Quality Perception in Higher Education - Using SERVQUAL Methodology

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Abstract

Understanding the student's perception in higher education goes far beyond student retention. Factors such as satisfaction, motivation and irritability points help not only in a more convergent service planning between the institution's efforts in the face of student expectation, but also in better learning. The perceived quality is difficult to measure and subjective. This work aims to understand the perceived quality of the student and analyze the SERQUAL model for its application in higher education. The 5 dimensions of the model were correlated with academic pillars and the sub-items of each dimension were expanded, according to previous studies. The research was conducted with 15% of the universe of students from a higher education course, which represents 69 students, from a private institution. The results were validated in a focus group of 5 students using tools such as the Ishikawa diagram and the Interrelationship Diagram. As a result of the application it was diagnosed that students have a higher expectation than the service offered, which results in a perceived negative quality. Points such as 'parking' and 'operational service', which are not essential characteristics of the educational service, directly impact on the perception of quality and consequently on the student's satisfaction. As a main result it was noticed that the method points out the problems that most bother the students. They tend to analyze the whole and camouflage items in the face of these stressful stimuli. The method proved to be an ally in the detection of problems of perceived-feltquality, but that requires beyond thedetermination of the data to understand the root cause of the results.

Keywords: Quality Perception; SERVQUAL; Higher Education; Self-report Methodology; Students Satisfaction

Abbreviation

QP: Quality Perception.

Introduction

Higher education education has become a service industry with an attractive, profitable market, with international investments and billion-dollar moves [1,2]. In the Brazilian scenario there is a high dropout rate of students from 2010 to 2019, the cumulative dropout rate is 59%, being 62% in the private sector [3], this implies numerous losses beyond the financial, such as the emotional difficulties encountered in 83.5% of students in four years of analysis [4]. Unlike other markets, higher education deals with the conflict of meeting short-term marketing needs and medium/long-term academic responsibilities [5]. It is also stressed the importance of the student not being able to be seen as a client by educational institutions, since he cannot have the right of the consumer, therefore, not being able to "acquire a diploma" [6].

Thus, the understanding of the expectations and needs of the students becomes a need of the sector, both to retain the student, as for learning. Since the learning process can be enhanced through emotion, motivation, curiosity and challenges or inhibited by anguish, tension, fear or threats [7]. In turn Slater and Narver [8] point out that market orientation is important, but it is not enough to sustain long-term competitive advantages. This corroborates the conflict pointed out earlier and demonstrated by Mark [9] when he states that meeting the demands of students in the short term is

to lead them to blame the institution for its personal failure, thus requiring caution in decision-making.

Kureemun and Fantina [10] bring the idea of perceived quality, which encompasses subjective factors and perceived value. In a simplified way, the perceived quality is the truth established in the mind of the consumer through the result between expectation and what happened. It transcends tangible metrics, are difficult to measure and of paramount importance, because once understood it translates the perception of the client in the actions of business improvements. For Parasuraman., *et al.* [11] the perceived quality is the judgment of the consumer about the excellence or general superiority related to a situation, this judgment refers to a different use between consumers and researchers or traders.

An analysis was made in the ten largest private higher education companies in Brazil. It was noticed that the methods of student satisfaction analysis are based on marketing methods, seeing the student as a client. In this case, five of them use the NPS (Net Promoter Score) and four others use the Likert scale in the axes of SINAES in their institutional analysis methods [12]. That is, 90% of them are based on business metrics without taking into account other factors that directly interfere in the educational sector.

Therefore, we seek alternative methods of self-report that can capture the student's perception in a more holistic and less commercial way within the perceived quality. The work aims to understand the perceived quality of the student and analyze the SERQUAL model for its application in higher education.

The method was applied in July 2019 with 69 production engineering students from one of the largest regional institutions, being the most traditional course in the city and the answers were validated in a focus group with 5 students.

SERVQUAL

The SERVQUAL model proposed by Parasuraman., *et al.* [11] it is an instrument developed in five dimensions, from twenty-two items to assess the perception of the client about the quality of service organizations. These items were derived from the ten dimensions of quality of service. In order to evaluate the quality of service, through the perception of the consumer in a quantitative way, it is a multi-item scale based on perceived quality that has good reliability and validity, aiming at improving the service. This methodology measures two statements: (1) expectation and (2) perception of service consumption and can be used with employees, current or past customers. The analysis takes place on a seven-point scale, starting from 'totally disagree' to 'strongly agree'.

The factors that interfere in the perception of the student are not convergent between the authors. For this reason, table 1 [13] presents a demonstration of divergence between authors regarding the metrics that influence the perceived experience in view of the satisfaction of the student of the educational service.

Column	Authors	Factors that influence student satisfaction
1	Thomas e Galambos [14]	(1) academic experiences, (2) social integration and pre-registration opinions and (3) campus services and facilities
2	Peng and Samah [15]	(1) Course content (suitability of course requirements, skills development, career preparation, course material quality, program usefulness and personal needs); (2) Teacher and Institution (availability of assistance offered by the out-of-class HEI, the organization of classes, the disposition of teachers outside class hours, the personal attention that students receive); (3) The evaluation of the course (the chances of the student succeeding if it is dedicated to the adequacy of the contents offered); (4) The means of instruction (lectures and tasks in the compatible language); (5) Social activities; (6) Concerns with students (availability of people to whom students can ask for help); (7) Physical facilities (includes library, leisure environments for students to relax throughout the day, laboratories, availability of computing resources, recreational facilities, availability of classroom activities).
3	Gibson [16].	(1) quality of teaching, (2) quality of the curriculum, (3) skills and knowledge acquired and (4) achievement of learning objectives (5) availability, (6) quality of facilities and services (7) capacity and response of the academic and support staff (8) feeling of "belonging", or degree of social integration, (9) perceptions of the institution's responsiveness and (10) concern of the institution

4	Parasuraman., *et al.* [11, 17] - SERVQUAL	(1) tangibility, (2) reliability, (3) responsiveness, (4) communication, (5) credibility, (6) security, (7) competence, (8) courtesy, (9) understanding/ knowledge of the customer and (10) access.
5	LeBlanc and Nguyen [18] - Based on SERVQUAL	(1) Curriculum (course content, program orientation, number of courses offered, degree that program objectives are explained to students); (2) Physical evidence (layout and lighting of the classroom, general physical appearance, cleanliness, degree of comfort, decoration and environmental "atmosphere"); (3) Ability to answer (time of availability of information to students, assertiveness and accuracy of records); (4) Access to facilities (parking, access to computers, access to classrooms and study rooms); (5) Reputation (if the HEI is innovative, its organizational culture, beliefs, values, the institution's involvement with the community, degree of curriculum updating, administrative actions being aligned with students); (6) Management (administration and availability of people, friendliness and cordiality, ability to solve problems when they arise, knowledge of the rules and procedures by employees); (7) Teachers' aptitude (teacher aptitude and appearance, friendliness and cordiality of faculty, research productivity; communication skills, teachers' academic credentials, whether teachers are innovators and change managers).
6	Douglas., *et al.* [19] - Based on SERVQUAL	(1) care, (2), teacher training, (3) teaching methods, (4) attitude, (5) content and (6) infrastructure.

Table 1: Factors surveyed that influence student satisfaction. Source: adapted from Ribeiro., *et al.* [13].

Gibson [16] shows that non-academic factors (items 8, 9 and 10 in column 3) are often the cause of students' dissatisfaction in the overall academic experience, that academic items 1, 2, 3 and 4 are the most significant and determinant for overall satisfaction, and also states that the influence variables vary according to the institution and the student.

The SERVQUAL methodology was suggested by Parasuraman., *et al.* [11,17]. Initially, 10 items of analysis were presented and later perceived overlap between them. Therefore, the model was reduced to 5 items - concatenating in its last two dimensions seven items of the original dimensions of the service (communication, credibility, security, competence, courtesy, understanding /knowledge of customers and access). The five proposed dimensions are [11]:

- **Tangibility:** Physical facilities, equipment and the appearance of employees;

- **Reliability:** The ability to perform the promised service reliably and accurately;

- **Responsiveness (responsiveness):** Willingness to help customers and provide the service;

- **Warranty:** Knowledge and courtesy of employees and their ability to inspire confidence;

- **Empathy:** The service, the individualized attention that the company offers to the client.

According to Bearden, Netemeyer and Haws [20], the tool is composed of the equalization of two answers related to the expectation and reality of a specific service. It is an analysis of 22 items, which uses the Likert scale of 7 points, the 7 (seven) which "strongly agree", to 1 (one), "strongly disagree" in the subscales of analysis: (1) tangibility, (2) reliability, (3) responsiveness, (4) assurance and (5) empathy.

Lourenço and Knop [21] conducted the SERVQUAL research in Portuguese in the academic sector, using Cronbach's Alpha to measure the reliability of the tool. They used the five dimensions, divided into 22 items of analysis, as shown in table 2.

Dimension	Description of Variables	Variable Name
Tangibilidade	01 - Suitable physical facilities (comfortable, airy, illuminated)	Physical Facilities
	02 - Has library with adequate collection	Library
	03 - Has adequate computer laboratory (quantity and characteristics of the equipment)	Computer Lab
	04 - Has adequate technological resources (projector, computer...)	Technological Resources
	05 - Has good-looking staff and teachers (well dressed, organized)	Good Looking
	06 - Teachers use teaching materials of good presentation	Teaching materials

Reliability	07 - The course promoted academic or executive lectures	Lectures
	08 - The course carried out technical visits	Technical Visits
	09 - The course promoted extension courses	Extension Courses
	10 - Disciplines are relevant for professional training	Professional Training
	11 - Teachers balance theory and practice in the classroom	Theory and practice
	12 - Teachers have the ability to arouse the student's interest in the contents	Create Interest
Alacrity	13 - The service provided by the staff of the secretariat is adequate	Attendance of the secretariat
	14 - Teachers show sincere interest in helping students	Interest in helping
Security	15 - Provides communication elements (murals, manuals, warnings, emails) that keep students informed	Communication
	16 - Teachers are able to provide satisfactory answers to students' questions	Correct answers
	17 - Teachers have mastery of the subjects dealt with	Mastery of affairs
	18 - Teachers inspire confidence	Trust
	19 - Teachers are fair in student performance assessments	Justice in evaluations
	20 - Teachers and staff are always courteous with students	Courtesy
Empathy	21 - The school understands the specific needs of students	Specific needs
	22 - Teachers give individualized attention to students	Individualized attention

Table 2: SERVQUAL questions for the academic sector. Source: adapted from Lourenço and Knop [21].

The calculation is made with the average of the perceived quality subtracted by the expected quality average, the difference is the gap and must be made for each item. Its reliability validation can be analyzed by cronbach's alpha consistency, which should be at least more than 0.7 [22]. If the difference is positive, it means that what is perceived is higher than expected. What is important to note is that if you reverse the subtraction, the analysis is reversed.

Cabello and Chirinos [23] corroborate the good reliability when Cronbach's alpha is greater than 0.7 and the calculation is the difference between perception and expectation, with the positive value being related to satisfaction and negative value to dissatisfaction, and can make the calculation for each dimension or each question item.

The SERVQUAL model has been used in several studies in the educational sector and showing some secondary divergences in the priorities of the results, but as main the variation between academic and teaching factors [19,24-27]. Sohail and Shaikh [28] reduced to six variables, which brought together in a single the management and aptitude items of teachers. Douglas*., et al.* [19] they used 6 categories in 19 SERVQUAL attributes. Hasan., *et al.* [24] highlight empathy as the strongest factor, followed by assurance, tangibility, responsiveness, and reliability. Douglas., *et al.* [19] showed that the most important factors in perceived quality are related to academic service, while physical aspects do not interfere so much in student satisfaction, but influence the choice of the study site. The authors suggest the alignment of information, such as service standards and deadlines, to have a "quality standard". In the Brazilian scenario, it was noticed that the attributes vary according to the higher education institution. In private institutions appeared the conflict between teaching, human resources and infrastructure, having many additional attributes when compared with public institutions.

Lourenço and Knop [21] also analyze in five dimensions, but change the "Responsiveness" by "Presteza" and "Guarantee" by "Security". In general, the changes are more nominal. In the first, the main idea is the service focused on the employee's disposition and the second on the service provided, focused on communication and parameters for the client. Another divergence between the authors is that in the reliability Lourenço and Knop [21] add the academic part, such as lectures, extension courses, technical visits, professional training, the correlation of theory with practice and even the creation of interest for the student.

There are also studies with variation in the number of topics, using 38 items of analysis instead of 22, as shown in table 2. This study suggested the strong relationship between Perceived Quality and the reputation of a higher education institution, both in strategic alignment and in the alignment of teacher behavior [18].

Despite the recognition for being a valuable methodology for periodic use, easy to apply, with flexibility and for the analysis of service trend, SERVQUAL was criticized by some authors [19,29-31], the reasons or questions were:

- Do not have data associated with expectations;

- Not be a model applied to all types of service, such as for industrial services;

- Whether the five elements are independent and sufficient.

- If the evaluators' perspective is aligned with the research premises.

Another counterpoint to the methodology is highlighted by Galloway [32] who states that it does not adapt well to the situation and that it does not contribute to the analysis of perceived value, especially when addressing a part of the organization. The method was applied with students and employees of an HEI and one of its conclusions was that one of the variables is the degree of use of the service through the clients, because the superficiality and judgment of the service are related to the degree of knowledge of these and their interests. The case becomes more particular since these 'clients' have ties to the services, so they seek to "take advantage" of this longer-lasting relationship, as well as their interests change over time this perception.

Finally, Kureemun and Fantina [10] agree that there are several ways to learn about the perspectives of customers, but stress that no method is sufficient, since the perception of quality is difficult to evaluate and very difficult to measure. Research is one of the ways to gather the facts, but they will not offer all the necessary information. They alone are not enough, they have a low rate of support and the questions do not get to the heart of the problem. However, they provide some indicators of what respondents think. Questions should be "raw" and data analysis should see "raw", this means analyzing all the information added to the optional survey comments. This field is what the customer is really thinking. Thus, they suggest some complementary techniques for data analysis, i.e.:

- **Categorization**: Similar data will converge and should be categorized together;

- **Prioritize:** Once problems are categorized, they should be prioritized. The suggestion in this step is the interrelationship diagram of the six sigmas methodology;

- **Root cause analysis:** Investigating the root cause of the problem is of paramount importance, several methods can be used, and the suggested methods are: cause and effect diagram and the methodology of the five whys.

This is the only way to validate the data. The Kureemun and Fantina model was the only schematized model found with efficient results and using concrete tools. For the treatment of data, the authors also highlight some tools [10].

- **Cause and effect diagram, Ishikawa or fishbone:** Aims to establish the relationship of causes with effects, in which for each effect has several categories of causes that may have sub-categories [33] once the analyzed "problem" has been determined, this diagram allows to analyze in a systemic way the cause-effect relationship. The causes that probably generate the effects are written and each of them is investigated further, in a playful format (similar to a fishbone) [34];

- **Five reasons:** It is a simple technique of questioning with great effectiveness, assists in mapping processes or in the search for problems or causes [33]. For each cause, one wonders why it. The answer, again, is questioned why. And so, successively, five times, until it reaches the root cause;

- **Interrelationship diagram:** Kureemun and Fantina [10] suggest the following steps for the interrelationship diagram: (1) Each category enters a card, divided into three parts (2) inviting key stakeholders to a meeting; (3) the cards should be in a large circle; (4) guests are asked if each category is influenced by the other. If the answer is positive, it is necessary to find out what the influence is. It is important to highlight that there should be a consensus among the members regarding influence and which is the most influential; (5) participants have to draw an arrow coming out of those who influence and reaching the influenced; (6) at the end, it is necessary to count the number of arrows that enter each category and the number that leaves. Incoming numbers should be noted in the lower left and output numbers in the lower right corner, as shown in figure 1.

Figure 1: Interrelationship Diagram.
Source: Kureemun and Fantina [10].

The topics with the highest number of departures are the "drivers" and the input topics are the "results"; with this, one should determine the area that needs immediate attention.

Materials and Methods

The SERVQUAL method has already been applied to measure satisfaction in the academic universe [19,24-27]. In general following the 5 pillars (tangibility, reliability, responsiveness, assurance and empathy) for quality of service analysis proposed by the authors Parasuraman*., et al*. [11,17] and also validated and referenced by Swartz and Brown [36]. However, it was possible to see divergence in several items, such as the number of dimensions [19,28] and in the number of items analyzed [19,31], in addition to the structure of the research itself [21,24]. This highlights a special emphasis on Galloway's criticism [32] when it comes to not adapting well to situations, especially when analyzing parts of the organization.

Given this non-unanimity already presented, it was decided to apply the SERVQUAL model in higher education, in students of the Production Engineering Course. The choice of the course was made

in view of the tradition of the course in the region, the knowledge of the researcher with the weaknesses, strengths, threats and opportunities of the course, as well as the criticality of the selection of students for the focus group.

The main objective is to analyze the tool and the items that must be analyzed within the dimensions. It comes out from the premise that regardless of the methodological divergence found, the understanding of the perception of quality under an aspect already validated in the educational area, could help in the analysis of the present study. In view of Galloway's analysis [32] it was then decidedto apply SERVQUAL with all dimensions analyzed in previous studies where 44 students from different academic areas and moments were interviewed to better understand the sectors that interfere in the student's satisfaction [13]. Soon the items were based on Table 2, together with the guidelines of Parasuraman., *et al*. [11,17] and with figure 2.

Table 3 presents the final result, which contains 70 items of analysis, categorized in the 5 pillars proposed in figure 1 and added the '-' when there was no convergence

Figure 2: Pillars for analysis of perception and satisfaction of the student.
Fonte: Ribeiro., *et al*. [13].

N	Questions asked	Items from an HEI
01	Physical facilities are visually appealing/ beautiful	Infrastructure
02	General campus facilities be comfortable	Infrastructure
03	Campus security	-
04	The appearance of the HEI to be consistent with what it promises to be	Infrastructure
05	Laboratory equipment is modern	Infrastructure
06	The library have updated books	Infrastructure
07	The library have enough books	Infrastructure
08	The library have diversity	Infrastructure
09	Employees are well dressed/tidy	Service
10	The classrooms are comfortable and attractive	Infrastructure
11	Lesson equipment is modern and efficient	Infrastructure
12	The Institution meet the promised schedule	Academic

13	Teachers meet the pre-established schedule for classes	Teacher	41	Employees know how to answer questions	Service
14	THE IES have an interest in solving student problems	Service	42	Teachers embark together in the interests of students	Teacher
15	There is quality in teaching	Academic	43	Employees fully understand customer needs/feelings	Service
16	Academic experiences aggregate the course	Academic	44	Class schedules are at convenient times	Academic
17	The content of the updated disciplines	Academic	45	THE IES is concerned about the student's opinion	Service
18	The teachers' curriculum is good	Teacher	46	Provides an extra classroom campus life	Service
19	Teachers have knowledge	Teacher	47	Service standardization	Service
20	Teachers have practical mastery of knowledge	Teacher	48	They have social activities	-
21	Teachers have productivity of academic research	Teacher	49	Has network with students	Student's Personal
22	Teacher's concern for the student	Teacher	50	Has network with teachers	Teacher
23	Quickly meet student demands	Service	51	There is monitoring of the employability needs of students	Student's Personal
24	Meet the deadlines set in the academic part	Academic	52	There is the accompaniment of the feeling of belonging	Student's Personal
25	Meet the deadlines set in the administrative part	Service	53	The emotional support given by IES	Student's Personal
26	Employees are always willing to help	Service	54	There's a sense of justice inside the classroom	Student's Personal
27	Employees to accurately inform the date of service delivery	Service	55	The effort that the student makes to pass in the disciplines	Student's Personal
28	Employees have Responsiveness (ability to respond or indicate where to find the answer)	Service	56	The level of evaluation	-
29	Employees are always too busy to serve the customer	Service	57	The teacher's methodology is playful	Teacher
			58	The constant extracurricular activities	Academic
30	Teachers be trusted	Teacher	59	Academic diversity	Academic
31	Employees be trusted	Service	60	Students' commitment to study	Student's Personal
32	Employees fully understand the student's needs/feelings	Service	61	There are scholarships and funding for students	Service
33	Teachers fully understand the student's needs/feelings	Teacher	62	Evaluation of the course in mec	Academic
34	The HEI give individualized attention to each student	Service	63	Evaluation of THE HEI in mec	Academic
35	Teachers give individualized attention to each student	Teacher	64	Environment for social integration	Student's Personal
36	IES' reputation in the labour market	Service	65	It has clean environment	Infrastructure
37	Feel safe (in the emotional sense and not safety-danger) with employees	-	66	It has comfortable environment	Infrastructure
			67	It has decorated environment	Infrastructure
38	Employees be polite/kind	Service	68	It has Parking	Infrastructure
39	Teachers be polite/kind	Teacher	69	It has leisure facilities	Infrastructure
40	Teachers know how to answer questions	Teacher	70	Service standardization	Service

Table 3: EXPANDED SERVQUAL - points used in the experiment.

It is possible to notice that there are similar items, such as 33 and 43, however, one highlights the student's bias and the client's other, according to the paradigm initially addressed in relation to the commercial view and educational vision.

It is necessary to observe a possible limitation of this technique. When the questionnaire is too large, the interviewees tend to present a predisposition to maintain the same answer [36,37]. It is understood, therefore, that Cronbach's alpha should result in a high humerus of redundant items.

Regarding the dimensions of SERVQUAL, the 5 dimensions of the authors Parasuraman*., et al.* [11,17] and Lourenço and Knop [21] as follows:

- **Tangibility:** Focused on everything that can be tangible (physical facilities, technological resources, appearance of employees and environment);

- **Reliability:** Deliver what was promised, schedule, reliability of the teacher and what the course is pre-disposed to have in the academic part;

- **Promptness in the service:** Encompassing the responsiveness, service and willingness of employees to the service;

- **Intangibility:** Focused on the intangible part, has as items belonging to the knowledge and courtesy of employees, the communication of the HEI and the feeling of justice, group, security and trust;

- **Empathy:** Individualized care, attention to students' feelings towards the HEI.

Table 4 shows the correlation of the data from this perspective, where there is a correlation between "Tangibility" and "Infrastructure"; "Reliability" and "Academic", but with a strong participation of "Teachers"; "Promptness of service" and "Provision of Service"; and "Intangibility" with "Student Personnel". In the dimension "Empathy" there is a mixture of 'service', 'teachers' and 'customer needs'.

In addition to these changes, at the end of the questionnaire there was an open space where they questioned what the partici-

Dimension	Question number	Predominance of the Item of the HEI
Tangibili-dade	Infrastructure: 01, 02, 04, 05, 06, 07, 08, 10, 11, 65, 66, 67, 68, 69 Service: 09	Infrastructure
Reliability	Academic: 12, 15, 16, 17, 24, 44, 58, 59, 62, 63 Teacher: 13, 19, 20, 21, 40, 57 Service: 25, 27 Others: 48	1st Place: Academic 2nd Place: Teacher
Promptness in service	Teacher: 39 Service: 14, 23, 26, 28, 29, 38, 41, 46, 47, 61, 70	Provision of Service
Intangibi-lity	Teacher: 18, 30, 50 Student Personnel: 49, 54, 55, 60, 64 Service: 31, 36 Others: 03, 37, 56	Student's personals
Empathy	Teacher: 22, 33, 35, 42 Student Personnel: 51, 52, 53 Service: 32, 34, 43, 45	Teacher, Student Personnel and Service Delivery

Table 4: The dimensions of SERVQUAL used.

pant thought was most important and even left the option of adding unmentioned items.

Servqual information collection occurred in May 2019 and the focus group analysis occurred in July 2019. After collection, the data were treated and the students started the final exams of the school semester. Then the viability of the second stage was only possible after the closing of the activities. Table 5 presents the stages of data collection and analysis.

The choice of classes was based on specific classes of the course, composed only of students of the course, in which teachers were available to give in around 40 minutes for their realization.

Both in the application of SERVQUAL and in the use of the tools of the focus group, there was no interference from the investigator,

Stage	Procedure	Sample	Guidelines
SERVQUAL Held in May 2019 Objective: to analyze the SERVQUAL tool and the perception of students in the academic universe	- 3 face-to-face classes of Production Engineering (In two of them, one first wondered about the expectation, then about the reality. In another, the analysis was inversion, to see if there was divergence of the data.) - Students in a face-to-face environment, with face-to-face explanation, but the questionnaire available in digital format (answers by mobile phones)	- Only the volunteer students answered - Total universe 450 student - Sample of 69 Students, (15% of the universe) Profile of students: - From half to end of course - Age group between 18 and 49 years, but the predominance of 18 to 30 years - Men and Women	Explanation of: - Research objective - Operation (the difference between expectation and reality was highlighted) Attention was requested when answering
Data processing June 2019 Objective: obtaining servqual results	- Analysis via Excel, with the database of the research performed. - Difference in perceived quality with all results together and also a separate analysis by applied discipline (D1, D2, D3)	- Data analysis occurred through the difference between 'Perceived Quality' and 'Real Quality' - For the preparation of the tables was analyzed by size of SERVQUAL, - The five points that had the most evidence were analyzed, both in the positive and negative perspectives. - A table was elaborated that presents the ranking of the first and last five by application discipline (D1, D2 and D3), seeking to analyze if there is a difference in the results obtained - The written answers were analyzed one by one, both from the perspective of what they scored, as well as the terms they spoke. With this, it was elaborated: - A chart with the most important topics - A cloud of words, with the terms they commented the most (It stands out that for the word cloud were correlated synonyms, errors of Portuguese typing) and discarded prepositions and verbs that did not add to the analysis.	- Positive results: implies satisfactory perception, that is, that the perception of quality exceeds the expected. -Negative results: unsatisfactory perception. Cronbach's alpha was analyzed, seeking a minimum alpha of reliability of 0.7, Data based on literary guidelines [22,23]
Focal Group Held in July 2019 Objective: validate SERVQUAL responses and use complementary techniques to understand the data and method	- Choice of experienced students - Voluntary participation - Face-to-face participation in the classroom during the holidays we sought to find the root cause of the problems, through the five reasons or the cause and effect diagram. - This whole stage was physical (face--to-face and using pen and paper)	- 5 experienced students (in the last period of the course)	Explanation of: - Research objective - The basic pillars for the increase of items (Figure 2) - The SERVQUAL model - Search results - The tools (Cause and Effect Diagram, 5 whys and Interrelationship Diagram) It was provided: - Tutorials on how to use the tools - Blank sheets - Sheets with outline of the 3 tools - Base pillars (Figure 2)
Data processing 2nd half of 2019 Objective: data closure	- Pass the physical material to the virtual and close the analyses - Software used > Excel and PowerPoint	The material made by the students in the focus group was passed to the computer	In case of doubt the students of the focus group were contacted in the whatsapp group created for the experiment.

Table 5: Methodological steps.

unless to remove some punctual doubt. At the end of the application of the focus group tools, some questions were asked to better understand and validate the data.

About the application in the three classes, each class was named As D1, D2 and D3, namely?

- **D1:** Composed of 36 students. It was the most detailed explanation, following the normal order of the application and had the researcher present throughout the application;

- **D2:** Composed of 15 students. It was presented in an inverted way of the other. The researcher gave the lead and left the class responding to the experiment;

- **D3:** Composed of 18 students. The researcher gave the guide and then left the teacher of the discipline with the students responding, with application in the normal model.

The focus group was composed of five end-of-course students, considered as experienced, and their profile was:

- Male student, with more maturity, holds a management position in the market, coming from the transfer of another course of a state HEI;

- Male student, within the average age group of course training, coming from transfer of a federal HEI, of the same course. He has an internship in the area of the course, but in the administrative sector;

- Female student, within the average age group of the course, chose to study in a private HEI, even though she was able to go to a public one;

- Female student, slightly younger than the average course education, intern in the area of activity of the course;

- Female student, within the average age group of course training, interned in several areas throughout the course and engaged in institutional actions.

The results were presented by servqual dimension.

Results and Discussion

The dimension of 'Tangibility' aims to analyze whether the physical or tangible part is in accordance with the student's perception of quality. Table 6 shows in the Perceived Quality (QP) column that only 2 variables were positive (marked in black). This

implies that the 'employee being well dressed' and the 'environment is decorated' have a higher quality perception than expected. However, all other categories were negative, demonstrating that the physical and tangible part of the HEI falls short of what was expected. ANIPO.

	N	Questions asked	QP	Items from an HEI
Tangibi-lidade	1	Physical facilities are visually appealing/ beautiful	-0,501	Infrastructure
	2	General campus facilities be comfortable	-0,733	Infrastructure
	4	The appearance of the HEI to be consistent with what it promises to be	-0,587	Infrastructure
	5	Laboratory equipment is modern	-0,793	Infrastructure
	6	The library have updated books	-0,707	Infrastructure
	7	The library have enough books	-1,206	Infrastructure
	8	The library have diversity	-0,745	Infrastructure
	9	Employees are well dressed/tidy	0,266	Service
	10	The classrooms are comfortable and attractive	-0,803	Infrastructure
	11	Lesson equipment is modern and efficient	-0,888	Infrastructure
	65	It has a clean environment	-0,564	Infrastructure
	66	It has a comfortable atmosphere	-0,878	Infrastructure
	67	It has a decorated atmosphere	0,446	Infrastructure
	68	It has parking	-1,321	Infrastructure
	69	It has leisure facilities	-0,885	Infrastructure

Table 6: Tangibility Dimension.

The 'Reliability' dimension aims to see if what has been promised is delivered. Table 7 shows that the students' perception is negative, that is, the perceived quality is the non-fulfillment of expectations regarding the delivery of what was promised.

that only the item 'of employees being too busy' is above expectations, again referring to the negative perspective, which generates dissatisfaction.

	N	Questions asked	QP	Items from an HEI
Reliability	12	The Institution meet the promised schedule	-0,486	Academic
	13	Teachers meet the pre-established schedule for classes	-0,262	Teacher
	15	There is quality in teaching	-0,585	Academic
	16	Academic experiences aggregate in the course	-0,636	Academic
	17	The content of the updated disciplines	-0,560	Academic
	19	Teachers have knowledge	-0,472	Teacher
	20	Teachers have practical mastery of knowledge	-0,387	Teacher
	21	Teachers have productivity of academic research	-0,541	Teacher
	24	Meet the deadlines set in the academic part	-0,599	Academic
	25	Meet the deadlines set in the administrative part	-0,846	Service
	44	Class schedules are at convenient times	-0,432	Academic
	48	Having social activities	-0,328	-
	57	The methodology of teachers being playful	-0,577	Teacher
	58	The constant extracurricular activities	-0,612	Academic
	59	Academic diversity	-0,418	Academic
	62	Evaluation of the course in mec	-0,421	Academic
	63	Evaluation of THE HEI in mec	-0,378	Academic

Table 7: Reliability Dimension.

The dimension of 'service promptness' focuses on the analysis of care, with emphasis on the employee's approach. Table 8 shows

	N	Questions asked	QP	Items from an HEI
Promptness of service	14	THE IES have an interest in solving student problems	-1,553	Service
	23	Quickly meet student demands	-1,376	Service
	26	Employees are always willing to help	-1,010	Service
	28	Employees have responsiveness (ability to respond or indicate where to find the answer)	-1,171	Service
	29	Employees are always too busy to serve the customer	0,704	Service
	38	Employees be polite/kind	-0,744	Service
	39	Teachers be polite/kind	-0,644	Teacher
	41	Employees know how to answer questions	-0,564	Service
	46	Life on campus extra classroom	-0,532	Service
	47	Service standardization	-0,698	Service
	61	Scholarships and funding for students	-0,698	Service
	70	Service standardization	-0,622	Service

Table 8: Service Dimension Promptness.

The dimension of 'Intangibility' focuses on the analysis of what is immaterial, with more difficult measurement and more focused on subjectivity. Table 9 shows that only the 'teachers' curriculum' is higher than expected, all the other leave to be desired with regard to the perceived quality of the immaterial, both in the aspects of service, as well as of teachers and student staff.

	N	Questions asked	QP	Items from an HEI
Intangi-bility	3	Campus security	-1,319	-
	18	The teachers' curriculum is good	0,305	Teacher
	30	Teachers be trusted	-0,645	Teacher
	31	Employees be trusted	-0,658	Service
	36	IES' reputation in the labour market	-0,446	Service
	37	Feel safe (in the emotional sense and not safety-danger) with employees	-0,378	-
	49	The network with students	-0,892	Student's Personal
	50	The network with teachers	-0,867	Teacher
	54	The feeling of justice inside the classroom	-0,672	Student's Personal
	55	The effort that the student makes to pass in the disciplines	-0,592	Student's Personal
	56	The level of evaluation	-0,571	-
	60	Students' commitment to study	-0,938	Student's Personal
	64	Environment for social integration	-0,434	Student's Personal

Table 9: Intangibility Dimension.

Finally, the dimension of 'Empathy' focuses on the analysis of attention and individualization with students. Table 10 shows that students expect more from empathy than they receive.

	N	Questions asked	QP	Items from an HEI
Empathy	22	Teacher's concern for the student	-0,867	Teacher
	32	Employees fully understand the student's needs/feelings	-0,924	Service
	33	Teachers fully understand the student's needs/feelings	-0,903	Teacher

	34	The HEI give individualized attention to each student	-0,687	Service
	35	Teachers give individualized attention to each student	-0,491	Teacher
	42	Teachers embark together in the interests of students	-0,779	Teacher
	43	Employees fully understand customer needs/feelings	-0,667	Service
	45	THE IES is concerned about the student's opinion	-1,325	Service
	51	There is monitoring of the employability needs of students	-1,115	Student's Personal
	52	The feeling of belonging	-0,442	Student's Personal
	53	The emotional support given by IES	-0,665	Student's Personal

Table 10: Empathy Dimension.

The five items that most impacted the perceived quality from a positive and negative perspective are presented in table 11, however in the positive QP they only had 4 items.

N	Dimension	Item analyzed	QP
9	Tangibilidade	Employees are well dressed/tidy	+0,27
18	Intangibility	The teachers' curriculum is good	+0,31
29	Service Promptness	Employees are always too busy to serve the customer	+0,70
67	Tangibilidade	It has a decorated atmosphere	+ 0,45
3	Intangibility	Campus security	-1,32
14	Service Promptness	THE IES have an interest in solving student problems	-1,55
23	Service Promptness	Quickly meet student demands	-1,38
45	Empathy	THE IES is concerned about the student's opinion	-1,32
68	Tangibilidade	It has parking	-1,32

Table 11: Sectors and areas with higher index.

By dividing the analysis by each of the 3 classes, table 12 in relation to the division of the groups, there was a variation between the items highlighted. Items with a green background are part of the most positive items, and items with a red background are part of the five most positive items. It is evident that there was a subtle divergence between the groups, especially in the d2 group, which had the questionnaire applied in an inverted way. Group D1, on the other hand, converged more with the final answers, as there was also more number of students who answered.

| N	Dimension	Item analyzed	D1	D2	D3	General
3	Intangibility	Campus security	-1,49	-0,75	-1,12	-1,32
7	Tangibilidade	The library have enough books	-1,09	-1,06	-1,42	-1,21
8	Tangibilidade	The library have diversity	-0,78	-0,27	-1,00	-0,75
9	Tangibilidade	Employees are well dressed/tidy	0,63	0,11	-0,39	0,27
12	Reliability	The Institution meet the promised schedule	-0,48	0,08	-0,77	-0,49
14	Promptness of service	THE IES have an interest in solving student problems	-2,05	-1,06	-1,15	-1,55
18	Intangibility	The teachers' curriculum is good	0,61	0,33	-0,08	0,31
23	Promptness of service	Quickly meet student demands	-1,84	-1,38	-0,92	-1,38
26	Promptness of service	Employees are always willing to help	-1,24	-1,38	-0,62	-1,01
28	Promptness of service	Employees have Responsiveness (ability to respond or indicate where to find the answer)	-1,33	-1,00	-1,00	-1,17
29	Promptness of service	Employees are always too busy to serve the customer	0,99	-0,33	0,77	0,70
32	Empathy	Employees fully understand the student's needs/ feelings	-1,29	-1,40	-0,42	-0,92
33	Empathy	Teachers fully understand the student's needs/ feelings	-1,35	-1,13	-0,39	-0,90
45	Empathy	THE IES be concerned about the student's opinion	-1,94	-0,75	-0,81	-1,33
48	Reliability	Having social activities	-0,81	0,23	-0,15	-0,33
49	Intangibility	The network with students	-1,27	0,10	-0,92	-0,89
50	Intangibility	The network with teachers	-1,32	-0,27	-0,73	-0,87
51	Empathy	There is monitoring of the employability needs of students	-1,70	-0,34	-0,81	-1,12
55	Intangibility	The effort that the student makes to pass in the disciplines	-1,02	0,67	-0,61	-0,59
67	Tangibilidade	It has a decorated atmosphere	0,83	-0,31	0,23	0,45
68	Tangibilidade	It has parking	-1,40	-1,45	-0,96	-1,32
70	Promptness of service	Service standardization	-0,57	-1,34	-0,35	-0,62

Table 12: Most commented sectors and areas per class.

Cronbach's Alpha coefficient (shown in Table 13) in all perspectives had a value higher than 0.7. In fact, a very high value (above 0.9), which means that there is redundancy in the questions and redundant items should be eliminated. This makes sense, since it has similar points such as item 31 ('employees be reliable) and item 30 'teachers be reliable', since teachers are also employees of the institution.

|	Alfa de Cronbach	
	Ideal	Real
D1	0,918	0,975
D2	0,990	0,987
D3	0,964	0,987
General	0,958	0,983

Table 13: Cronbach's Alpha.

In open questions, 'teaching', with emphasis on 'teaching quality', was the one that was most commented, followed by 'empathy' and 'employability'. However, if all approaches related to 'teacher' ('training', 'student relationship', 'knowledge', 'reliability' were combined, the 'teacher' would be in second place. Figure 3 shows the degree of repetition of each item. The first term, 'everything' converges with the answer 'everything is important' or similar.
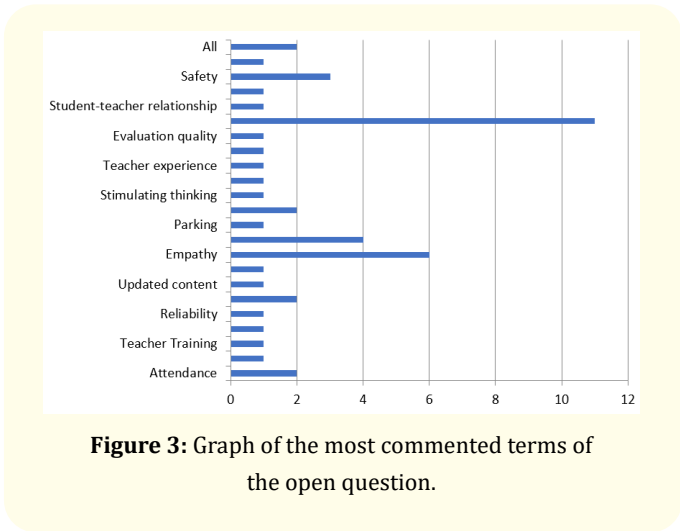
Figure 3: Graph of the most commented terms of the open question.

Even with the questionnaire not presenting the pillars of SERVQUAL, one student highlighted 'Empathy', with the following comment: "Empathy of the IES towards the student and that this is applied in the classroom. Because many students are suffering from mental illnessdeveloped at the university. So, the feeling of putting oneself in the student's place would make total difference by bringing greater benefits such as a domino effect, such as feeling of belonging, better care, problem solving, playful didactics (because if the subject is already difficult we will try to see another way of teaching) among others" (Q28).

Figure 4 presents the word cloud that addresses the content of all open comments. It is possible to see that the term 'student' came first, followed by 'teaching', 'teacher' and 'quality'.
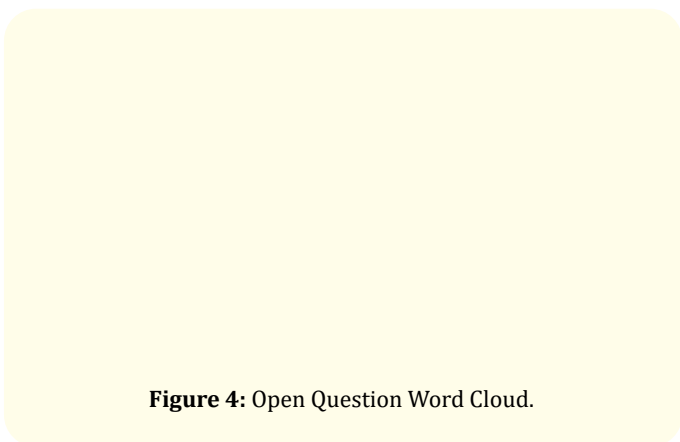

Figure 4: Open Question Word Cloud.

In the focus group, the students analyzed the results and pillars, resulting in the creation of the interrelationship diagram through the five pillars of Figure 2 (teacher, service provision, infrastructure, student and academic personnel) and creating the relationship between them. The result found is shown in figure 5, where in the analysis the students missed the sixth pillar, which would be the 'institutional management'. It is important to highlight that, for them, all 6 pillars have connection, but the main links were highlighted.
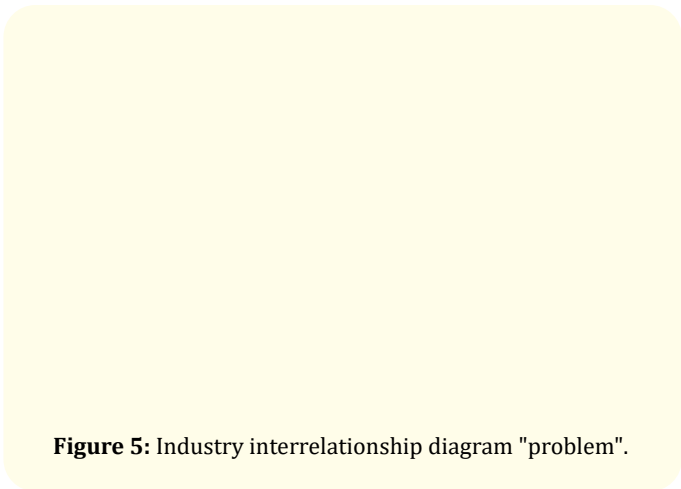
Figure 5: Industry interrelationship diagram "problem".

Students chose a problem they felt was the primary to use in the Cause and Effect tool (Ishikawa). The problem chosen unanimously was 'service of the financial sector and the secretariat', which converged to the worst evaluations (items 14 and 23) and to some open comments. However, the students realized that they did not have all the information necessary to fill out the entire diagram, but from their perspective the main point for the cause of the problem was the 'method', the 'people' and the 'machine', respectively. The result is shown in figure 6.
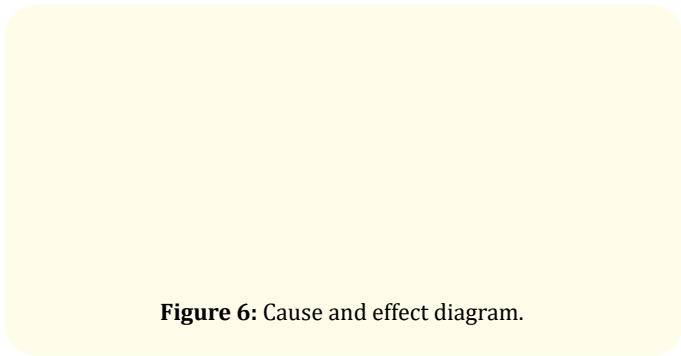
Figure 6: Cause and effect diagram.

It was also questioned why 95% of the items analyzed are below the students' expectations, and one student stated: "people classify their vision", "you should not look at isolated things, this is all a set", trying to justify the negative bias of the results.

The group's conclusion is that these more negative factors of SERVQUAL interfere with direct student satisfaction, may not be the main problem, but perhaps what causes the most 'stress' for them.

On the positive aspects students believe there are more things that are not on the list. One student mentioned that the 'recognition of the market', the 'quality of teachers', the 'attendance in coordination' were points that exceeded expectation and would be in front of item 9 (appearance of employees) and 67 (decoration).

In a moment of reflection of the result a student mentioned: "it will be that the people are even connected in the packaging to the institution", referring to superficial and momentary aspects. As a final observation, there is the following comment: "I believe that people end up saying the feelings that bother the most, in what bother the most times".

Conclusion

The SERVQUAL model used the base pillars, but a correlation was made with the distribution of academic pillars, which resulted predominantly in:

- Tangibility Infrastructure→
- Academic and faculty reliability→
- Provision of service Provision of Service→
- Student Personal Intangibility→
- Empathy People→

The methodology used 70 items of analysis concatenating several points studied in the literature, or in previous studies. The result, already expected, was a high alpha from Cronbach. This means consistency in what was questioned, but at the same time redundancy of items which generates the need to reduce the quantity. This information was already expected, because in the preparation of the material itself, it was noticed the overlap of factors, such as teachers with collaborators or more technical issues such as the course grade or the institution's grade. Neverthemore, it was desired to study to see if there was divergence in the students' perception.

Regarding the results of SERVQUAL, it was possible to perceive that the quality perceived in all 5 dimensions is below, that is, the students expect more than the institution offer. This negative perception of the service offer generates an opportunity for the institution to be able to work in front of the main items evaluated.

The points that do not directly interfere in education, such as operational service and 'parking', in the end, were points that directly impact their perception of quality and satisfaction. This result makes the investigation of academic sectors challenging, as well as the measurement of subjectivity, since academic excellence alone is not sufficient for positive perception.

The validation of the SERVQUAL result with the focus group generated the convergence of the consistency of the results, guideing the responses under what the students feel, from the perspective of what "bothers" or "generates stress". It was also diagnosed that the result gives room for doubt of what students are evaluating, since these 'feelings' can camouflage opposite or more important items, generating difficulty in understanding what really is the root cause of the problem and what impacts satisfaction. In addition to the need to add the sixth pillar of institutional management.

We saw the validity of using the focus group to validate the answers and understand the perception behind the answers and for this a group formed by expert users.

SERVQUAL was able to detect the problems that really "annoy" the students, reinforced by the focus group as "very first place", demonstrating to be a good tool of analysis in this perspective.

The inversion of the application was interesting, since the students of the inverted method had a slightly better tendency towards the positive perspective. It was then possible to perceive that the context and stimuli interfere in the interviewees' response, since the alternation of reflection (thinking about what has and then the ideal) resulted in a less negative result, although it still contains a perceived negative quality.

In the word cloud generated by the comments, it was possible to see that "student" came first, followed by "teaching" and "quality". This endorses the thinking of the focus group, in which the needs of students must be understood.

The main problems presented by SERVQUAL converged on what students see as a problem, but the positives diverged, which leads to the limitation mentioned by Swait and Adarnowicz [36]

and Weathers., *et al*. [37] of this type of experiment, because it allows the interviewees to have a predisposition to an answer, which, in this case, was negative.

Finally, it is concluded that SERVQUAL is a good analysis tool for detecting problems that bother users, that the analysis of respondents is under an overview, of the service set, and not under isolated points. Thus, the method understands the quality perceived-felt by the students, channeling mainly to their frustrations or disappointments.

The future is suggested a reduction of items to have a more attractive number, as well as a simpler way to work with the focus group – which requires less time.

Bibliography

1. Meyer C and Schwager A. "Understanding customer experience". *Harvard Business Review* 85.2 (2007): 117-126.

2. Wm Almeida. "On the end of the gratuity of Brazilian public higher education". *Research Notebooks* 49.173 (2019): 10-27.

3. Census dand Higher Education. "Statistical notes 2019". Ministry of Education.

4. ANDIFES. "V National Survey of Socioeconomic and Cultural Profile of UNDERGRADUATE STUDENTS OF IFES - 2018". *Fonoprace* (2018): 316.

5. Aronowitz S and Giroux HA. "The corporate university and the politics of education". *The Educational Forum* 64 (2008): 332-339.

6. File CHP., *et al*. "Social roles in higher education: Student-client, Teacher-manager-educator, institution of commercial education". *Science Administration* 8.15 (2006): 2-27.

7. Fonseca V. "Importance of emotions in learning: a neuropsychopedagogical approach". *Psychopedagogy Magazine* 33.102 (2016): 365-384.

8. Slater SF and Narver JC. "Market orientation and the learning organization". *Journal of Marketing* 59.3 (1995): 63-74.

9. Mark E. "Student satisfaction and the costumer focus in higher education". *Journal of Higher Education Policy Management* 35.1 (2013): 2-10.

10. Kureemun B and Fantina R. "Your customers' perception of quality: What it means to your bottom line and how to control it". CRC Press Taylor and Francis Group (2011).

11. Parasuraman A., *et al*. "SERVQUAL: A Multiple-Item Scale For Measuring Customer Perceptions of Service Quality". *Journal of Retailing* 64.1 (1988): 12-40.

12. IM brook. "Mapping hedonomy and emotional experiences: The perception of the student in higher education from the perspective of emotional design". Federal University of Pernambuco (Doctorate inDesign) (2020): 472.

13. Ribeiro IM., *et al*. "Academic sectors that interfere with student satisfaction in higher education". *Acta Scientarium Education* (2021): 1-28.

14. Thomas EH and Galambos N. "What satisfies students? Mining student-opinion data with regression and decision tree analysis". *Research in Higher Education* 45.3 (2004): 251-267.

15. Peng PJ and Samah AJA. "Measuring student's satisfaction for quality education in a e-learning university". *Unitar e-Journal* 2.1 (2006): 11-21.

16. Gibson A. "Measuring business students satisfaction: a review and summary of the major predictors". *Journal of Higher Education Policy and Management* 32.3 (2010): 251-259.

17. Parasuraman A., *et al*. "A conceptual model of service quality and its implications for future research". *Journal of Marketing* 49.4 (1985): 41-50.

18. Leblanc G and Nguyen N. "Searching for excellence in business education: An exploratory study of customer impressions of service quality". *International Journal of Educational Management* 11.2 (1997): 72-79.

19. Douglas D., *et al*. "Measuring student satisfaction at a UK university". *Quality Assurance in Education* 14.3 (2006): 251-267.

20. Bearden WO., *et al*. "Handbook of Marketing Scales: Multi-item measures for marketing and consumer behavior research". *Sage* (2011).

21. Lourenço CDS and Knop MFT. "Higher education in administration and perception of the quality of services: An application of the SERVQUAL scale". *Brazilian Business Management Magazine* 13.39 (2011): 219-233.

22. Stefano NM., *et al*. "A fuzzy SERVQUAL based method for ecaluated of servisse quality in the hotel industry". *Procedia CIRP* 30 (2015): 433-438.

23. Hair E and Chirinos JL. "Validation and applicability of modified SERVQUAL surveys to measure the satisfaction of external users in health services". *Heredian Medica Magazine* 23.2 (2012): 89-95.

24. Hasan HFA., *et al.* "Service Quality and Student Satisfaction: A Case Study at Private Higher Education Institutions". *International Business Research* 1.3 (2008): 163-175.

25. Bigné E., *et al.* "Perceived quality and satisfaction in multiservice organizations: the case of Spanish public service". *Journal of Services Marketing* 17.4 (2003): 420-442.

26. Ademir C and Gülcan, Y. "Student satisfaction in higher education: A Turkish case. Higher Education". *Management and Policy* 16.2 (2004): 109-122.

27. Rastoder A., *et al.* "Perceptions of Students towards Quality of Services at Private Higher Education Institution in Bosnia and Herzegovina". *European Researcher Series A* 101.12 (2015): 783-790.

28. Sohail MS and Shaikh NM. "Quest for excellence in business education: A study of student impressions of service quality". *International Journal of Education Management* 18.1 (2004): 58-65.

29. Buttle F. "SERVQUAL: review, critique, research agenda". *European Journal of Marketing* 30.1 (1996): 8-32.

30. Asubonteng P., *et al.* "SERVQUAL revisited: a critical review of service quality". *The Journal of Services Marketing* 10.6 (1996): 61-81.

31. Pariseau SE and Mcdaniel JR. "Assessing service quality in business schools". *International Journal of Quality and Reliability Management* 14.3 (1997): 204-218.

32. Galloway, L. "Quality perceptions of internal and external customers: a case study in educational administration". *The TQM Magazine* 10.1 (1998): 20-26.

33. MV Rodrigues. "Actions for quality: strategic and integrated management for the improvement of processes in the pursuit of quality and competitiveness". *Elsevier* (2014).

34. Bergman B and Klefsjö B. "Quality from Customer Needs to Customer Satisfaction". *Studentlitteratur AB* (2010).

35. Swartz TA and Brown SW. "Consumer and provider expectations and experiences in evaluating professional service quality". *Journal of the Academy of Marketing Science* 17.2 (1989): 189-195.

36. Swait JS and Adamowicz W. "The influence of task complexity on consumer choice: a latent class model of decision strategy". *Journal of Consumer Research* 21.1 (2001): 189-199.

37. Weathers D., *et al.* "The impact of the number of scale points, dispositional factors, and the status quo heuristic on scale reliability and response accuracy". *Journal of Business Research* 58.11 (2005): 1516-1524.

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