, customer retention and loyalty as profitability factors and profitability model generates higher levels of sustainability and organizational competitiveness.

Relationship between general satisfaction and the analyzed variables (service attributes)

A stepwise linear regression process, which aims to predict a single dependent variable between two or more independent variables, was used to evaluate the relationship between the overall satisfaction of the students and 40 valid variables (service attributes) (Hair *et al.*, 2010). Thus, at the end of the questionnaire, respondents assigned a level between "1 – completely dissatisfied" to "7 – fully satisfied" regarding their overall satisfaction with courses.

Through the first generated model, it could be observed that the six factors are tabled to generate an explanation index of 64.8 percent. The coefficients and the degree of significance of each independent variable (factors) are presented in Table VIII.

However, according to Table VIII, the coefficients for the factors F3, F4 and F6 were proved not significant, at a significance level of 0.05. Consequently, it was decided to formulate a new linear regression model, presenting only the variables (factors) with a significance level < 0.05.

The new linear regression model (model 2) showed significant coefficients for all variables and, despite the withdrawal of the factors F3, F4 and F6, the index stood at an

Sample adequacy test	Measures
Kaiser-Meyer-Olkin (KMO)	0.963
Bartlett sphericity test	
Approx. χ^2	14,139,323
Degree of liberty	780
Significance	0.000
Source: Results from the data analysis	

Table VI.
The KMO test and the Bartlett sphericity test

F's	Identified factors	Cronbach's α
F1	Teachers/qualification	0.952
F2	Structure/image	0.896
F3	Planning and course development	0.914
F3	Additional services	0.831
F5	Education environment	0.847
F6	Cost vs value benefits	0.701
Source: Results from the data analysis		

Table VII.
Cronbach's α for the factors identified (dimensions of quality in services)

explanation level of 64.6 percent, reducing only to a level of 0.02 percent from the previous model. It confirms that the explanation earned by the factors F3, F4 and F6 are now explained by the other variables (factors) of the model. Thus, the model of overall student satisfaction (SG) can be represented by the following equation:

$$SG = -0.649 + 0.380(F1) + 0.497(F2) + 0.179(F5)$$

In regard to the possibility of repurchasing services and indicate to a third party the institution, the regression conducted with the six factors resulted in a model with an index explanation of 47.2 percent. The coefficients and the degrees of significance are shown in Table IX.

Again, it was observed that the coefficients for the factors F3, F4 and F6 proved to be not significant at a significance level of 0.05. Thus, it was decided to generate a new regression model (model 2) with only the variables (factors) that showed < 0.05 of significance.

Model 2 showed significant coefficients for all variables and, despite the withdrawal of the three factors, the index of explanation fell by only 0.01 percent, at 47.1 percent. Thus, the model that best explains the possibility of repurchasing (PR) services from the institution can be represented by the following equation:

$$PR = -1.675 + 0.417(F1) + 0.610(F2) + 0.198(F5)$$

Consequently, a regression analysis was also performed to the possibility of indication to third parties, resulting in a model (model 1) capable of explaining 49 percent and whose coefficients and degrees of significance can be seen in Table X.

Identified factors or dimensions	Model 1		Model 2	
	Coef.	Sig.	Coef.	Sig.
Constant	−0.666	0.001	−0.649	0.001
Teachers/qualification (F1)	0.358	0.000	0.380	0.000
Structure/image (F2)	0.467	0.000	0.497	0.000
Planning and course development (F3)	0.005	0.905	–	–
Additional services (F4)	0.047	0.278	–	–
Education environment (F5)	0.152	0.000	0.179	0.000
Cost vs value benefits (F6)	0.033	0.235	–	–
Source: Results from the data analysis				

Table VIII.
Results of regression of overall satisfaction

Identified factors	Model 1		Model 2	
	Coef.	Sig.	Coef.	Sig.
Constant	−1.664	0.000	−1.675	0.000
Teachers/qualification (F1)	0.408	0.000	0.417	0.000
Structure/image (F2)	0.569	0.000	0.610	0.000
Planning and course development (F3)	0.003	0.961	–	–
Additional services (F4)	0.006	0.931	–	–
Education environment (F5)	0.185	0.003	0.198	0.000
Cost vs value benefits (F6)	0.035	0.443	–	–
Source: Results from the data analysis				

Table IX.
Results of the regression of the possibility of repurchasing services

The new model (model 2) showed significant coefficients for all variables, and with the removal of the three factors, the index of explanation fell by only 0.01 percent, at 48.9 percent. Thus, the model that best explains the possibility of indication to third parties (IT) can be represented by the following equation:

$$IT = -1.242 + 0.400(F1) + 0.508(F2) + 0.162(F5)$$

Conclusion

Given the current scenario of competitiveness between universities, the organizations need to know about their customers' preferences and the dimensions of quality of services to attract and retain students. Consequently, they must realize benchmark activities on the competitors to contribute to the definition of news strategies for a more effective management. It also may leverage a consistent market where universities operate on the assumption that satisfied students are more likely to remain in the institution and will display it to others.

In that context, the present study aimed to identify the dimensions of quality in services, in order to direct such efforts for the adoption of the needs and expectations of their students, to give a clear path on the manager's decision process. Validating the importance of the topic and the lack of studies applied to the context, this study had as its main objective to identify the attributes and the dimensions related to the perceived quality of the services provided by the universities, with regard to graduate courses.

Emiliani (2004) discusses the subject of "lean practices in higher education," highlighting the outsourcing initiatives, technology and collaboration as key to reduce costs and improve efficiency in this sector methods. Thus, such benchmarking process becomes crucial to identify best business practices and formulate winning strategies. Consequently, it becomes necessary for the universities to show transparency and reliability in sharing data. In this context, it appears that benchmarking activities in higher education institutions are valuable method that assists in identifying, analyzing and emphasis of dimensions presenting efficiency, besides differentiating deficiencies, thus enabling continuous improvement process through research gaps that need improvement and, which will permit organizational learning in the development and implementation of a quality system that allows constant internal reviews.

Considering the results of the research, it appears that graduate students show concern about the construction of knowledge and the exchange of experiences and the qualifications of the teachers. In many countries, higher education institutions are facing rapid changes and diversification, due to changes in regulations, emerging technologies and more "demanding" students. In addition, students are becoming very

Identified factors	Model 1		Model 2	
	Coef.	Sig.	Coef.	Sig.
Constant	−1.204	0.000	−1.242	0.000
Teachers/qualification (F1)	0.402	0.000	0.400	0.000
Structure/image (F2)	0.593	0.000	0.608	0.000
Planning and course development (F3)	−0.001	0.992	–	–
Additional services (F4)	−0.027	0.686	–	–
Education environment (F5)	0.158	0.006	0.162	0.002
Cost vs value benefits (F6)	0.044	0.294	–	–
Source: Results from the data analysis				

Table X.
Results of the regression of the possibility of indicating the institution to third parties

critical and analytical when choosing an educational institution and therefore, they seek more evidence of quality of services before taking a decision when choosing a university (Sultan and Wong, 2014; Angell and Megicks, 2008). The research demonstrates that the overall satisfaction of the graduate students have a variance explained by 12 attributes 69.6 percent, showing that almost all of the factors identified in the factor analysis are represented in the model. Therefore, the study by Anderson and Mittal (2000) confirms the results of this research, with practical situations in organizations and the relationship between the level of quality, satisfaction, retention and loyalty with profitability and profitability in order to achieve higher levels of sustainability and competitiveness in the market.

Another aspect that must be noted from the results is that the student (customer) should be seen as an active participant in the learning process rather than a simple "product" (or end result). Consequently, it means that the dimensions of quality may vary according to the students' particular interests or situations and environments.

The models of overall satisfaction repurchase and the possibility of indicating to a third party, used in this study, reinforce the assertion of Gallifa and Batallé (2010), who claim that when dealing with educational services, specifically the positive word-of-mouth advertising becomes an important benefit to the satisfaction of customers, and satisfied customers are more likely to make recommendations for potential customers. The recommendations from people nearby, and reliable, can reduce the perceived risks relieved from an intrinsic decision making in selecting a university more than another.

The managerial implications evidenced through benchmarking and applied survey results indicate that university managers take the expectations of students as subjective perceptions. For this, it is suggested to indicate a representative of each Academic Center for Quality Committee, a detailed assessment of the current status of the programs (courses) that take place, the creation of a "quality office" of services, the implementation of a relationship sector with students to create and consolidate a culture of service.

Finally, it is possible to mention some limitations in this study, where some more crossed analysis could have been done to enrich the analysis of the data. Another limitation that can be pointed out is the fact that they have only adopted factor analysis to verify the factors that make up the dimensions of the quality of services rendered, and that could have been done with complete refinement, which involves other steps to be met, the reduction of the questionnaire items and further analysis and refinement of the scale. Moreover, the fact that quantitative research was conducted through a single transversal data collection did not allow changes to occur in the perception of the respondents, creating a doubt about the existence of other factors that influence the management decision for a particular course.

Thus, other researchers are encouraged to use this study as a basis for other applications and research situations. Some suggestions for future research rely on the replication of the same study in other universities in the world (benchmarking); replication of the same study, in the same context and allowing a longitudinal comparison of results; the verification of the implementation of strategies from the data collected and improve the level of institutional competitiveness and overall satisfaction of the students. Although such research is inherent to a particular environment, there is the opportunity to broaden the discussion and to replicate similar research in other contexts, generating improvements in the quality of graduate courses in Brazil or abroad, increasing the level of student satisfaction and encouraging their retention at the universities.

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