QUALITY OF EDUCATIONAL SERVICES IN THE PANDEMIC PERIOD OF COVID-19: A STUDY IN A BUSINESS ADMINISTRATION COURSE

QUALIDADE DOS SERVIÇOS EDUCACIONAIS NO PERÍODO DA PANDEMIA DA COVID-19: UM ESTUDO NUM CURSO DE ADMINISTRAÇÃO

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Abstract Education is considered a service that is provided to society, and higher education institutions play an important role in providing this service. In view of the implications and changes resulting from the covid-19 pandemic, these institutions had to adapt so that teaching could migrate from face-to-face to remote. Therefore, this study aims to analyze the perception of students from the administration course at the State University of Rio Grande do Norte, Campus Pau dos Ferros, on the quality of educational services provided during the Covid-19 pandemic period. Therefore, quantitative research was carried out, characterized as descriptive exploratory, through a field study with application of a questionnaire, answered by 145 students. Descriptive statistical techniques and exploratory factor analysis were used to process the data. The results obtained show that the teacher dedication construct, which brings together variables that are related to the dedication and interaction of teachers with students, received the highest score related to the quality of the service provided. The only variable that showed an average above four and does not belong to the aforementioned construct also involves teachers and their relationship with students. The components of the other constructs did not obtain highlighted scores, which indicates that they are points where improvements are needed. In general, it is concluded that the investigative aspects of the research indicate that the course provides quality educational services.

Keywords: Remote Education; Higher Education; Quality.

Resumo. A educação é considerada um serviço que se presta à sociedade, e as instituições de ensino superior cumprem papel importante na prestação desse serviço. Em vista as implicações e mudanças decorrentes da pandemia da covid-19, essas instituições tiveram que se adaptar para que o ensino migrasse do modo presencial para o remoto. Diante disso, o presente estudo tem por objetivo analisar a percepção dos discentes do curso de administração da Universidade do Estado do Rio Grande do Norte, Campus Pau dos Ferros, sobre a qualidade dos serviços educacionais proporcionados no período da pandemia da Covid-19. Para tanto, fez-se uma pesquisa de natureza quantitativa, caracterizada como exploratória descritiva, por meio de um estudo de campo com aplicação de um questionário, respondido por 145 discentes. Foram utilizadas técnicas de estatística descritiva e análise fatorial exploratória para o tratamento dos dados. Os resultados obtidos apontam que o constructo dedicação docente, que reúne variáveis que estão relacionadas a dedicação e interação dos docentes com os alunos, receberam a maior pontuação relacionada a qualidade do serviço prestado. A única variável que apresentou média acima de quatro e não pertence ao constructo supracitado também envolve os professores e sua relação com

os alunos. Os componentes dos demais constructos não obtiveram pontuações destacadas, o que indica que são pontos onde melhorias se fazem necessárias. De modo geral, conclui-se que os aspectos investigativos da pesquisa apontam o curso presta serviços educacionais de qualidade.

Palavras-chave: Ensino Remoto; Ensino Superior; Qualidade.

1. INTRODUCTION

Education is considered a service provided to society, and due to its nature, it requires cooperation among the parties involved in the process for the goals to be achieved. For this reason, the student, who is a participant and benefits from this service, plays an important role in evaluating its quality.

Higher education (HE) has been extensively explored in academic research. In this context, with the increasing demand for higher education and the growing number of available slots for students, the quality of services provided by higher education institutions (HEIs) has been garnering more attention, leading to the need to identify and establish parameters for evaluating these services (Pacheco, Mesquita & Dias, 2015).

The Ministry of Education periodically conducts external institutional evaluation processes; however, these surveys do not use students as the primary source of information, except regarding the knowledge acquired by them during their graduation (Lourenço & Knop, 2011). The use of instruments for internal evaluation thus becomes indispensable for any HEI committed to the pursuit of process improvement and student satisfaction, as students are believed to be significant actors within institutions.

The literature on the quality of educational services indicates that it is imperative for HEIs to assess the quality of the services they provide to commit to continuous improvement (De Jager & Gbadamosi, 2010). Therefore, it is essential to use instruments to measure the quality of services provided, given the significant implications and changes resulting from the COVID-19 pandemic, which forced individuals and institutions to reorganize their activities. HEIs had to adapt and undergo operational changes, causing the transition from in-person to remote learning.

Considering the aforementioned and acknowledging the changes resulting from the current scenario in which HEIs find themselves, this study presents the following research problem: What is the perception of students about the quality of educational services in higher education administration during the Covid-19 pandemic? Guided by this question, this study aims to analyze the perception of students in the administration course at the University of the State of Rio Grande do Norte, Campus Pau dos Ferros, regarding the quality of educational services provided during the Covid-19 pandemic.

This study is justified by the need to analyze students' perceptions regarding the educational services offered by the institution in remote form, which differs from the in-person mode in which the course began and had to adapt due to the global health crisis. Furthermore, for others interested in the topic, this research could serve as a source of study, considering the need to stimulate new discussions on the topic.

The structure of the article, in addition to this introduction, contains four more sections. The second section presents the theoretical framework. The third section introduces the methodology used in the study. The fourth section constitutes the presentation and discussion of the results, and the fifth section refers to the final considerations. In addition to the aforementioned sections, the article also includes the references used throughout the research.

2. QUALITY IN EDUCATIONAL SERVICES

In the global scenario, numerous studies, such as those by Libâneo (2017), De Jager, Gbadamosi (2010), and Abdulah (2006), have focused on the quality of educational services,

particularly in higher education. In Brazil, Souza, Barros, Vita, Araújo, and Guimarães Junior (2020), Silva, Souza, and Menezes (2020), and De Paula and Matos (2019) reflect on the theme, applying different tools under multiple theoretical-methodological approaches.

Quality in services is everything the customer perceives as such. Therefore, for the customer, the quality standard will be excellent when the experienced quality meets or exceeds their expectations (Parasuraman, Zeithaml & Berry, 1988; Kotler, 1998). Regarding the quality of educational services, HEIs must provide services with a high standard of quality, ensuring student satisfaction and increasing the likelihood of attracting new students (Milan, Eberle, Corso & De Toni, 2015).

Wojahn, Ramos, and Carvalho (2018) conducted a study seeking to present a new proposal for evaluating satisfaction with the quality of educational services at various levels, from elementary to postgraduate education. The elements of the proposed model were adapted from studies on service quality by Parasuraman et al. (1985), social capital by Coleman (1988), and didactics by Libâneo (1994).

Regarding the research method defined by the authors, eight dimensions were initially listed, including the dimensions mentioned above. These dimensions are tangible aspects, competence, security, courtesy, accessibility, relationships with peers, relationships with professors, and didactics. The model showed reliability indices above average, proving to be a model capable of evaluating satisfaction with the quality of higher education by students (Wojahn et al., 2018). It was also observed that the dimensions of Coleman's model (1998) were discarded as they were not significant for the study, and the dimension with the highest satisfaction percentage was didactics, with 66.4% (Wojahn et al., 2018).

When analyzing satisfaction with the quality of education, didactics or teaching methods have also proven to be an issue that needs evaluation. Didactics studies the conditions and forms that enhance teaching, as well as the conditioning factors in the teaching-learning relationship. Techniques, resources, or teaching methods are complements made available to the teacher to improve the methodology and teaching process (Libâneo, 2017).

Sources, Silveira, Domingues, and Souza (2011) conducted research aiming to analyze the quality of services in HE through the application of the SERVPERF and HEdPERF models developed by Cronin and Taylor (1992) and Abdulah (2006) respectively. The goal was to identify the performance of quality attributes in educational services of higher education courses, compare their results, and verify differences in the performance of their attributes.

The study revealed that both models were validated without error through reliability/validity analysis. However, among the models, the one considered more suitable for evaluating the provision of educational services is the HEdPERF model, as it showed better performance. This corroborates with Deschamps (2007), who also indicates the model as more suitable for measuring quality attributes in educational services (Fontes et al., 2011).

The quality of educational services has been discussed from various perspectives, complementing and sometimes conflicting with each other. "Perhaps the cause of this diversity of approaches is the very conceptualization of quality in education, which is diffuse and permeates discussions involving different points of view" (Ikeda & Oliveira, 2005, p. 201).

2.1 Evaluation of quality in educational services

Over the years, quality management experts have developed methods to improve the quality of services. Regarding higher education, various researchers see the implementation of quality practices as a way to ensure that higher education institutions can perform well and that users, in this case, students, have their expectations met (Berry & Parasuraman, 1991; Sohail, Rajadurai & Rahman, 2003).

However, higher education institutions need to diagnose the factors that affect the quality of their services, understanding it as a fundamental element of user perception and mastering

the process of evaluating the dimensions that constitute the pursuit of continuous improvement (Gouvea, Onusic & Mantovani, 2016; Souza et al., 2020).

Nevertheless, achieving this continuous improvement will only happen through addressing the limitations diagnosed by correctly measuring the quality of services (De Jager & Gbadamosi, 2010). Such measures can help HEIs prioritize attributes that most affect the perception of the quality of educational services from the students' perspective (Sunder, 2016). Some of these attributes are linked to the cooperation and attentiveness involving teachers and students, which can contribute to achieving better conditions of quality in teaching. Additionally, the sharing and application of knowledge become more effective, aiding in creativity and innovation in teaching (Machado, Urpia & Forno, 2018).

In an effort to improve student satisfaction and behavioral intentions, it is essential for HEI managers to encourage the conduct of research to assess service quality (De Paula & Matos, 2019). At the same time, service management must incorporate a new way of thinking in higher education, taking into account the relevant variables, as depicted in Figure 1, which drive quality demands (Sunder, 2016).



Figure 1. Relevant Variables for Improving Quality in Higher Education.
Source: Adapted from Sunder (2016).

Based on various conceptions regarding the quality of education and the different concerns about its scope, different tools with various indicators can be used to assess the quality of services in higher education, resulting in instruments that may not encompass all aspects of the service delivery process (De Jager & Gbadamosi, 2010; Cheng & Tam, 1997).

In view of this, the measurement of service quality has gained extensive coverage with various tools that can be applied in diverse contexts. The most popular scales for this type of research include the SERVQUAL model – service quality, by Parasuraman et al. (1988); the SERVPERF scale – service performance, developed by Cronin and Taylor (1992); and the *HedPERF* method (Higher Education Performance-only) - Scale of higher education performance, by Abdullah (2005, 2006), a method specifically created to measure the performance of the quality of educational services.

HedPERF is a model focused on measuring quality in services, specifically in the provision of higher education, being the first model developed with this focus. Thus, the *HedPERF* model is an instrument capable of measuring the quality of educational services of an institution of higher education (IES). The instrument consists of a set of 41 items, considering not only the components of academia but also the factors provided by the service environment experienced by the student (Abdullah, 2005).

The application of *HedPERF* is carried out through five dimensions, described as factors, and can be observed in Table 1 presented below.

Table 1. Dimensions of the *HEdPERF* Model.

FACTOR – 1	Reputation	Factor indicating the importance of HEIs in projecting a professional image.
FACTOR – 2	Access	Items related to matters such as ease of contact, accessibility, availability, and convenience.
FACTOR – 3	Academic Aspects	Factor of exclusive responsibility of the students.
FACTOR – 4	Program Themes or Issues	Questions regarding the academic program with specializations, flexible structure, and curriculum.
FACTOR – 5	Non-Academic Aspects	They are essential to enable students to fulfill their study obligations; they are not functions performed by teachers.
FACTOR – 6	Understanding	Includes items focused on understanding the specific needs of students regarding counseling and health services.

Source: Developed by the authors based on Abdulah (2006).

Abdullah (2006) asserts that the HEdPERF scale is valid and reliable, as it has been empirically tested, and the set of results demonstrated superiority over other tested tools. Furthermore, he suggests that HEIs should use the model as a management tool to improve their performance, focusing on what they consider important and working towards various attributes essential for the excellence in the quality of services they provide.

2.1 Contributions of research related to remote teaching

The ongoing changes in the current scenario, prompted by the Covid-19 pandemic, have created gaps and dilemmas in the education sector, emphasizing the importance of conducting studies aimed at addressing these challenges. According to Silva et al. (2020), the main difficulties faced by students in continuing their studies remotely include low-quality internet, limited access means, lack of equipment such as laptops and desktops, limited familiarity with digital technologies, and inadequate space to attend classes, leading to lower student performance.

In this regard, Silva et al. (2020) highlight the relevance of prior planning, without excluding the main stakeholders in this new format of teaching, namely students and teachers, to minimize various factors influencing the effectiveness of this education modality. Without proper planning, training, and minimal structuring, remote teaching can be detrimental to the teaching-learning process.

According to Soares, Pinho, Matos, Lopes, Cerqueira, and Souza (2021), with prior planning and the integration of digital technologies and platforms into remote teaching, there is an opportunity for improved teaching quality and enhanced learning. Additionally, according to Cani, Sandrini, Soares, and Scalzer (2020), a digital environment allows for the creation of engaging and interactive lessons not only during the Covid-19 pandemic but emphasizes the need to provide teachers and students with the necessary conditions for using these technological resources.

It is important to note that there are criticisms of technology-mediated education, particularly in countries with social inequality like Brazil, as it may lead to more exclusion than

social inclusion due to the limited access of all students to the internet and technological devices (Godoi, Kawashima, Gomes & Caneva, 2020). Moreover, there should be concern for students regarding the new learning environment, as this change may result in emotional stress when confronted with their performance in this new scenario (Santos, Campos, Sallaberry & Santos, 2021).

3. MATERIAL AND METHODS

Regarding the nature of the research, it is characterized as quantitative, which, through the use of statistical techniques, seeks to analyze the information obtained by the researcher (Prodanov & Freitas, 2013). The study in question, concerning its objectives, is classified as exploratory-descriptive, aiming to provide greater familiarity with the problem at hand for a better understanding. It also seeks to identify the characteristics of a particular population or phenomenon, as well as possible relationships between variables (Gil, 2017).

In terms of procedures, the present study is classified as a field research, aiming to obtain information and/or knowledge about a specific problem for which answers are sought. The purpose is to discover new phenomena or relationships among them (Markoni & Lakatos, 2017). It was conducted among students of the administration course at the Advanced *Campus* of Pau dos Ferros (CAPF) of the State University of Rio Grande do Norte (UERN).

The Administration course at CAPF/UERN has 236 students; however, of these, only 195 have active enrollments and are attending the undergraduate program during the period of this research. From this universe, students from the 1st, 2nd, 4th, 6th, 8th, and 10th periods were selected as research subjects. They have benefited from the educational services of the institution during the Covid-19 pandemic (periods 2020.1, 2020.2, and 2021.1). For data collection, the non-probabilistic sampling technique by accessibility or convenience was used (Gil, 2008). With the help of a sample calculator using the equation below and aiming for a confidence level of 95% and a margin of error of 5%, the sample size would be 130 students. However, 145 respondents were reached.

$$\frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1+\left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

Equation 1. Sample Size Calculation Equation.

The equation is represented by the following items: n = sample size obtained through the calculation; N = total population belonging to the research; Z = deviation indicated to the acceptable mean value for the confidence level to be reached; e = maximum margin of error allowed by the research; p = the proportion we aim to find in the calculation.

The data collection instrument used was an adapted version of *HedPERF* (*Higher Education Performanceonly*) - Higher Education Performance Scale by Abdullah (2005). The questionnaire (Appendix A) was adapted to better understand the research objectives and consisted of 54 questions. Adaptations were made in the Reputation (course) dimension, which previously focused on the institution; Access, where the statements were institution-focused and, after modifications, focused on the course; and Academic Aspects, where the statements were adapted for remote teaching, which was previously in-person.

The first section presented four questions related to the respondent's profile. In the second section, 50 questions related to the importance of the six dimensions of service quality being measured were presented, with appropriate adaptations. Additionally, three dimensions were developed to better understand aspects of remote teaching.

The dimensions are: a) Reputation (Course); b) Access; c) Academic Aspects; d) Programmatic Contents; e) Non-Academic Aspects; f) Understanding; g) and the developed dimensions: Remote Teaching Aspects; h) Digital Inclusion; i) Information Technology (IT) Support. Dimension f) Understanding can be understood within the scope of the other factors or independently.

For respondents to indicate their perception, a Likert scale ranging from 1 to 5 was used, as shown in Table 2 below.

Table 2. Likert Agreement Scale

Disagree/Strongly disagree	Partially disagree	Indifferent/Neutral	Partially Agree	Agree/Strongly Agree
1	2	3	4	5

Source: Developed by the authors (2021).

The questionnaire was included in *Google Forms* for a pilot test with five people. After conducting the pilot test, it was observed that there was a need for changes in spelling and semantic issues to enhance respondents' understanding. Data collection took place between September 27 and October 8, 2021. The collection was conducted during synchronous classes, where teachers allocated a specific time for the research to be applied.

The collected data were analyzed using the *Statistical Package for the Social Sciences* - SPSS, version 25. The treatment was done through descriptive statistics, which transforms the collected data into information through tables and graphs to achieve the defined objectives (Gil, 2017). Furthermore, Exploratory Factor Analysis (EFA) was used, a technique that helps identify clusters among variables through the presented factor loadings, exploring the data and providing information about the number of factors needed to represent them (Hair, Black, Babin, Anderson, and Tatham 2009).

After data analysis, it was decided that in this study, the only dimensions to be addressed would be: Academic Aspects in Remote Teaching and Remote Teaching Aspects since they directly dealt with remote teaching. The data obtained in the other dimensions will be used in another research. Additionally, the schematic summary of the methodological aspects can be observed in Table 3.

Table 3. Schematic Synthesis of Methodological Aspects

RESEARCH CHARACTERIZATION		RESEARCH SETTING	
Methodology	Quantitative	Research Location	UERN/CAPF Administration Course
Research Type	Exploratory - Descriptive	Universe	195 Students
Method	Field Research	Sample	130 Respondents
Data Collection Instrument	Adapted version of *HedPERF* (*Higher Education Performanceonly*) - Higher Education Performance Scale, applied to students via *Google Forms*	Sampling Type	Non-probabilistic Convenience Sampling
Data Analysis	Descriptive statistics and Exploratory Factor Analysis	Confidence Level and Margin of Error	95% and 5% respectively
Time Frame	Between September 27 and October 8, 2021	Total Responses Obtained	145 responses.

Source: Developed by the authors based on the research data (2021).

4. RESULTS AND DISCUSSION

The first part of this section is intended for presenting the profile of the respondents, followed by the descriptive statistics of the model, and finally, the results related to the exploratory factor analysis. With that said, the following, as shown in Table 4, presents the profile of the research subjects.

Table 4. Profile of the Respondents.

CHARACTERISTICS		FREQUENCY	PERCENTAGE
GENDER	Male	83	57,6%
	Female	61	42,4%
MARITAL STATUS	Single	106	73,6%
	Married	17	11,8%
	Common-law marriage	17	11,8%
	Divorced	3	2,1%
AGE	17-18	10	6,9%
	19-29	113	78,5%
	30-45	20	13,9%
	46-59	-	-
	Acima de 60 anos	1	0,7%
ORIGINAL COURSE PERIOD	1°	32	22,2%
	2°	30	20,8%
	4°	24	16,7%
	6°	20	13,9%
	8°	17	11,8%
	10°	21	14,6%
TOTAL		145	100%

Source: Research Data (2021).

As shown in Table 4, of the total respondents, 57.6% belong to the male gender, and 42.4% belong to the female gender. The majority have a younger profile, represented by 78.5%, with an average age between 19 and 29 years. Additionally, according to the marital status of the research participants, 73.6% stated that they are single.

Regarding which period the students were originally enrolled in during the data collection period, the majority belong to the 1st and 2nd periods, with 22.2% and 20.8%, respectively. The periods 6, 8, and 10 presented percentages ranging from 11.8% to 14.6%. This fact may be related to dropout rates in higher education, which has multiple possible origins and is a serious issue that can affect not only the student but also their family, the teacher, the university, and society (Mussliner, Mussliner, Meza & Rodríguez 2021).

The second part of the analysis involved the use of descriptive statistics to identify the mean and standard deviation of the variables analyzed, as shown in Table 5. To obtain this information, respondents were asked to express their agreement or disagreement with the statements presented.

Table 5. Descriptive statistics of the model.

V	Affirmative	Media	Standard Deviation
1	The teachers have the knowledge to answer my questions related to the course content	4,30	0,638
2	Teachers are attentive and courteous in their communications with me	4,12	0,734
3	Teachers are never too busy to address my requests for assistance	3,39	0,837
4	When I have a problem, teachers show a sincere interest in resolving it	3,91	0,784
5	Teachers demonstrate a positive attitude towards students	4,09	0,636
6	Teachers communicate well in the online classroom (Google Meet)	4,22	0,660
7	Teachers understand when a student is having internet connection issues	4,22	0,714

8	Teachers provide feedback on my progress during the semester	3,46	0,981
9	Teachers make enough and convenient time available for consultations	3,73	0,750
10	Teachers are well-informed and experienced in their respective fields of knowledge	4,20	0,705
11	The institution provides necessary training on digital tools used in remote teaching	3,59	0,927
12	The training is periodic	3,05	0,941
13	The training is important	4,42	0,642
14	The training for remote teaching was sufficient for me to carry out all activities satisfactorily	3,43	1,042
15	I was able to use all the tools used by teachers in online classes satisfactorily	3,84	0,951
16	The level of difficulty of synchronous and asynchronous assignments and assessments aligns with the content taught in classes	3,67	0,893
17	Assignments and assessments carried out in remote teaching contribute equally to my development in the course as activities and assessments carried out in person	3,28	1,100
18	I am satisfied with the course's development during the remote teaching period	3,42	1,048
19	I am satisfied with my performance during the remote teaching period	3,45	1,115

Source: Research Data (2021).

In Table 5, the students' perceptions regarding the quality of educational services provided during the Covid-19 pandemic by the Administration course at CAPF are presented, and it is possible to identify the items with higher averages. Thus, in statement V13, with an average of 4.42, students emphasized that "The training is important" for the development of remote classes. In second place, V1 with an average of 4.30 highlights that "Teachers have the knowledge to answer my questions related to the course content," demonstrating mastery of the subjects they are teaching.

Following this, V6 and V7 with averages of 4.22 emphasize that "Teachers communicate well in the online classroom (*Google Meet*)" and "Teachers understand when a student is having internet connection issues," demonstrating good preparation by the teacher as well as empathy towards students and their constraints.

Other items highlighted with a high degree of relevance are V10 and V2 with averages of 4.20 and 4.12, respectively, highlighting that "Teachers are well-informed and experienced in their respective fields of knowledge" and "Teachers are attentive and courteous in their communications with me."

The results emphasize the importance of training students to enter remote learning and the preparation of teachers to assist these students during classes. The relationship with teachers is a strong attribute for the development of online classes, as it corresponds to the trust bonds between individuals, impacting better results (Wojahn *et al.*, 2018).

Furthermore, the findings are similar to the study by Milan et al. (2015), which highlights the interaction of teachers as a factor that helps in learning and developing knowledge, in addition to highlighting the importance of having professionals with technical or scientific skills in certain areas of knowledge.

In the subsequent analysis, aiming to identify the main variables representing the set of observed aspects, Exploratory Factor Analysis (EFA) was performed to understand the factors related to the perception of the quality of educational services. For this purpose, the following indices were developed: *Cronbach's Alpha*, greater than 0.6; *Bartlett's Sphericity*, less than 0.5; *Kaiser-Meyer-Olkin* (KMO), equal to or greater than 0.5 highlighted in Table 5, and then the *Communalities*, equal to or greater than 0.5 (Hair *et al.*, 2009).

Table 6. Results of the tests for consistency of the observable variables for use in the EFA

Cronbach's Alpha	Bartlett's Sphericity	KMO	Explained Variance (%)
0,891	0,000	0,874	66,6

Source: Research Data (2021).

After concluding the model evaluation tests, it was found, based on the results in Table 6, that the *Cronbach's Alpha* was 0.891, indicating high authenticity of the factors concerning their relationship with the observed variables. *Bartlett's Sphericity* with a value of 0.000 indicated statistical significance, validating the use of EFA. Regarding the KMO, the result of 0.874 confirmed that it is in accordance with acceptable standards for explained variance (Hair *et al.*, 2009). There was also a significant degree of explanation and relevance of the model, with 66.6% consistency. All tests showed positive results, confirming the relevance of the research, as well as the contribution of the variables to the quality of educational services during the Covid-19 pandemic.

It is worth noting that none of the 19 variables evaluated were excluded from factor extraction, as all presented *Communalities* greater than 0.5 (Table 6), highlighting their importance in explaining the factors. Next, the test of total explained variance was conducted to detect the number of factors generated based on the set of variables, as indicated in Table 7.

Table 7. Total Explained Variance Test

Factor	Initial eigenvalues			Sum of squared loadings			Sum of squared loadings after rotation		
	Total	% de Variance	% cumulative	Total	% de Variance	% cumulative	Total	% de Variance	% cumulative
1	6,930	36,473	36,473	6,930	36,473	36,473	3,534	21.653	21.653
2	3,270	17.246	53.719	3,270	17.246	53.719	2,498	18.147	39.800
3	1,401	7,373	61.092	1,401	7,373	61.092	2,428	15.889	55.689
4	1,047	5,509	66.601	1,047	5,509	66.601	2,379	10.912	66.601

Source: Research Data (2021).

From the set of variables, four factors were formed, explaining 66.6% of the total variability in the data. The completed factorial composition and respective satisfaction variables regarding the educational services provided by the Administration course at UERN/CAPF during the Covid-19 pandemic are displayed below.

Table 8. Exploratory Factor Analysis

Variables	Construct	Com.	F1	F2	F3	F4
1	Teaching Dedication	0,660	0,749			
2		0,701	0,604			
4		0,657	0,658			
5		0,687	0,662			
6		0,676	0,675			
10		0,686	0,692			
13		0,546	0,593			
7	Remote Teaching Aspects	0,725		0,763		
17		0,661		0,740		
18		0,821		0,883		
19		0,796		0,842		
11	Training/Capacity Building	0,767			0,841	
12		0,684			0,777	
14		0,681			0,702	
15		0,670			0,538	
3	Cooperation and Attentiveness	0,542				0,588
8		0,664				0,744

9	0,533	0,535
16	0,597	0,590

Source: Research Data (2021).

Given the information presented in Table 8, it can be observed that Factor 1 (F1), labeled "Teaching Dedication," brought together variables V1, V2, V4, V5, V6, and V10, as these variables are related to the dedication and interaction of teachers with students, in this case, students of the Administration course. Supporting this idea, De Jager and Gbadamosi (2010) point out that satisfaction in an educational environment depends on the interaction between students and teachers, and this interaction translates into a potentially high-quality teaching experience.

Regarding this aspect, Pacheco et al. (2015) state that when students are satisfied with the education provided by the institution, it positively influences the perception that new students and society have of it. It should be noted that variable 13 ("Training is important") was positioned in Factor 1 and not in Factor 3, which would be more suitable for it considering its content or meaning (Hair et al., 2009). It is worth highlighting that the highest averages obtained (Table 5) are grouped in Factor 1.

Next, Factor 2 (F2), labeled "Remote Teaching Aspects," formed by the grouping of items V7, V17, V18, and V19, as this set of variables aligns with elements experienced by students during the pandemic period.

Even when providing the planned content in traditional classes with little or no change in the pedagogical status quo, remote teaching is carried out in a different environment than usual. This can lead students to concerns about time management and learning, as well as increase emotional stress in the new environment, which can result in a decline in student performance (Santos *et al.* 2021).

On the other hand, with the challenges posed by this new work condition, there is concern among teachers to adapt their teaching strategies and develop new methodologies that understand the interests and needs of students to improve experiences in this new environment (Godoi *et al*., 2020).

The next group, Factor 3 (F3), was named "Training/Capacity Building" and was formed by the combination of variables V11, V12, V14, and V15, as this set of variables points to training aspects for the development of student activities during the remote teaching period.

The training and capacity building of students for the use of Information and Communication Technologies in the school context are relevant factors. One of the main challenges faced in remote teaching is related to the difficulties students face in using these tools (Godoi *et al.*, 2020). Furthermore, even with the necessary training, students may still resist changes and be shy in this new form of social interaction. It is worth noting that students who attend college in the distance learning modality have a different profile than students who attend in-person classes and have undergone this change.

The last group, Factor 4 (F4), titled "Cooperation and Attentiveness," considering its grouping with variables V3, V8, V9, and V16, represents actions that assist students throughout their undergraduate studies. F4 is similar to F1, as its variables present aspects of the interaction of teachers with students, whether synchronous or asynchronous.

For Machado *et al.* (2018), through this cooperation and attentiveness involving teachers and students, achieving better conditions of quality in teaching becomes possible. Additionally, the sharing and application of knowledge become more effective, which can help foster creativity and innovation in teaching. It is also noticeable that the averages (Table 5) of these factors are above three but below four, demonstrating the need for improvement, as a score of three on the agreement scale (Table 2) denotes indifference to the presented statements.

Finally, with the Exploratory Factor Analysis grouping 19 variables into four factors (F1, F2, F3, and F4), it was demonstrated that these factors are determining for the quality of

educational services during the Covid-19 pandemic and contribute to improving the experience in higher education remotely. It was also possible to identify variables that may represent possible gaps in remote teaching, enabling teachers to take actions to improve the process of providing educational services in higher education in Administration, a generalist course that requires a good structure to assist students in developing the skills and competencies necessary for success in their professional lives.

5. CONCLUSION

Considering the objective of this research, which is to analyze the perception of students in the Administration course at the State University of Rio Grande do Norte, Campus Pau dos Ferros, regarding the quality of educational services provided during the Covid-19 pandemic, it is inferred that, through the application of EFA (Exploratory Factor Analysis), four determining factors for the quality of educational services were identified, named "F1: Teaching Dedication," "F2: Aspects of Remote Teaching," "F3: Training/Capacity Building," and "F4: Cooperation and Attentiveness," which explain the set of variables used in the study.

Based on the research findings, it is evident that, regarding Teaching Dedication aspects, the Administration course, through its teachers, provides students with quality classes, with good communication in the virtual classroom (Google Meet). Furthermore, its professors are well-informed and experienced in their respective fields of knowledge, providing students with professionals capable of addressing their doubts regarding the course content. In terms of Cooperation and Support, students indicated that professors make sufficient and convenient time available for consultations, but as it did not reach an average of four, this is one of the aspects that need improvement, as well as the others that make up this construct.

Regarding the construct of Aspects of Remote Teaching, students emphasized the importance of teachers' understanding of problems with students' internet connection, a crucial factor since online platforms may present usability complications. However, the other statements comprising this construct indicate levels of indifference regarding students' performance and the course itself during the pandemic.

Based on the results obtained, it can be affirmed that the Administration course at UERN/CAPF has qualified professionals who, with their assistance, provide quality higher education. Furthermore, there were no negative averages (less than three) in the statements used in the research, demonstrating that the course is providing a quality service but needs improvement, particularly if the return to in-person classes does not occur in the next academic semester. The dissatisfaction with remote graduation, which differs from the originally offered in-person teaching by the course, may outweigh the qualities observed in this research.

The present research provides contributions by highlighting the importance of the quality of educational services during the pandemic period. The study also advances both theoretically and practically in contributing to the discussion on quality in higher education in Administration during this unusual period, presenting the satisfaction of those who experienced this process. Moreover, the findings are relevant as they assist the department in the pursuit of improving the remote teaching process for its better effectiveness, as it was possible to identify aspects that, if not improved, may compromise its functioning.

The research has limitations regarding quantitative methodology, which, by using objective questions, allows respondents only to agree or disagree with the statements, potentially concealing other perceptions not anticipated by the researcher. Furthermore, since the study was conducted only in the Administration course, the findings cannot be generalized to other courses at the institution, despite significant relevance indicated by statistical tests.

As a contribution to future research, it is recommended to expand the scope of the analysis to other university courses, this time using only items related to Academic Aspects in Remote Teaching and Aspects in Remote Teaching. The general use of the tool, without excluding

other items, may make the questionnaire tedious, a factor that may also have occurred in the present study, compromising the obtaining of the respondent's real opinion. Additionally, the use of other data obtained with the questionnaire in a new study is suggested to deepen the analysis of other dimensions, addressing aspects such as the course's reputation, access, and factors not directly related to teaching.

Moreover, conducting qualitative research using the same aspects and investigating whether the results would be similar to those found in the quantitative research would be noteworthy.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

Abdullah, F. (2006). Measuring service quality in higher education: HEdPERF versus SERVPERF. *Marketing Intelligence & Planning*, 24(1), 31-47.

Abdullah, F. (2005). HEdDPERF versus SERVPERF: the quest for ideal measuring instrument of service quality in higher education sector. *Quality Assurance in Education***,** 13(4), 305-328.

Berry, L. L., & Parasuraman, A. (1991). Marketing services: Competence through quality. *Oxford: Maxwell MacMillan International*.

Cani, J. B., Sandrini, E. G. C., Soares, G. M., & Scalzer, K. (2020). Educação e covid-19: a arte de reinventar a escola mediando a aprendizagem "prioritariamente" pelas TDIC. *Revista Ifes Ciência*, 6(1), 23-39.

Cheng, Y., & Tam, W. M. (1997). Multi models of quality in education. *Quality assurance in Education*, 5, 22–31.

Cronin Junior, J. J., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *Journal of Marketing*, 56(1), 55-68.

De Paula, P. A., & De Matos, E. B. (2019). Qualidade percebida de serviço prestado por meio de mídia social de uma universidade federal. *Revista da Faculdade de Administração e Economia (ReFAE)*, 9(2), 26-43.

Deschamps, M. (2007). *Avaliação de qualidade no ensino superior: aplicação dos modelos HEdPERF e SERVPERF na Faculdade de Tecnologia do Senai/SC-Blumenau*. (Dissertação de Mestrado em Administração). Universidade Regional de Blumenau, Blumenau, Brasil.

De Jager, J., & Gbadamosi, G. (2010). Specific remedy for specific problem: measuring service quality in South African higher education. *High Education*, 60, 251–267.

Fontes, V. C., Silveira, A., Domingues, M. J. C. S., & Souza, T. C. G. (2011). Alternativas para a avaliação institucional em instituição de ensino superior: modelos SERVPERF e HEdPERF. In *Anais do 3o Encontro de Ensino e Pesquisa em Administração e Contabilidade*. João Pessoa, PB.

Gil, A.C. (2008). *Métodos e técnicas de pesquisa social* (6a ed.). São Paulo, SP: Atlas.

Gil, A. C. (2017). *Como elaborar projetos de pesquisa* (6a ed.). São Paulo, SP: Atlas.

Godoi, M., Kawashima, L. B., Gomes, L., & Caneva, C. (2020). O ensino remoto durante a pandemia de covid-19: desafios, aprendizagens e expectativas dos professores universitários de Educação Física. *Research, Society and Development*, 9(10), e4309108734.

Gouvêa, M. P., Onusic, L. M., & Mantovani, D. M. N. (2016). Qualidade e Lealdade ao Curso no Ensino Superior. *Revista de Administração da UFSM*, 9(1), 26-45.

Hair, J. F. Jr, Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Análise multivariada de dados* (6a ed.). Porto Alegre: Bookman.

Ikeda, A. A., & Oliveira, T. M. V. (2005). Serviços educacionais: uma análise de quatro abordagens de qualidade. *Revista Organização em Contexto*, 181-203.

Kotler, P. (1998). *Administração de marketing: análise, planejamento, implementação e controle* (5a ed.). São Paulo, SP: Atlas.

Libâneo, J. C. (2017). *Didática.* São Paulo, SP: Cortez.

Lourenço, C. D. S., & Knop, M. F. T. (2011). Ensino superior em administração e percepção da qualidade de serviços: uma aplicação da escala servqual. *Revista Brasileira de Gestão e Negocio*. 13, 219-233.

Machado, C. P., Urpia, A. G. B. C., & Forno, L. F. D. (2019). Diagnóstico do nível de amplitude do alcance de práticas de gestão do conhecimento: um survey em escolas públicas. *Navus.* 9(1), 105-121.

Marconi, M. A., & Lakatos, E. V. (2017). *Fundamentos de metodologia científica* (8a ed.). São Paulo, SP: Atlas.

Milan, G. S., Eberle, L., Corso, A., & De Toni, D. (2015). A qualidade em serviços e a satisfação de clientes: comparação entre a percepção de alunos de graduação e de pós-graduação de uma IES. *Revista de Administração,* 8(3), 415-437.

Mussliner, B. O., Mussliner, M. S. S., Meza, E. B. M., & Rodríguez, G. L. (2021). O problema da evasão universitária no sistema público de ensino superior: uma proposta de ação com base na atuação de uma equipe multidisciplinar. *Brazilian Journal of Development*, 7(4), 42674-42692.

Oldfield, B. M., & Baron, S. (2000). Student perceptions of service quality in a UK university business and management faculty. *Quality Assurance in Education*, 8(1), 85-95.

Pacheco, I. J. D., Mesquita, J. M. C., & Dias, A. T. (2015). Qualidade percebida e satisfação dos alunos da rede federal de educação profissional e tecnológica. *Revista Gestão & Tecnologia Pedro Leopoldo*, 15(1), 5-28.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: a multi-item scale for measuring consumer perceptions of the service quality. *Journal of Retailing*, 64, 12-40.

Prodanov, C. C., & Freitas, E. C. (2013). *Metodologia do trabalho científico. Métodos e técnicas da pesquisa e do trabalho acadêmico* (2a. ed.). Novo Hamburgo: Feevale.

Santos, E. A. D., Campos, G. H. F., Sallaberry, J. D., & Santos, L. M. R. D. (2021). Experiências com o Ensino Remoto e os Efeitos no Interesse e na Satisfação dos Estudantes de Ciências Contábeis Durante a Pandemia da Sars-Cov-2. *Revista Gestão Organizacional*, 14(1), 356-377.

Silva, A. C. O., Souza, S. A., & Menezes, J. B. F. (2020). O ensino remoto na percepção discente: desafios e benefícios. *Dialogia*, (36), 298-315.

Silva, E. H. B., Silva, J. G. Neto, & Santos, M. C. (2020). Pedagogia da Pandemia: reflexões sobre a educação em tempos de isolamento social. *Revista Latino-Americana de Estudos Científicos*, 29-44.

Soares, J. Neto, Pinho, F. V. A., Matos, H. L., Lopes, A. R. O., Cerqueira, G. S., & Souza, E. P. Tecnologias de ensino utilizadas na Educação na pandemia COVID-19: uma revisão integrativa. *Research, Society and Development*, 10(1), e51710111974-e51710111974.

Sohail, M. S., Rajadurai, J., & Rahman, N. A. A. (2003). Managing quality in higher education: A Malaysian case study**.** *International Journal of Educational Management*, 17, 141–146.

Souza, H. R. G., Barros, N. R., Vita, L. F. P., Araújo, M. A. V., & Guimarães Junior, D. S. (2020). Qualidade de Serviços e sua Relação com a Intenção de Recomendar o Curso de Administração de uma IES Pública: Uma Avaliação a partir do Instrumento HEdPERF. *Revista Eletrônica Gestão e Serviços*, 11, 2965-2987.

Sunder M, V. (2016). Constructs of quality in Higher Education services**.** *Journal of Productivity and Performance Management*, 65(8) 1091-1111.

Thompson, S. K. (2017). Adaptive and Network Sampling for Inference and Interventions in Changing Populations. *Journal of Survey Statistics and Methodology*, 5(1), 1-21.

Wojahn, R. M., Ramos, S. P., & Carvalho, L. C. (2018). Proposta de modelo para avaliação da satisfação com a qualidade do ensino. *Revista GUAL*, Florianópolis, 11, 01-23.