European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available online at: www.oapub.org/edu

DOI: 10.46827/ejes.v11i4.5252 Volume 11 | Issue 4 | 2024

SERVQUAL: A STUDY ABOUT THE PERCEPTION OF QUALITY IN A BRAZILIAN UNIVERSITY

Carla França Medeiros[1],
Adalena Kennedy Vieira[2],
Raimundo Kennedy Vieira[1i]
[1]Federal University of Amazonas,
Gal Rodrigo Octávio, 6200, Coroado I,
Manaus (Amazonas),
Brazil
[2]State University of Pará,
Campus XIX, Pa 154, Km 28,
Salvaterra-Marajó (Pará),
Brazil

Abstract:
Objective: This study aims to evaluate the quality of the services provided by the Faculty of Technology of the Federal University of Amazonas (TF/FUA) through the expectations and perceptions of the clients (students), as well as to propose possible improvements in the provision of services. **Methodology:** The SERVQUAL analysis tool was adapted to the reality of higher education, which has seven dimensions of quality: tangibility, reliability, competence, receptivity, clarity, autonomy, and accessibility. **Results:** It was possible to identify that the perceptions do not match the expectations of the students, indicating the need for policies for quality and customer satisfaction. The most significant dimensions of quality are reliability and competence. The dimensions with lesser importance were autonomy and tangibility. Based on the analysis of perceptions, the best dimensions evaluated were competence and receptivity, and the worst dimensions were autonomy and tangibility. **Practical Implications:** The study aimed to assist the management of TF/FUA in self-knowledge about the quality of services provided. It aided decision-making to improve services. In addition, it supported the consolidation of the student as a university client, capturing their expectations and perceptions regarding services. Thus, it was possible to contribute to their autonomy and participation in services.

Keywords: quality in services, quality in educational services, HEI, and SERVQUAL

[i] Correspondence: email kennedy71@gmail.com

1. Introduction

The evaluation and measurement of the quality of services are highly complex because they encompass perspectives and perceptions of a subjective and dynamic nature. (Su, Swanson, and Chen, 2016).

Based on the difficulty of establishing an evaluation parameter, several scholars devoted their time to researching and proposing improvements in measuring service quality.

One of the first models for measuring service quality was proposed by Grönroos (1984). Subsequently, Parasuraman, Zeithaml, and Berry (1985) presented the SERVQUAL tool for service quality measurement, which is based on identifying customer perceptions and perceptions of the customer about the service companies offer through periodic surveys. (Lupo, 2013).

According to Lacerda (2005, p.20), "*quality is the management philosophy that seeks to achieve a full attendance of the needs and the maximum satisfaction of the client's expectations*."

According to Fitzsimmons and Fitzsimmons (2010), the evaluation of the customer about the service is the factor that accredits the direct actions that the company must take. Therefore, due to the high competitiveness of the global market, many institutions are focusing their actions on customer satisfaction.

The service quality can be perceived through the comparison between the expectation of the client and the accurate perception of the service consumed. When expectations are better than the service provided or do not meet the minimum requirements of users, their quality is considered low. On the other hand, if the exceptions are lower than the service presented, the quality is called excellence (Fitzsimmons & Fitzsimmons, 2010). The SERVQUAL tool follows this line of reasoning and constitutes an instrument of great value in evaluating the quality of services.

This study aims to evaluate the quality of the services provided by the Faculty of Technology of the Federal University of Amazonas (TF/FUA) through the expectations and perceptions of the clients (students) and to propose possible improvements in the provision of services.

In this way, the study on screen is structured through topics. The first item deals with the introduction of the work. The second topic deals with the conceptual revision of the themes: quality in services, quality in educational services of higher education, and the SERVQUAL tool. The third theme deals with the state of the art in which some works that have performed the institutional evaluation in situations related to this article using the SERVQUAL tool are presented in the last five years. The fourth topic deals with the methodology employed in the study. The fifth topic presents the case study through the presentation of the site and presentations and discussions about the research results, and finally, the sixth topic presents the study's conclusions.

2. Literature Review

This section reviews the themes: quality in services, Quality in educational services, and SERVQUAL tool as an instrument for measuring quality in services.

2.1. Quality in Services

The search for service quality is a fundamental element in the business world. It is considering the globalized and competitive market and the emergence of a generation of more demanding customers. (Tseng and Wu, 2014).

Before entering the quality of services, it is worth distinguishing between product and service. Products are objects that can be touched, stored, viewed, etc.; *services* are defined by Kotler and Keller (2012) as something that one mode offers to another without resulting in material property.

To Kotler and Keller (2012), the service, unlike the product, can be defined as intangible, inseparable, perishable, and variable.

Figure 1 illustrates a general differentiation between products.

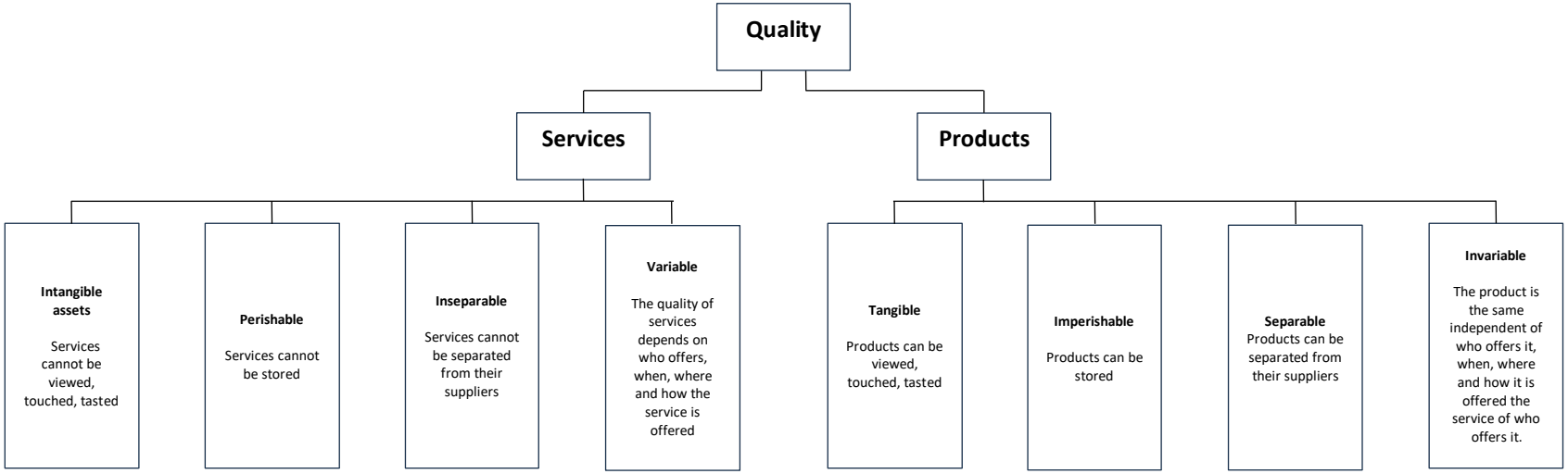
For Fitzsimmons and Fitzsimmons (2010, p. 30), service is "*a perishable, intangible experience developed for a consumer who plays the co-producer*." Thus, the customer creates the demand and consumes the service, and their expectations and longings continuously change.

Even in service rendering processes, there may be simultaneously or, in the last case, the offer of a product. In higher education institutions (HEIs), for example, whose principal activity is providing educational services, they can also produce products since their research generates the creation of new drugs, compounds, tools, and others.

Thus, several studies were carried out on this topic in the context of the search for quality services. To have a comprehensive view, a table was drawn up containing the understandings of several authors (Table 1).

Regarding service provision, this study will use the definition of Mauri and Minazzi (2013). To these authors, it is essential to consider all information that expresses the needs or expectations of the client to improve the quality of services provided. These expectations should be gathered, analyzed, and transformed into an action project within the institution.

Figure 1: Difference between services and products



Source: Authors.

Table 1: Understanding quality in services

Authors	**Quality in services**
Parasuraman *et al.* (1985)	It is related to the comparison between users' expectations and the institution's performance in the service delivery process.
Albrecht (1992 page. 254)	It is "the ability that an experience or any other factor has to satisfy a need, solve a problem, or provide benefits to someone." In this sense, it can be understood that quality service translates into the satisfaction of the demands of the clients, at the right time.
Albrecht (1998)	The company should have an overview of the entire service cycle, which is any and all experiences encountered by the customer in the process of consuming the service.
Freitas (2003)	By understanding the service cycle, it is possible to detect failures and make decisions for corrective/preventive action to improve the quality of services.
Gonçalves e Belderrain (2012)	They warn about the difficulty in measuring the quality of services offered by institutions since the services are evaluated based on the different experiences lived by the users.
Souza, Meira, Maske (2012)	They affirm that it is possible to seek the specification of services in measurable attributes, despite the difficulty in measuring quality, due to subjectivity and intangibility in services.
Wong e Dioko (2013)	They measure quality employing the difference in the analogy between the customer's expectations and the actual performance in the provision of services by the company.
Baker (2013)	The quality of the service is measured from the perception of the quality of the service. Whether the service meets or exceeds the customer's needs, that is satisfaction.
Mauri e Minazzi (2013)	All information that expresses the needs or expectations of the client must be gathered, analyzed, and transformed into action projects within the institution, to improve the quality of services.
Siu, Zhang e Kwan (2014)	Performance below expectations by the customer generates dissatisfaction and impairs loyalty. However, if the perception was higher than the expectations, satisfaction and the possibility of loyalty become effective.
Quester, Romaniuk e Wilkinson (2015)	They establish that long-term and profitable relationships are based on customers and that successful institutions are differentiated from other competitors by means of measures aimed at quality of service.
Sofi, Hakim e Gadoo (2016)	The perception of the customer as well as their satisfaction is what defines the degree of quality of services. This means that the perceived value is strongly correlated with customer satisfaction.

Source: Authors.

2.2. Quality in Educational Services of Higher Education

Two reflections are highly relevant to the quality of services provided by HEIs. Is the student a product and client of HEIs?

According to Green (2014), the primary objective of higher education is to provide skilled labor to support the economic and social development of the country. It occurs through producing graduates and expanding the frontiers of knowledge through teaching, research, and extension. In this case, for Green, the graduate is a product manufactured by HEI to be consumed as labor by the market.

According to (Gokcen, 2014; Naidoo and Jamieson 2005 Saunders, 2014), empirical evidence shows that students consume the services provided by HEI. However, the student concept as a client is mainly anecdotal.

What is perceived is that the student absorbs the educational services of higher education. However, they need the autonomy to be co-producers of the services, which, theoretically, must meet their expectations and desires. According to Fitzsimmons and Fitzsimmons (2010, p. 30), the student's vision as a consumer of services would be disqualified since, to them, the client is a co-producer of the services.

It is observed that there is some undue distance between the student and the educational process; the teaching and learning model is imposed on the student; there is an inadequate separation of educational experience as a product rather than a process.

Producing professionals with quality in the training process is necessary. Attention must be paid to direct training services and indirect services such as university restaurants, photocopy services, campus security, and others that influence the student training process. In other words, what is now perceived is that there is no critical analysis of students' needs, expectations, and perceptions.

Based on the reflections made in this item, the answer to the question shown in the first paragraph is that the student becomes a product of the HEIs when it becomes a trained professional. However, even if the student's conception as a client needs to be carried out thoroughly, it is possible to create paths for this realization.

Thus, it is understood that the student's approach as a client has substantial impacts, both on their Perception of an individual and in the pedagogical conception of HEIs, and for this reason, the student's vision as a client is considered in this research. Their expectations and perceptions are captured as a central base for analyzing the quality of services in HEIs.

2.2.1. Perception of the Student as a Client

They consider the student's perspective as a "client" of the university. When entering the institution, the student creates expectations and generates perceptions regarding the services provided.

In this sense, according to Oliveira and Ferreira (2009), measuring quality through the expectations and perceptions of the students should consider all ordinary activities. Whether direct or indirect, that results in the primary objective of the student's higher education. Thus, to meet the quality of services designed to meet customer needs, as addressed in item 2.1.

The construction of customer expectations about the services is influenced by several factors, such as word-of-mouth communication, previous experiences related to the service, external communications, and even the users' individual demands. (Ranaweera and Jayawardhena, 2014).

Perceptions are built through personal experiences about services. According to Oliver (2014), an institution that fails to meet consumer expectations may retain its customers and attract new customers. The image of the establishment is tarnished before its clients and before society. In this way, the quality of meeting the customers' needs is a significant factor in maintaining an institution in the competitive market.

It is assumed that there are many models to measure quality within HEIs. However, the quest for quality in HEIs should be a continuing concern, as they are

embedded in a global dynamic where demands are constantly changing. In addition, such measurement enables improvements in institutional governance, performance and productivity improvement, and quality assurance.

The SERVQUAL Tool, which is used to measure service quality through customer expectations and perceptions, can be utilized by different service providers, including HEIs.

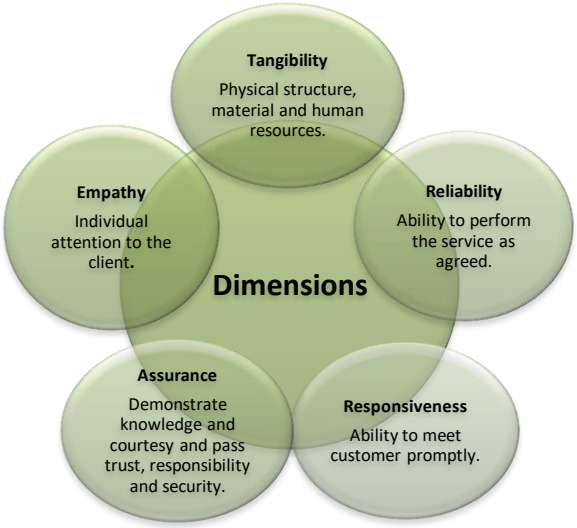
2.3. SERVQUAL Tool

The SERVQUAL quality analysis tool was developed by Parasuraman, Zeithaml, and Berry (1988). This instrument aims to evaluate the quality of the service through the identification of the expectations and perceptions of its users.

According to Almeida *et al.* (2012), the method is based on analyzing five dimensions related to customer satisfaction regarding the provision of services.

Figure 2 shows the five dimensions analyzed in SERVQUAL (Fitzsimmons & Fitzsimmons, 2010).

Figure 2: Dimensions of the SERVQUAL Tool



Source: Adapted from Fitzsimmons and Fitzsimmons (2010).

In this way, SERVQUAL comprises the application of a questionnaire consisting of two parts. The first part consists of questions that will identify the customers' expectations regarding the service, and the second part presents matters relating to the users' Perceptions after using the services (Pisoni *et al.*, 2013), as seen in Table 2.

Table 2: Original version of the SERVQUAL scale

Item		Expectation	Performance
1	**Tangibility**	They should have modern equipment.	XYZ have modern equipment.
2		Their physical facilities should be visually appealing.	The physical facilities of XYZ are visually appealing.
3		The employees should be well dressed and clean.	XYZ employees are well dressed and clean.
4		Appearances of company premises should be preserved according to the service offered.	The appearance of the physical installations of XYZ is saved according to the offered service.
5	**Reliability**	When these companies promise to do something at a certain time, they should do it.	When XYZ promises to do something at a certain time, it really does.
6		When customers have a problem with these companies, they should be supportive and leave them safe.	When you have a problem with the XYZ company, it is supportive and leaves you safe.
7		These companies should be reliable.	XYZ is reliable.
8		They should provide the service in the promised time.	XYZ provides the service at the promised time.
9		They should keep their records correct.	XYZ keeps your records correct.
10	**Responsiveness**	They would not be expected to inform customers exactly when the services were run.	XYZ does not tell you exactly when services will run.
11		It is not reasonable to expect an immediate availability of company employees.	You do not receive immediate services from XYZ employees.
12		Company employees do not always have to be available to help customers.	XYZ employees are not always willing to help customers.
13		It is normal for them to be too busy responding promptly to requests.	XYZ employees are always busy responding to customer requests.
14	**Assurance**	Clients should be able to believe in the employees of this company.	You can believe in XYZ employees.
15		Customers should be able to feel secure in negotiating with the company's employees.	You feel secure in negotiating with XYZ employees.
16		Your employees should be educated.	XYZ employees are educated.
17		Your employees should get adequate support from the company to fulfill their duties properly.	XYZ employees do not get adequate support from the company to fulfill their duties properly.
18	**Empathy**	Companies would not be expected to pay individual attention to customers.	XYZ does not give individual attention to you.
19		Employees cannot be expected to give personalized attention to customers.	XYZ employees do not pay any personal attention.
20		It is absurd to expect employees to know what customers' needs are.	XYZ employees are not aware of their needs.
21		It is absurd to expect these companies to have the best interests of their clients as their goal.	XYZ does not have your best interests as a goal.
22		It should not be expected that the opening hours would be convenient for all customers.	XYZ does not have working hours convenient to all customers.

Source: Parasuraman, Zeithaml, and Berry (1985).

Questionnaire respondents fill in the answers using a Likert from 1 to 7. The number 7 (left end) corresponds to "I totally agree," and the number 1 (direct end) corresponds to "I totally disagree," as shown in Table 3.

Table 3: Likert scale for SERVQUAL responses

7	6	5	4	3	2	1
Excellent	Very Good	Good	Satisfactory	Unsatisfactory	Weak	Mediocre

Source: Parasuraman, Zeithaml and Berry (1985) apud Oliveira and Ferreira, 2009.

Thus, it is possible to quantify the quality of the services provided by the institution through equation 1 below, where Q is quality, P is Perception, and E is expectation:

$$Q = P - E \quad (1)$$

The positive result indicates that the services provided exceed the client's expectations. On the other hand, a negative result expresses that the perceptions do not correspond to the users' expectations, indicating the need for measures in favor of quality and customer satisfaction. (Coelho, 2004).

3. State of the Art

This section will present works that carried out the institutional evaluation in situations related to this article using the SERVQUAL tool.

Given the need to evaluate the quality of services, the applicability of the SERVQUAL tool has proved to be efficient in several parts of the world regarding the quality of educational services (Table 4).

Table 4: State of the art of the SERVQUAL tool in educational studies

Authors	Study object	Methods (Changes over classical method)	Results
Melchor Cardona and Bravo (2012)	Research the perceptions of quality of service of a private university in Colombia.	They specified the five quality dimensions: Q1) of the object (teaching or research); Q2) Process: how to deliver the object; Q3) of the infrastructure; Q4) of interaction and communication between people; Q5) of the atmosphere: confidence, security, high projection, and positions that reflect the institution. The sample size was 1802, with a 95% confidence level and a 2% error.	As a result, there were significant variables in the explanation of student satisfaction, such as a university and academic program development fund and a perception of assessment techniques as a challenge to improving intellectual growth.
Ravindran and Kalpana (2012)	To evaluate expectation, perception, and satisfaction of services among	They adopted the SERVQUAL tool to six dimensions, i.e., location, academic, infrastructure, image, cost and personnel,	The study identified a significant difference between the perceptions of students in four categories of institutions across all six dimensions of

	students of institutions in Coimbatore, India.	and overall satisfaction. Autonomous: 13 institutions, 71 interviewed; Techniques: 19 institutions, 107 interviewed; Arts and Science: 11 institutions, 85 interviewed, and 6 Universities, 41 respondents.	institution quality factors. All five factors, except cost, significantly influence overall student satisfaction for the institution.
Hoque, Razak, Othman, Mishra, Samad (2013)	Compare the quality-of-service provision between public schools in Saudi Arabia and Malaysia.	The five factors applied were (1) physical evidence, (2) personal contact, (3) reputation and assessment, (4) admission, and (5) teaching and teachers. A quantitative approach was used, and a questionnaire was applied to 250 students.	The result shows that Malaysian students had less satisfaction than the Saudis about providing services in their schools across all six factors analyzed.
Yousapronpaiboo (2014)	Investigate the quality of service in higher education in Thailand.	The study used the five instrumentation dimensions of SERVQUAL. In addition, the paper also examined the validity and reliability of SERVQUAL in the evaluation of higher education in Thailand. About 350 undergraduates from five universities in Bangkok between 2011 and 2012 participated in this work as respondents.	The study found that higher education in Thailand needed to meet the expectations of undergraduates, indicating that several improvements in the provision of services need to be performed, mainly upgrading facilities and equipment.
Jeevarathnam, Veerasamy and Noel (2014)	Address the experience of international students regarding the quality of services in South Africa.	A census was conducted among international students, comprising 215 respondents, using the classic SERVQUAL instrument.	There was a high degree of internal consistency among the five dimensions of quality of service in terms of expectations and perceptions. It was observed that the empathic dimension exhibited the highest score. Recommendations have been made on how the university can improve the quality of service among its international students.
Xiao and Wilkins (2015)	To examine the effects of the teacher's commitment on the student's perception of the quality of	The service's quality was measured through the SERVQUAL tool and the application of self-administered questionnaires on paper. A model was created linking	The study showed that the teacher's commitment to the academic performance of the students and the teacher's commitment to the social integration of the students are both positively related to the

	teaching and the satisfaction of the students at a Chinese university.	the teacher's commitment to the perceived quality of the student and student satisfaction, and the hypotheses were tested using structural equation modeling. The sample comprised 24 teachers and 456 students.	student's satisfaction. However, the teacher's commitment to the social inclusion of the students did not influence the students' perception of the quality of teaching.
Sardar, Amjad and Ali (2016)	Analyze the relationship and difference between students' expectations and perceptions about quality of service in Pakistan.	The study was based on primary data collected from 349 respondents from a population of 405 students, using a questionnaire based on the classic SERVQUAL tool.	The research identified a gap between students' expectations and perceptions. Perceived reliability was the most important dimension of service quality found in the study. The results provide valuable feedback to identify and improve the quality dimensions of weak services between institutes in Pakistan.

Source: Authors.

The work presented in Table 4 used the SERVQUAL tool to make quality analyses in higher education institutions, diagnosing the expectations and perceptions of institutional clients.

The research results provide valuable feedback to identify and improve the quality level in different institutions.

Thus, this study will follow the same reasoning in utilizing the SERVQUAL tool to evaluate the quality level of TF/FUA.

4. Material and Methods

This study carried out in 2016, was based on applied research using a case study in the TF / FUA. The subjects of the research were selected among the students of the second and eighth periods of the ten courses of the Faculty of Technology of UFAM, in its unit in Manaus, totaling a universe of 2,288 (two thousand two hundred and eighty-eight) students enrolled in the second semester of 2016, according to information from the Department of Academic Registry of Teaching and Graduation Deanery and the sample of 600 (six hundred) students, constituting a sample percentage of 38%.

4.1. SERVQUAL Tool Adapted to the Reality of Higher Education

SERVQUAL questionnaires, adapted to the reality of higher education institutions, were elaborated by Macowski (2007), in which seven quality dimensions are evaluated.

Two self-administered paper questionnaires were applied. One is to evaluate the students' expectations regarding the quality of services universities of excellence should

provide based on thirty-nine items. Another questionnaire to assess the perceptions regarding the services provided by TF/FUA was based on the same thirty-nine items.

The evaluations of each item, it was performed using the Likert scale from 1 to 7, where 1 (Mediocre); 2 (Poor); 3 (Unsatisfactory); 4 (Satisfactory); 5 (Good); 6 (Very good); 7 (Excellent).

4.2. Quality Dimensions

The seven dimensions of service quality proposed by Macowski (2007) and adopted in this research are presented in Table 5.

Table 5: Dimensions of quality in services

Items	Dimensions	Characteristics
1	Tangibility	It is related to the physically observed items;
2	Reliability	It symbolizes the confidence perceived by the student the moment he uses the services provided by the institution;
3	Competence	It translates the ability of staff and teachers to perform their functions properly;
4	Receptivity	It refers to the service to the student when he needs it.
5	Clarity	It is linked to the dissemination of the information that the student needs in relation to academic subjects.
6	Autonomy	It reflects the freedom of the employees to solve the problems demanded by the students.
7	Accessibility	It expresses the ease or difficulty found by the students to use the available resources in the institution. This reflects the freedom of the employees to solve the problems demanded by the students.

Source: Adapted from Macowski (2007).

According to Parasuraman, Zeithaml, and Berry (1988), it can be grouped in the quantity of theoretically proposed dimensions to verify the use of the collected data set. A factorial analysis can be used when constructing a questionnaire. In this way, Macowski (2007) used this technique to produce his questionnaire adapted to HEIs.

5. Case Study

This section presents the place where the survey was done and the presentation and discussion of the results.

5.1. Location Presentation

The Federal University of Amazonas originated in the Free University School of Manaus on January 17, 1909, and is considered by the Guinness Book to be the first HEI in Brazil. (Brito, 2011).

Created by Law No. 4,069-A, of June 12, 1962, of Decree no. 53,699, dated March 13, 1964, is a federal autarchy maintained by the Union. Its headquarters is in Manaus City, State of Amazonas (Ufam, 2016). Besides the headquarters, Ufam has five poles in the Amazonas countryside, established in the municipalities of Parintins, Coari, Itacoatiara, Humaitá, and Benjamin Constant.

Ufam offers more than 80 courses distributed among the areas of Agrarian, Biological, Exact, and Human Sciences. According to the Management Report of Ufam (2015), 28,222 students were enrolled in 2015.

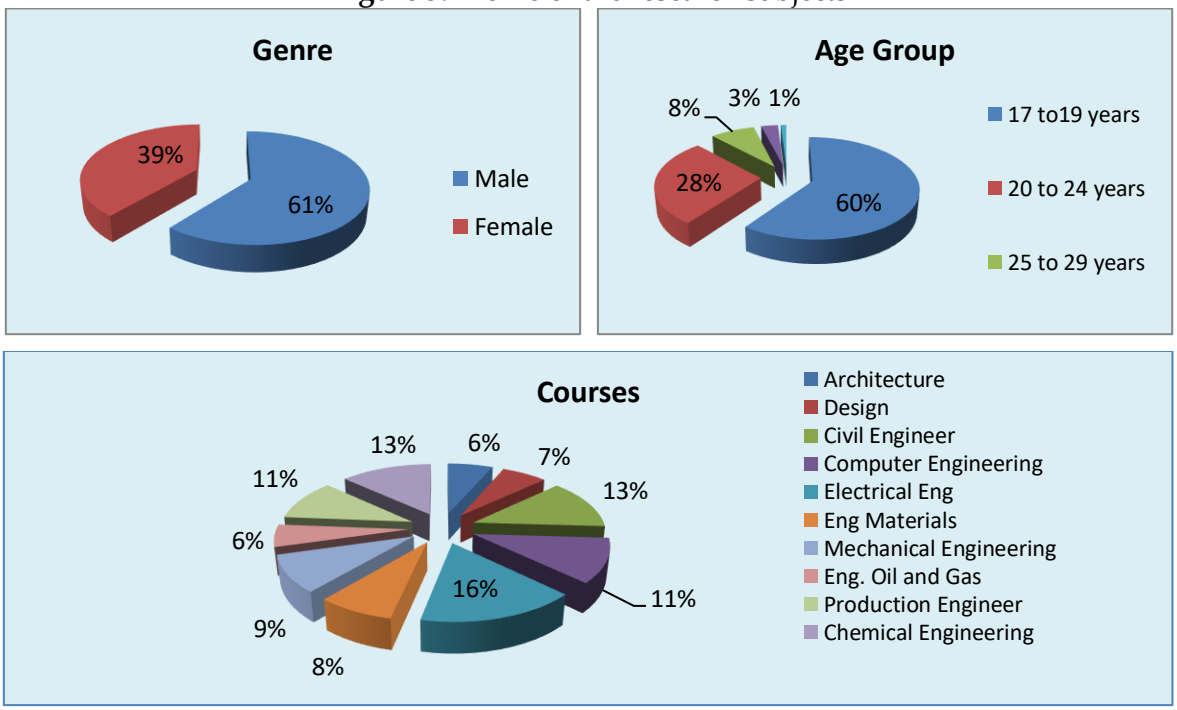
The Faculty of Technology was created in 1970 through Decree No. 66.810. However, the recognition of the engineering course only occurred in 1972 through Decree No. 69.924. (Ufam, 2016)

Since December 1988, the Faculty of Technology - FT has been in the UFAM's headquarters unit. Today, it has about ten undergraduate courses, including Design, Civil Engineering, Production Engineering, Architecture and Urbanism, Computer Engineering, Gas Engineering and Petroleum, Materials Engineering, Mechanical Engineering, Chemical Engineering, and Electrical Engineering. The last course is subdivided into Electronic Engineering, Electrotechnical Engineering, and Telecommunications Engineering.

5.2. Presentation and Discussion of Results

This subsection deals with the presentation of the data collected in the research. Thus, through this study and the application of questionnaires based on the SERVQUAL tool adapted to HEIs. The profile of the research participants was first presented, then identified to the student's expectations and perceptions, evidenced the dimensions of greater and lesser relevance, pointed out the strengths and weaknesses in the provision of services, and proposed improvements in the offered services by TF/FUA. All data were tabulated and analyzed using the Office Package.

Figure 3: Profile of the research subjects



Source: Authors.

About 600 students from the ten TF/FUA courses participated in the research. The profile of the students who answered the questionnaires was drawn according to the following information: gender, age, and course. It was identified that 39% were female and 61% male. The predominant age group was between 20 and 24, representing 60% of the sample. As for courses, we had the following representations: Architecture: 6%, Design: 7%, Civil Engineering: 13%, Computer Engineering: 11%, Electrical Engineering: 16%, Materials Engineering: 8% Petroleum and Gas Engineering: 6%, Production Engineering: 11%, and Chemical Engineering: 13%. All indices listed here are shown in percentages in Figure 3.

5.2.1. Perceptions and Expectations by Dimension

In this item, students' expectations regarding the level of services that a university of excellence will be offered and their perceptions regarding the services provided by TF/FUA will be presented. The green data represent the most important indexes for quality as the basis of the student's expectations. Regarding the students' perceptions, the data in red represent numbers below the index considered satisfactory, and the blue ones are equal to or above the satisfactory, according to Table 3.

The data will be presented by dimension (Tangibility, Reliability, Competence, Responsiveness, Clarity, Autonomy, and Accessibility). As far as the expectation is concerned, the closer to (7), the higher the level of importance of the expected quality, and the closer it is to (1), the lower the level of relevance to quality. As for the perception, the closer to (7) is that the service offered by TF/FUA is excellent, and the closer to the number (1) the service is mediocre.

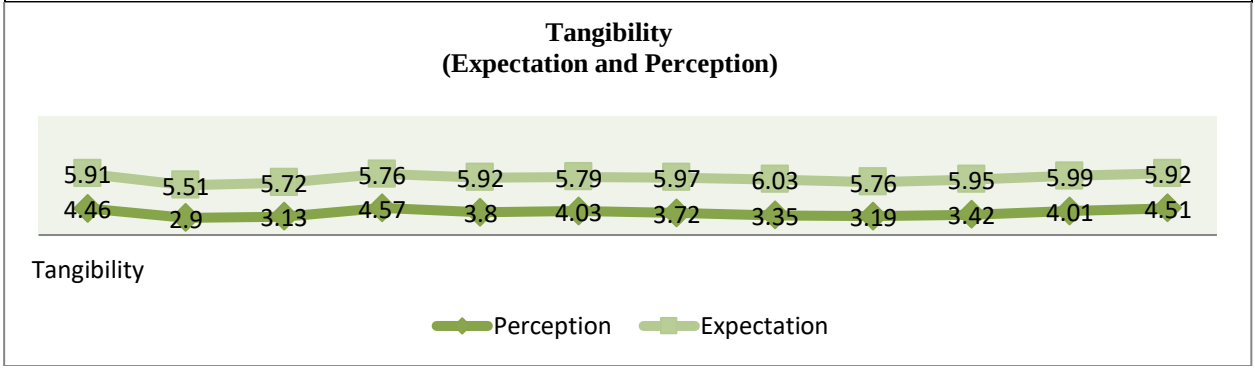
A. Tangibility

The tangibility dimension is related to the physically observed items. According to the questionnaire proposed by Macowski (2007), it is the dimension that is most representative, containing about twelve questions, since it is the most palpable and visually detectable dimension since it evaluates items of infrastructure and external appearances such as rooms, laboratories, cleaning, comfort, and others, according to Table 6.

Table 6 presents the results of the expectations and perceptions found in the tangibility dimension. As it is possible to be observed, regarding the student's expectations, the items with the highest level of importance for quality are, respectively: the specific laboratory of the course with equipment destined for its course; adequate and comfortable auditoriums; and modern laboratories equipped with software suitable for the disciplines.

Table 6: Tangibility (Expectation and Perception)

Tangibility	**Expectation**		**Perception**	
Questions	**Average**	**SD***	**Average**	**SD***
1. Comfortable and pleasant classrooms.	5,91	1,17	4,46	1,28
2. Rooms suitable for individual / group study.	5,51	1,83	2,90	1,47
3. Study place that favors concentration.	5,72	1,65	3,13	1,52
4. Airy, large and bright courtyard.	5,76	1,25	4,57	1,55
6. Hygiene and cleanliness in the premises.	5,92	1,35	3,80	1,47
8. Parking that satisfies the demand.	5,79	1,36	4,03	1,56
9. Modern and equipped computer labs.	5,97	1,47	3,72	1,60
10. Laboratory and specific course equipment.	6,03	1,55	3,35	1,71
13. Plates indicating the location of each environment.	5,76	1,50	3,19	1,52
14. Clean and user-friendly restaurants and canteens.	5,95	1,34	3,42	1,52
15. Adequate and comfortable auditoriums.	5,99	1,23	4,01	1,47
17. Service and quality of the copy and print service.	5,92	1,18	4,51	1,52
Total average	**5,853**		**3,756**	
Caption: * SD = Standard Deviation				



Source: Authors.

Regarding the students' perception, the items with the worst evaluation are rooms appropriate for individual/group study, Place of study that favors concentration, And Plates indicating the location of each environment.

Overall, the expectations were higher than the perceptions found, and the average perception was 3.7. This value was below the satisfactory index, which would be 4.0, as shown in Table 3.

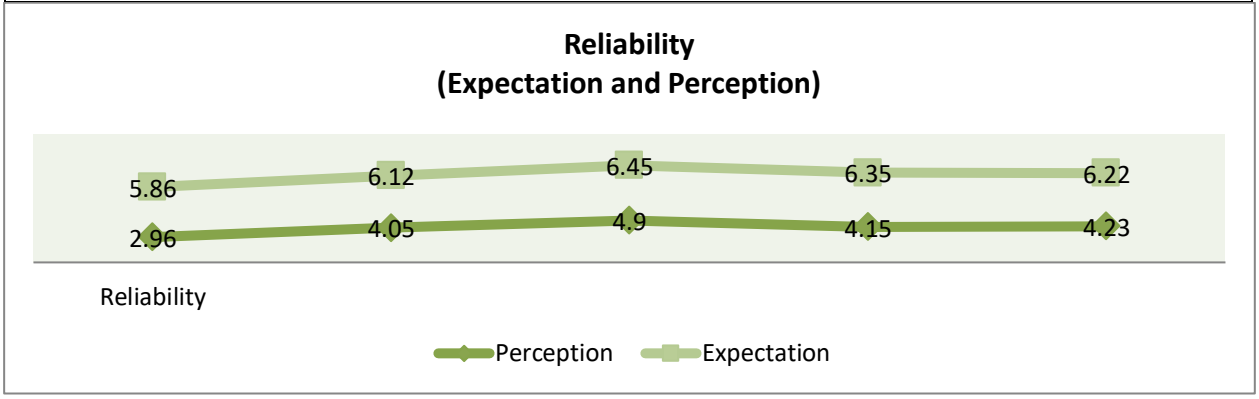
Consequently, projects aimed at partnerships between companies and universities and searching for resources in development institutions are alternatives for improving the institutional infrastructure.

B. Reliability

The reliability dimension is linked to the confidence perceived by the student when he uses the services provided by the institution. This dimension assesses whether the student feels confident and secure within the university, whether the library has exciting and meaningful material for the teaching process, as well as evaluates the teachers in their degree of knowledge and qualification, the methodology used in the classroom, and incentive Research and scientific production, as presented in Table 7.

Table 7: Reliability (Expectation and Perception)

Reliability	**Expectation**		**Perception**	
Questions	**Average**	***SD**	**Average**	***DP**
7. Security on premises.	5,86	1,67	2,96	1,48
11. Library with relevant collection.	6,12	1,33	4,05	1,47
31. Teachers with training appropriate to the discipline taught.	6,45	1,02	4,90	1,56
32. Teachers with teaching methodology appropriate to higher education.	6,35	1,28	4,15	1,62
33. Teachers who encourage scientific research and production.	6,22	1,27	4,23	1,58
Total average	**6,199**		**4,017**	
Caption: * SD = Standard Deviation.				



Source: Authors.

According to Table 7, regarding the expectation, the items most relevant for quality in the reliability dimension are related to teachers, their training, methodology, and research incentives.

Regarding the student's perception, the worst evaluated item is the security in the dependencies of TF/FUA. Security at the university today is accomplished in two ways. The first is the Security Division of the University, made up of public servants responsible for the safety of people and property. However, the provision for these positions no longer exists, and the tendency is to outsource this function. The other form of security is carried out by the outsourced company, contracted by bidding, that works only as a patrimonial guard. Even in the face of these two types of security, students still feel insecure within the university.

Therefore, measures must be taken to improve safety on campus, such as investments in campus lighting, identification of people in and out, as happens in private universities, and surveillance cameras.

The other items are within the mean of 4.0, corresponding to satisfactory services based on the Likert scale from 1 to 7.

Despite the expectation of the students being higher than the perception of the services rendered, the total average perception is 4.0, which characterizes the service as satisfactory.

C. Competence

The competence dimension refers to the ability of education technicians and teachers to perform their functions adequately, in addition to the Competence of the academic board. In this sense, the abilities to perform teaching activities, the bureaucratic ones, and the practices are evaluated, as seen in Table 8.

Table 8: Competence (Expectation and Perception)

Competence	**Expectation**		**Perception**	
Questions	**Average**	***SD**	**Average**	***SD**
19. Staff prepared to perform their duties.	6,01	1,22	3,92	1,40
27. Present and participative departments.	6,16	1,24	4,04	1,68
28. Coordinators that perform their duties properly.	6,24	1,17	4,33	1,70
35. Teacher team.	6,20	1,15	4,60	1,44
39. Academic center active.	5,99	1,44	3,70	1,87
Total average	**6,119**		**4,120**	
Caption: * SD = Standard Deviation.				

Source: Authors.

According to Table 8, the most representative items for the quality, before the expectation of the academic, in the competence dimension, are coordination of the course, departments, and teacher team.

Regarding the academic's perception, two items in this dimension could have been better evaluated: academic center acting and preparation of the employees to carry out their activities.

Academic centers are of extreme importance in universities because they are spaces where students are guaranteed representation in collegiate bodies, departments, rectories, and others. Within these spaces, it is possible to discuss solutions to the problems encountered in the courses and thus improve the quality of the services provided by the institution. In this sense, students must know the function of each of these spaces and become more participatory.

It is believed that training and performance evaluation measures can improve the quality of the services offered, referring to the preparation of employees,

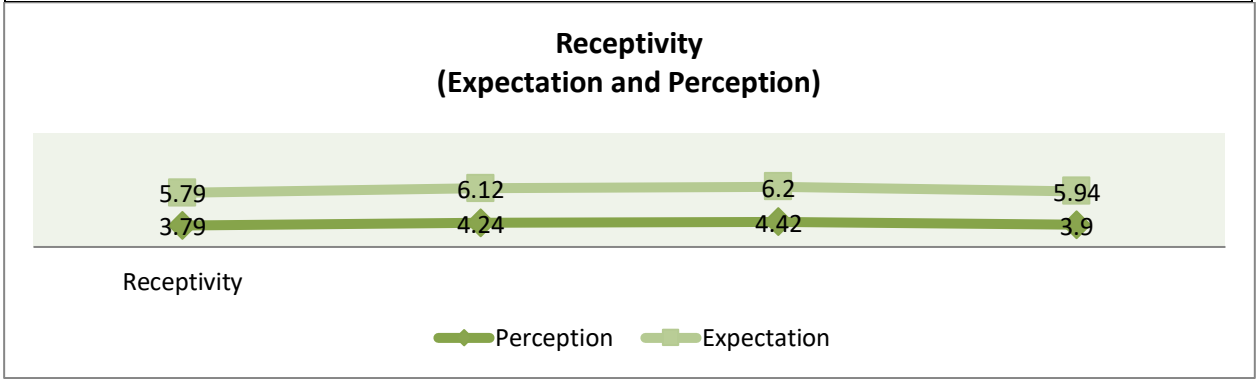
In this dimension, perceptions were lower than expectations. However, the total mean of the perception was 4.1, determining that the service provided was satisfactory.

D. Receptivity

In this dimension, the student's attendance is evaluated when he needs it. In other words, it analyzes how well-received the student is in both the institution's administrative area and the classroom by the teachers (Table 9).

Table 9: Receptivity (Expectation and Perception)

Receptivity	**Expectation**		**Perception**	
Questions	**Average**	***SD**	**Average**	***SD**
20. Receptivity, cordiality and commitment of employees. 20. Receptividade, cordialidade e empenho dos funcionários.	5,79	1,29	3,79	1,38
29. Attendance and receptivity to the academic in their coordination. 29. Atendimento e receptividade ao acadêmico na sua coordenação.	6,12	1,17	4,24	1,62
34. Teachers who value student participation in events. 34. Professores que valorizam a participação de alunos em eventos.	6,20	1,21	4,42	1,60
37. Receptivity and friendliness on the part of the direction. 37. Receptividade e cordialidade por parte da direção.	5,94	1,26	3,90	1,42
Total average	**6,012**		**4,112**	
Caption: * SD = Standard Deviation.				



Source: Authors.

In agreement with Table 9, the most significant items for quality are attendance and receptivity to the academic who seeks their coordination and teachers who value the participation of students in events in the area.

In the perception, two items had a below-average rating: receptivity, cordiality, and commitment of the employees, and responsiveness and cordiality by the management.

The alternatives for improving these poorly evaluated items are training courses aimed at the public for education technicians and teachers in management positions.

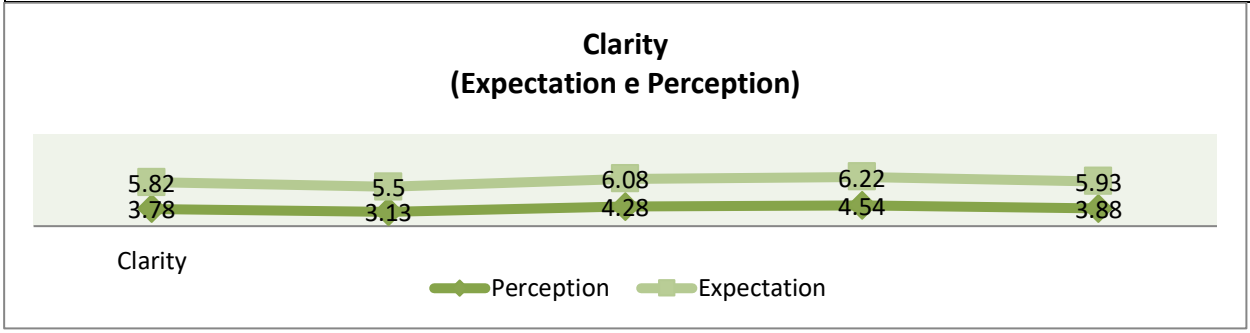
Overall, the perception of quality in this dimension was satisfactory, reaching a total average of 4.1. However, it is noted that the expectations were higher than the perceptions.

E. Clarity

The clarity dimension deals with the disclosure of the information (phone, internet, and in person) that the student needs concerning academic subjects, as seen in Table 10.

Table 10: Clarity (Expectation and Perception)

Clarity	**Expectation**		**Perception**	
Questions	**Average**	***SD**	**Average**	***SD**
18. Reports published clearly and easily accessible.	5,82	1,29	3,78	1,39
24. Phone information available to the student.	5,50	1,57	3,13	1,58
25. Appropriate and up-to-date institution website.	6,08	1,19	4,28	1,71
26. Easy access to academic information by the student center.	6,22	2,73	4,54	1,64
36. Easy communication on subjects pertaining to the direction.	5,93	1,26	3,88	1,4
Total average	**5,907**		**3,920**	
Caption: * SD = Standard Deviation.				



Source: Authors.

According to Table 10, the most essential items for quality were consultation of academic information via the student's center and the electronic page of the appropriate and updated institution on the internet.

Before the perception of the students, three items had deficits in the evaluation: Easy communication in the subjects pertinent to the direction; reports published clearly and easily accessible; and telephone information available to the student.

To meet the demands for communication, it is necessary to train the servers to serve and provide information to internal and external clients efficiently. In addition, it is pertinent that there be a management model that addresses the debate on strategic communication actions in the workplace in an integrated way.

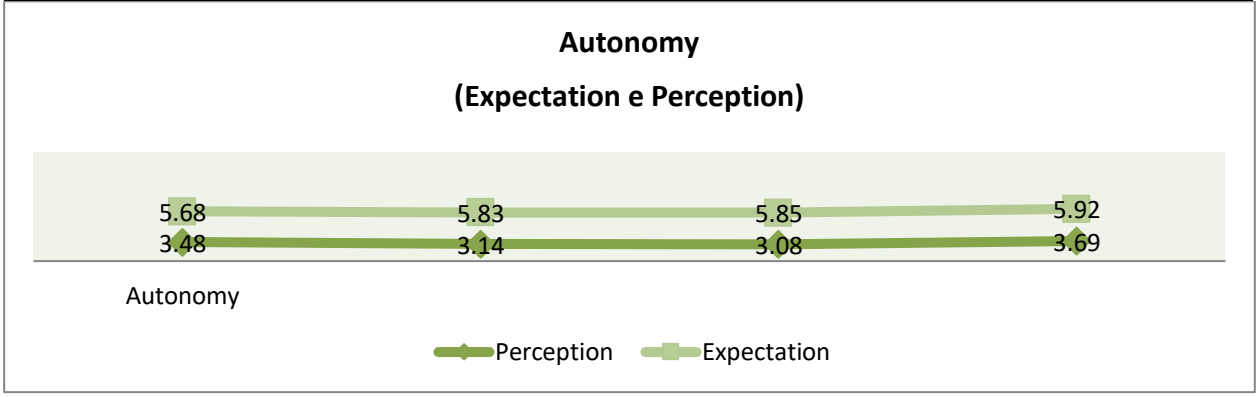
Overall, expectations were higher than perceptions. The perception of the clarity dimension had a total average of 3.9, characterizing, little by bit, the services rendered as unsatisfactory.

G. Autonomy

The dimension of autonomy in reflecting the freedom that the employees must solve the problems demanded by the students evaluates the autonomy of the administrative sectors when responding to the requirements of the students in a fast and efficient form, mainly in cases of urgency, as seen in Table 11.

Table 11: Autonomy (Expectation and Perception)

Autonomy	**Expectation**		**Perception**	
Questions	**Average**	***SD**	**Average**	***SD**
21. Autonomy for employees to solve problems.	5,68	1,38	3,48	1,40
22. Fast response to requests from academics.	5,83	1,49	3,14	1,43
23. Fast response for urgent requests.	5,85	1,51	3,08	1,49
38. Participatory leadership.	5,92	1,34	3,69	1,50
Total average	**5,820**		**3,348**	
Caption: * SD = Standard Deviation.				



Source: Authors.

According to Table 11, the items that are predominant for the quality are participatory direction, fast response to urgent requests, and Rapidity in responding to academic requests.

Within the scope of the perceptions, all the items that make up the autonomy dimension had a low evaluation, accounting for a total average of 3.3, qualifying the services as unsatisfactory.

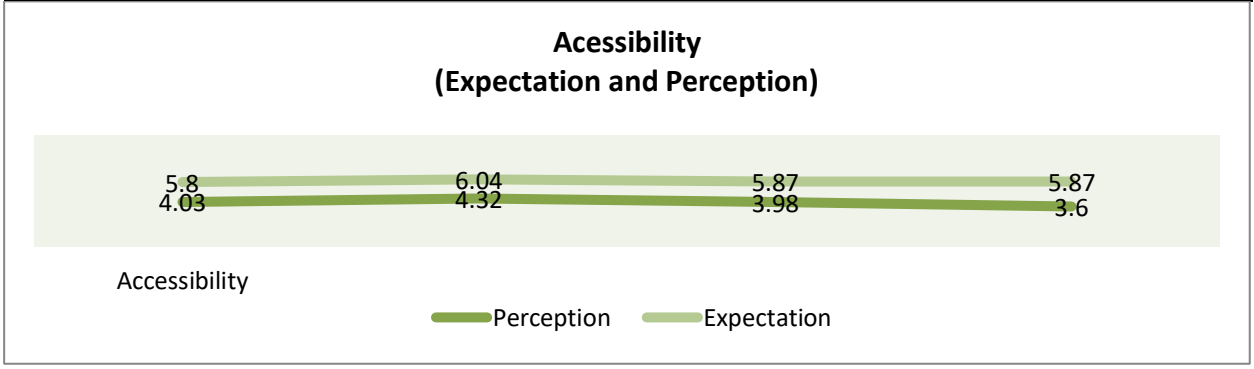
It is necessary to look at administrative procedures that give more autonomy to the employees and that the deadlines are shortened and accomplished, mainly when they characterize urgency. In addition, research has shown that a participatory and closer direction of students is needed to maximize the quality level.

H. Accessibility

Accessibility is related to the ease or difficulty the students find in using available resources and moving around the institution. In this way, the access to the dependencies and the hours of attendance and functioning, as well as the links of the coordination and departments, are updated on the institution's page on the internet, as seen in Table 12.

Table 12: Accessibility (Expectation and Perception)

Accessibility	**Expectation**		**Perception**	
Questions	**Average**	***DP**	**Average**	***DP**
5. Adequate access to all facilities.	5,80	1,30	4,03	1,47
12. Adequate library hours.	6,04	1,21	4,32	1,59
16. Office hours for the administrative departments that are appropriate to student demand.	5,87	1,32	3,98	1,44
30. Links of the coordination and departments updated on the page of the institution on the internet.	5,87	1,41	3,60	1,71
Total average	**5,896**		**3,984**	
Caption: * SD = Standard Deviation				



Source: Authors.

Depending on Table 12, there are appropriate library hours, attendance hours of the administrative sectors adequate to student demand, and links to the coordinations and departments updated on the institution's page on the internet, which are the most valuable items for quality.

Regarding the perception, the items Office hours of the administrative sectors adequate to the students' search, and links of the coordination and departments updated on the institution's page on the internet had a negative evaluation.

Policies such as flexibilization of the work shift in continuous shifts by the administrative sectors is an alternative to improve the attendance time of the students, question 16 in Table 12. Including the assignment and obligation to coordinators and department heads to maintain the links of coordination and Departments would improve the evaluation of question 30 in Table 12.

In this dimension, the expectations were higher than the perceptions, and the total measure of perception was 3.9, indicating that the offered services were not satisfactory. In short, it is estimated that the most critical dimensions of quality are Reliability (total average: 6,199) and Competence (total average: 6,119), and the least relevant are Autonomy (total average: 5,820) and Tangibility Total: 5,853).

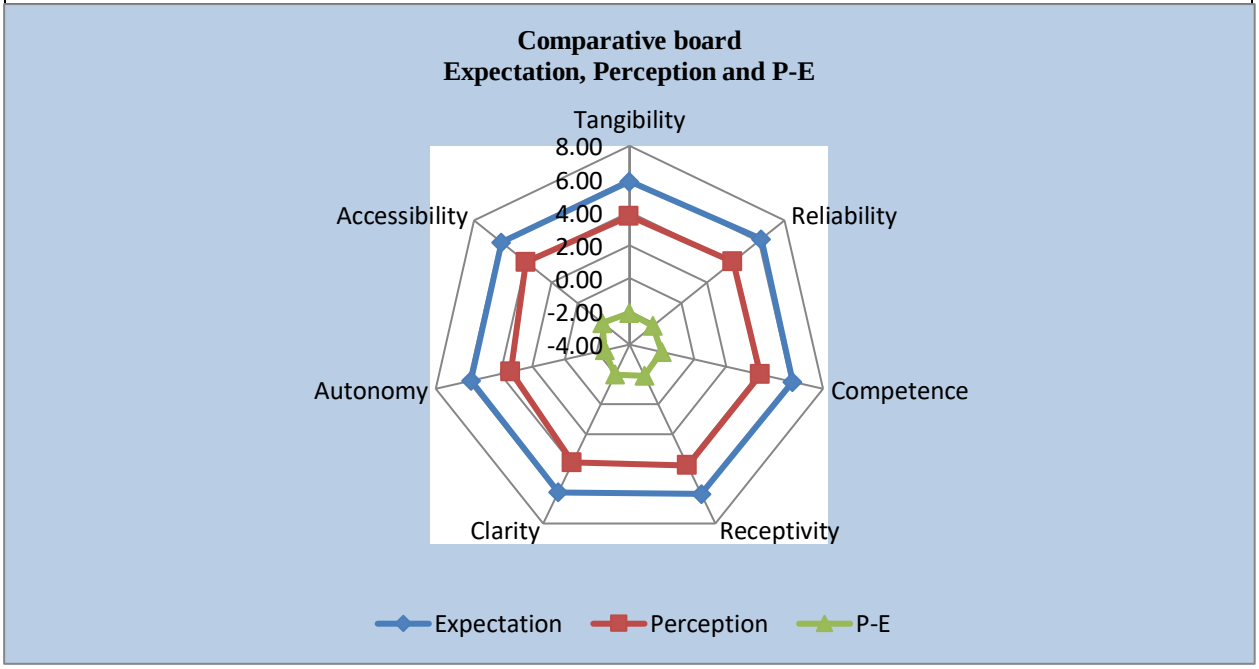
Based on the Analysis of perceptions, the best dimensions evaluated were Competence (total mean: 4.12) and Receptivity (total average: 4.11), and the worst dimensions evaluated were Autonomy (total mean: 3.34) and Tangibility 3.75).

5.2.2. Analysis of the difference between perception and expectation

This section quantifies the services provided by equation 1; quality is the difference between perception and expectation. As shown in Table 13 below.

Table 13: Difference between perception and expectation

Dimensions	Perception Total average	Expectation Total average	P-E
Tangibility	3,76	5,73	-1,97
Reliability	4,02	6,20	-2,20
Competence	4,12	6,12	-2,00
Receptivity	4,11	6,01	-1,90
Clarity	3,92	5,91	-1,99
Autonomy	3,35	5,82	-2,47
Accessibility	3,98	5,90	-1,92



Source: Authors.

Considering Table 13, we can deduce that all the equation results were negative. This result means that the perceptions do not match the expectations of the students, indicating the need for quality measures and customer satisfaction.

Nonetheless, when looking at the dimensions of perception individually, it can be concluded that the dimensions of Reliability, Competence, and reception provide satisfactory services. On the other hand, the dimensions of Tangibility, Clarity, Autonomy, and Accessibility have unsatisfactory services, requiring more urgent actions. Regarding the expectation, it was possible to identify that the students expect that the services are good or excellent, concentrating their evaluations between numbers 5 and 6 on the Likert scale.

6. Conclusions

Considering that aimed to evaluate the quality of services provided by the TF/FUA, it was possible to identify the expectations of the students about the services that Institutions of Higher Education of Excellence should provide to verify the students' perceptions regarding the quality of the services provided by TF/FUA, measure within the expectation the dimensions of greater and lesser relevance for quality, as well as within the perception of the best and worst dimensions evaluated and propose possible improvements in the provision of services by TF/FUA. In addition to assessing the difference between perception and expectation, the expectations were concentrated between numbers 5 and 6 on the Likert scale, in which it is possible to infer that students expect services to be good or excellent.

Regarding students' perceptions when looking at dimensions individually, it can be concluded that the dimensions of Reliability, Competence, and Receptivity have satisfactory services. On the other hand, the dimensions of Tangibility, Autonomy, and Accessibility have unsatisfactory services, requiring more urgent actions.

The most critical dimensions of quality are reliability (total average: 6,1994) and competence (total average: 6.12), and the least relevant are Autonomy (total average: 5.82) and Tangibility (total average: 5, 86).

Based on the analysis of perceptions, the best dimensions evaluated were Competence (total mean: 4.12) and Receptivity (total average: 4.11), and the worst dimensions evaluated were Autonomy (total mean: 3.34) and Tangibility 3.75).

When analyzing the difference between perception and expectation, it was possible to deduce that all the equation results were negative. These results mean that the perceptions do not correspond to the expectations of the students, indicating the need for measures for the quality and satisfaction of the students.

Thus, the study aimed to assist the management of TF/FUA in the process of self-knowledge regarding the quality of services provided for decision-making to improve services. Evaluation processes like those in the research should be performed periodically to promote continuous improvement.

In addition to assisting the management, the study aimed to support the student's consolidation as a university client, giving attention to their expectations, wishes, and perceptions regarding services, contributing to their Autonomy and participation in the service delivery process.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Author(s)

Carla França Medeiros has a master's degree in industrial engineering from the Federal University of Amazonas - UFAM (2017), a specialization in Public Policy Management from Manaus Metropolitan College (2013), and a degree in Social Service from the Federal

University of Amazonas (2009). She has been a Federal Employee at the Federal University of Amazonas since 2010.

Adalena Kennedy Vieira is an Associate Professor at the State University of Pará, Brazil. She holds a degree in Chemical Engineering from the State University of Campinas (Unicamp). She has over 20 years of experience working in university education.

Raimundo Kennedy Vieira was the Coordinator of the Post-graduate Program in Industrial Engineering and a Full Professor at the Federal University of Amazonas, Brazil. He has over 20 years of experience working in civil, materials, and industrial engineering, emphasizing developing green materials, environmental management, and production management, acting mainly in reusing industrial waste.

References

Albrecht, Karl. Quality Services: the competitive advantage. Sao Paulo. Makron Books, 1992.

Albrecht, Karl. Revolution in services - how companies can revolutionize the way they treat their customers. 5th ed. Publisher Pioneira, 256p., 1998.

Almeida, C.; Pscheira, C.; Seleme, R.; Muller, S.; Silva, R.. Perception of quality in higher education: application of SERQUAL in the undergraduate course in production engineering at UFPR. XL Brazilian Congress of Engineering Education, Belém, Sept., 2012. Available at: http://www.abenge.org.br/CobengeAnteriores/2012/artigos/104382.pdf. Accessed on 11 Jul. 2016.

Baker, D. M. A. (2013). Service quality and customer satisfaction in the airline industry: A comparison between legacy airlines and low-cost airlines. American Journal of Tourism Research, 2 (1), 67-77.

Brito, Rosa Mendonça de. 100 years UFAM. 2. Ed. Ver. Amp. - Manaus. Publisher Federal University of Amazonas, 2011.

Coelho, C. D. A. Evaluation of perceived quality in services: application in a private primary and secondary school. Florianópolis, 2004, 178 f. Dissertation (Master in Production Engineering) Post-graduation Program in Production Engineering, Federal University of Santa Catarina.

Fitzsimmons, J.; Fitzsimmons, M. Administration of services: operations, strategy, and information technology. 2. ed. Porto Alegre: Bookman, 2010.

Freitas, A.L.P., Costa, H. G. A Multicriteria Analysis for the Classification of Service Quality Using the ELECTRE TRI Method, Annals of XXIII ENEGEP - National Meeting of Production Engineering, Ouro Preto / MG, 2003.

Gokcen, N. 2014. "The Rise of Student Consumerism." The Psychologist 27: 940-1.

Gonçalves, T.; Belderrain, M.. Evaluation of quality in lan houses through the adaptation of the SERVQUAL instrument. Revista Produção Online, Florianópolis, v. 12, n. 1, p. 248-268, 2012.

Green, D. (1994). What Is Quality in Higher Education?. Taylor & Francis, 1900 Frost Road, Bristol, PA 19007-1598.

Grönroos, C. (1984). A service quality model and its marketing implications. European Journal of Marketing, 18 (4), 36-44.

Hoque, K. E., Zabidi, A., Othman, A.J., Mishra, P. K., & Sukor, R. (2013). Quality Services as perceived by students of International and Public schools. Life Science Journal, 10 (2), 74-78.

Jeevarathnam, P. G., Veerasamy, D., & Noel, D. T. (2014). The Service Quality Experience of International Students: The Case of a Selected Higher Education Institution in South Africa. Mediterranean Journal of Social Sciences, 5 (8), 465.

Kotler, P.; Keller, K. L. Marketing Administration. 14. Ed. São Paulo: Pearson Education Do Brasil, 2012.

Lacerda, Flávia Alves de Brito. Quality management: fundamentals of excellence. Brasília: SEBRAE, 2005.

Lupo, T. (2013). The fuzzy ServQual based method for reliable measurements of education quality in Italian higher education area. Expert systems with applications, 40 (17), 7096-7110.

Macowski, D.. Quality of services provided by an institution of higher education in the view of graduates: statistical analysis according to the SERVQUAL method. Federal University of Paraná, Postgraduate Program, Curitiba, 2007. Available at: http://www.ppgmne.ufpr.br/arquivos/diss/168.pdf. Access XXXIV National Meeting of Production Engineering Production, Infrastructure and Sustainable Development Engineering: The Agenda Brasil + 10 Curitiba, PR, Brazil, October 7 to 10, 2014. Access in July 20. 2016.

Mauri, A. G., & Minazzi, R. (2013). Web reviews influence on expectations and purchasing intentions of hotel potential customers. International Journal of Hospitality Management, 34, 99-107.

Melchor Cardona, M., & Bravo, J. J. (2012). Service quality perceptions in higher education institutions: the case of a Colombian university. Management Studies, 28 (125), 23-29.

Naidoo*, R., & Jamieson, I. (2005). Empowering participants or corroding learning? Towards a research agenda on the impact of student consumerism in higher education. Journal of education policy, 20(3), 267-281.

Oliver, R. L. (2014). *Satisfaction: A behavioral perspective on the consumer*. Routledge.

Oliveira, O.J.; Ferreira, E.C., Adaptation and Application of the SERVQUAL Scale in Higher Education. In: ENEGEP, XXIX, 2009 Salvador, pg. 1.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *the Journal of Marketing*, 41-50.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual. *Journal of retailing*, *64*(1), 12-40.

Pisoni, A., Boligon, J.A., R., Medeiros, F. S.B., Denardin, S.A. S., & Murini, L. T. (2013). Servqual Methodology: A Tool for the Evaluation of Quality of Services in an Agricultural Machinery Company. Revista Industrial Gestão, 9 (3).

Quester, P. G., Romaniuk, S., & Wilkinson, J. W. (2015). A test of four service quality measurement scales: the case of the Australian advertising industry. In *Proceedings of the 1995 World Marketing Congress* (pp. 384-391). Springer International Publishing.

Ranaweera, C., & Jayawardhena, C. (2014). Talk up or criticize? Customer responses to WOM about competitors during social interactions. *Journal of Business Research*, *67*(12), 2645-2656.

Ravindran, S. D., & Kalpana, M. (2012). Student's Expectation, Perception and Satisfaction towards the Management Educational Institutions. *Procedia Economics and Finance*, *2*, 401-410.

Sardar, A., Amjad, S., & Ali, U. (2016). An empirical analysis of the service quality gap in business education: Evidence from higher education in Pakistan. *Journal of Education for Business*, *91*(3), 148-158.

Siu, N. Y. M., Zhang, T. J. F., & Kwan, H. Y. (2014). Effect of corporate social responsibility, customer attribution and prior expectation on post-recovery satisfaction. *International Journal of Hospitality Management*, *43*, 87-97.

Sofi, M. R., Hakim, I. A., & Gadoo, M. R. (2016). Service Quality Variables and Tourist Satisfaction at Destination Level–A Study of J&K Tourism. *International Journal of Applied Research and Studies*, *3*(2).

Souza, E.; Meira, J.; Maske, D.. A medição da Qualidade dos serviços prestados em hotéis de Balneário Camboriú, SC: Uma aplicação do modelo SERVQUAL. Revista Rosa dos Ventos, v. 4, n. 4, p. 544,555, 2012.

Su, L., Swanson, S. R., & Chen, X. (2016). The effects of perceived service quality on repurchase intentions and subjective well-being of Chinese tourists: The mediating role of relationship quality. *Tourism Management*, *52*, 82-95.

Tseng, S. M., & Wu, P. H. (2014). The impact of customer knowledge and customer relationship management on service quality. *International Journal of Quality and Service Sciences*, *6*(1), 77-96.

Ufam. Manaus, Federal University of Amazonas. Management Report of Ufam, 2015.

Ufam. Manaus, Federal University of Amazonas. Contains institutional information, techniques, news, projects, publications and services. Available at http://www.ufam.edu.br/informacoes-sobre-a-ufam. Accessed on: 02 Aug. 2016.

Xiao, J., & Wilkins, S. (2015). The effects of lecturer commitment on student perceptions of teaching quality and student satisfaction in Chinese higher education. *Journal of Higher Education Policy and Management*, *37*(1), 98-110.

Wong, I. A., & Dioko, L. D. A. (2013). Understanding the mediated moderating role of customer expectations in the customer satisfaction model: The case of casinos. *Tourism Management*, *36*, 188-199.

Yousapronpaiboon, K. (2014). SERVQUAL: Measuring higher education service quality in Thailand. *Procedia-Social and Behavioral Sciences*, *116*, 1088-1095.