EVALUATION OF THE QUALITY OF SERVICES PROVIDED AT AN AUTO ELECTRIC COMPANY USING THE SERVQUAL SCALE

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Evaluation of the Quality of Services Provided at an Auto Electric Company Using the Servqual Scale
Avaliação da Qualidade dos Serviços Prestados em uma Auto Elétrica por Meio da Escala Servqual

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Abstract

The general objective of this study was to identify the expectations and perceptions of customers in relation to the services provided by an electric car company, as measured by the SERVQUAL scale. As specific objectives, the work sought to investigate the main conceptual notions of services, quality and measurement of service quality; Research the expectations and perceptions of customers in relation to the service provided at Auto Elétrica Nacional; Analyze the responses to understand whether Auto Elétrica Nacional is providing a quality service to its customers; Propose tools for the company to maintain the strengths and improve the weaknesses found. In order to measure service quality, the work used the SERVQUAL instrument, the result of work developed by Berry, Parasuraman and Zeithaml (1985) and adapted by Pulita, Theis and Schreiber (2015), which establishes a relationship between customer expectations and perceptions, thus providing the measurement of service quality based on its five dimensions: tangible aspects, reliability, responsiveness, security and empathy. The analysis of the data obtained and the results found made it possible to answer the objectives and verify that the company under study provides a satisfactory quality of service to its customers, since it obtained an overall positive GAP of its services provided.
Keywords: *Service management, service quality measurement, SERVQUAL tool, automotive workshops.*

Resumo

O presente trabalho teve como objetivo geral identificar as expectativas e percepções dos clientes, em relação aos serviços prestados em uma Auto elétrica, sendo mensuradas pela escala SERVQUAL. Como objetivos específicos, o trabalho buscou investigar as principais noções conceituais de serviços, qualidade e mensuração da qualidade dos serviços; Pesquisar as expectativas e percepções dos clientes em relação ao serviço prestado na empresa Auto Elétrica Nacional; Realizar a análise das respostas para compreender se a Auto Elétrica Nacional está prestando um serviço de qualidade a seus clientes; Propor ferramentas para a empresa realizar a manutenção dos pontos fortes e a melhoria dos pontos fracos encontrados. Para a mensuração da qualidade dos serviços, o trabalho utilizou o instrumento SERVQUAL, fruto do trabalho desenvolvido por Berry, Parasuraman e Zeithaml (1985) e a adaptado por Pulita, Theis e Schreiber (2015), o qual estabelece uma relação entre expectativas e percepções dos clientes, proporcionando assim, a mensuração da qualidade

dos serviços baseada nas cinco dimensões da mesma, sendo elas: aspectos tangíveis, confiabilidade, responsividade, segurança e empatia. A análise dos dados obtidos e resultados encontrados possibilitou responder aos objetivos e verificar que a empresa objeto de estudo fornece um serviço de qualidade satisfatória a seus clientes, já que a mesma obteve um GAP geral positivo de seus serviços prestados.

Palavras-chave: *Gestão de serviço, mensuração da qualidade de serviços, ferramenta SERVQUAL, oficinas automotivas.*

INTRODUCTION

Regardless of the Covid-19 pandemic, which resulted in the largest contraction in Brazil's Gross Domestic Product (GDP) (4.1%) in the last 24 years (El País, 2021), the country's service sector, which accounts for around 70% of Brazil's GDP, recorded four consecutive increases between April and July 2021, thus reaching its highest level in 5 years (IBGE, 2021; GOVERNMENT OF BRAZIL, 2021). Therefore, in a context of growth and maintaining companies in the market, having differentials and high quality are mandatory for institutions wishing to grow and remain open for business (SEBRAE, 2019).

It can be seen that in the year before Covid-19 emerged and spread, Brazil's car fleet increased by 3,163,996 vehicles (IBGE,2020), which did not happen in the first year of the pandemic (SINDIPEÇAS,2021). And the little growth in the national fleet seen in 2021 has contributed to the fleet in the country today being considered the oldest in the last 25 years (CNNBRASIL,2021), and thus, consequently, both due to the increase in vehicles from 2019 to 2020 and the Brazilian fleet being the oldest in the last 25 years in the year 2021, there is a need for automotive workshops, whether auto electrical or mechanical.

In the city of Passos-MG, which according to the IBGE (2021) has a population of 115,970 people and an automobile fleet of 76,821 vehicles, the need for automotive workshops is no different. Auto Elétrica Nacional, founded in 1987 in the city of Minas Gerais, competes in an environment of at least 10 other competitors. That said, this study has the following research problem: What are customers' expectations and perceptions of the services provided by Auto Elétrica Nacional?

In order to answer the research problem, the general objective of this study was to identify the expectations and perceptions of customers in relation to the services provided by an electric car company, measured using the SERVQUAL scale (a tried and tested tool for

measuring customer expectations and perceptions). In order to achieve this general objective, the following specific objectives were proposed: (i) To investigate the main concepts of services, quality and measuring the quality of services; (ii) To research the expectations and perceptions of customers in relation to the service provided by Auto Elétrica Nacional; (iii) To analyze the responses in order to understand whether Auto Elétrica Nacional is providing a quality service to its customers; and (iv) To propose tools for the company to maintain its strengths and improve the weaknesses found.

The relevance of this study is based on the use of the SERVQUAL instrument, which, by measuring customer expectations and perceptions, provides indicators for the company under study to understand the wishes of its target audience and thus improve the performance of its service. In addition, the relevance of the study was based on studying the service sector, which today accounts for around 70% of Brazil's GDP (IBGE, 2021). In addition, in the city of Passos, this type of study has never been applied in the service sector of the company under study, so the study by Pulita, Theis and Schreiber (2015) was used as a reference for this work, which achieved its objectives using the SERVQUAL instrument in a mechanical workshop in the city of Portão/RS.

That said, this paper is divided into seven sections and is organized as follows. Section 1 introduces the work, contextualizing the topic, the problem to be solved and the objectives used to answer it. Section 2 presents some basic concepts and discusses related work. Section 3 contextualizes the research universe, which is the company studied. Section 4 details the proposed model. Section 5 presents the results obtained, while section 6 concludes the work and the last section provides bibliographical references.

THEORETICAL FRAMEWORK

Services

A service is any action that one part can offer to another, which is fundamentally intangible and does not result in any property. Its production is not necessarily linked to a physical product (KOTLER, 1998). In other words, a service is nothing more than an act, effort or performance (SILVA; KOVALESKI; GAIA, 2011), and is not directly linked to objects.

Services basically have four main characteristics. According to Fitzsimmons and Fitzsimmons (2005), the four characteristics are simultaneity, perishability, intangibility and heterogeneity. According to the authors, a service is simultaneous because it is produced and consumed at the same time. They also say that services are perishable because they cannot be stored due to their impalpable essence. Fitzsimmons and Fitzsimmons (2005) conclude by relating services to their heterogeneity, since according to the authors, because they involve the participation of people, services will not always be identical, due to some factors that can affect their execution.

The concept of "service" came to be recognized and treated differently in the 20th century, with the consolidation of modern capitalism and the market's perception of the existence of yet another sector, different from agriculture and manufacturing (LAUS, 2015). Although the dominance of the service sector in the global economy has been noted (WIRTZ; HEMZO; LOVELOCK, 2020), the fact that services cannot be stocked and are intangible makes them difficult to measure and more complicated than measuring the quality of material goods (SILVA E MEIRELLES, 2006).

Quality of Service

According to Pulita, Theis and Schreiber (2015), quality in services is the ability to satisfy needs, solve problems and generate benefits, and the difference between expectations and perceptions defines customer satisfaction or dissatisfaction with the service. This line of reasoning is also defended by Gianesi and Corrêa (1996), according to whom service quality is the level at which the customer's experiences are met by their perception of the service provided.

Therefore customer satisfaction with service quality can be defined by comparing the customer's expectations of the desired service with the perception of the service provided.

When expectations are exceeded, the service is seen as being of excellent quality, but when expectations are not met, the quality of the service provided is perceived as unacceptable (FITZSIMMONS AND FITZSIMMONS, 2010). This is also the understanding of Silva, Kovaleski and Gaia (2011), according to whom service quality and its measurement are made by the customer, and are made by equating what the customer expected with what they perceived from the service provided.

Customer perceptions occur within the five dimensions of service quality, which are reliability, tangibility, responsiveness (sensitivity), security and empathy (BERRY; PARASURAMAN; ZEITHAML, 1985). These dimensions are the five main elements that customers use to assess service quality, with reliability being the most important criterion for customers (FITZSIMMONS AND FITZSIMMONS, 2010). According to Aquino, Jerônimo and Melo (2015), reliability can be defined as the extent to which the company fulfills what was agreed upon within the given timeframe. Tangibility is related to physical aspects, such as equipment, physical facilities and the appearance of employees. Responsiveness reflects the willingness of employees to perform the service. Security represents the employee's ability to perform the service, such as friendliness, and finally empathy, which refers to the careful attention provided by the company to the customer.

According to Brasileiro et al. (2021), competition, which is significantly greater in all sectors of the economy, has made customers more demanding, requiring more and more quality in the services provided by companies. This means that service quality has become not just a differentiator, but a survival factor for companies (MARTINS et al., 2012), and so measuring it would become a tool to better meet customer needs and expectations.

Measuring service quality

Measuring service quality is complex, as customer satisfaction is determined by various intangible factors. Therefore, in order to be able to measure it, it is necessary to know the customer and their expectations of the service provided, as well as their perception (FITZSIMMONS AND FITZSIMMONS, 2010; BRASILEIRO et al., 2021). In this context, the study by Parasuraman, Berry and Zeithaml (1988) stands out as one of the forerunners in defining a model for measuring quality. The model they presented is the SERVQUAL instrument, which relates customer expectations to perceived performance in order to determine the quality of services. SERVQUAL is characterized by a questionnaire of 22

items, distributed among the 5 dimensions of perceived quality, namely reliability, tangibility, responsiveness (sensitivity), security and empathy (KOROCOSKI; FERREIRA; ATMANCUZK, 2016; OLIVEIRA ET AL., 2014). Ergang et al. (2011, p.3), defines the SERVQUAL scale as "a multiple scale summary instrument, with a high level of reliability and validity, which organizations can use to better understand the expectations and perceptions that customers have about a service"

The SERVQUAL model is also based on the service quality gap model developed by Berry, Parasuraman and Zeithaml (1985). The *gaps* model consists of 5 *gaps* which can be defined as sources of quality comparison and are used to find the causes of service failures. *Gaps* 1 to 4 are produced by internal failures in the company's operation, while gap 5 is the consequence, since it measures the quality of the service in the comparison between customer expectations and their perceptions (PULITA; THEIS; SCHREIBER, 2015; SCHNEIDER; WALTER; SOARES, 2018).

That said, service quality *gaps* can be defined as: *gap* 1 is the discrepancy between customer expectations and the company's perception of those expectations; *gap* 2 is the divergence between the company's perceptions of customer expectations and the quality standards expressed by the services performed; *gap* 3 is the disagreement between the service quality specifications and the service delivered to the customer; *gap* 4 is the difference between the described quality of the service and what is communicated to the customer; *gap* 5 is the disparity between customer expectations of the service and the perception of the service provided, this *gap* being the result of *gaps* 1 to 4 (GONÇALVES; BRUNO; BORGES, 2017; LIMA et al., 2022).

It should be noted that the 5 *gaps* can be measured individually, however, the measurement of *gap* 5 is the essence of the application of the SERVQUAL model (GONÇALVES; BRUNO; BORGES, 2017). According to Parasuraman, Berry and Zeithaml (1988), the *gap* 5 is calculated for each item in the SERQUAL questionnaire, which is defined by the difference between the perceptions and expectations of each customer in relation to the performance of the service provided (*Gap=* Average Perception - Average Expectation). An item with a negative *gap* indicates that the performance of the service is below expectations and is considered unsatisfactory for consumers. *Gaps* between 0 and -1 are considered to have low negative satisfaction, those between -1 and -2 have intermediate negative satisfaction, *gaps* between -2 and -3 represent poor negative satisfaction, and those

between -3 and -4, very poor negative satisfaction. A *gap of* zero or close to zero means that the service provided is acceptable, with low levels of satisfaction or little negative satisfaction. On the other hand, an item with a positive *gap* shows that the service provided exceeds the customer's expectations and is considered satisfactory (FREITAS; BOLSANELLO; VIANA, 2008; ANDRADE et al., 2019; CHIROLI et al., 2011).

Figure 1 - The 5 gaps analysis model for service quality
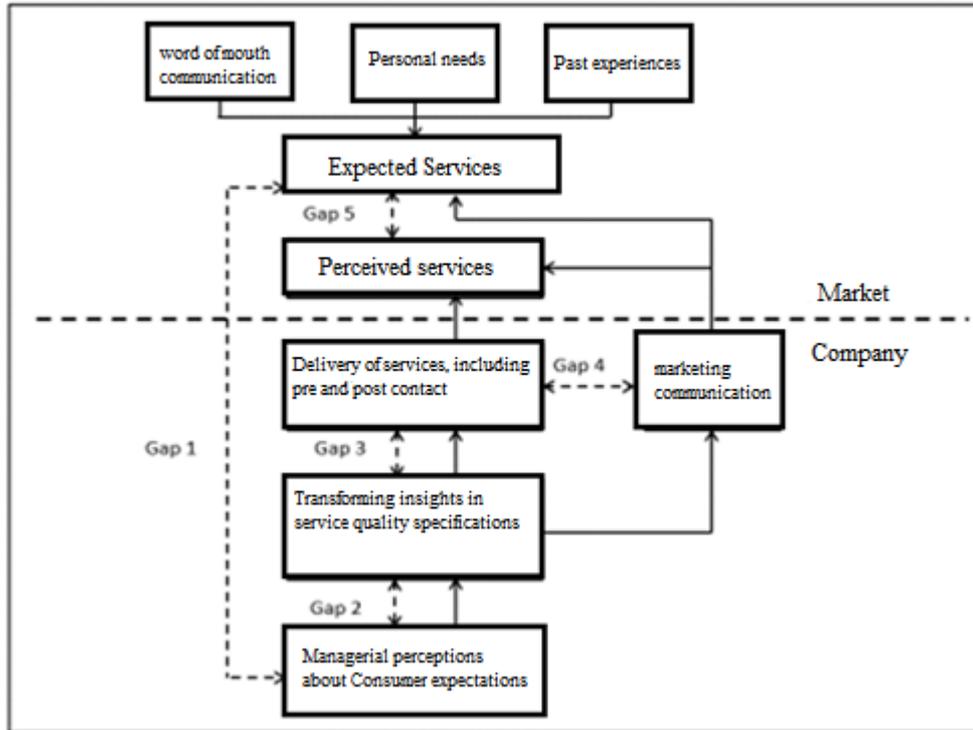
Source: Adapted from Parasuraman, Zeithaml and Berry (1985)

Table 1 below shows the 22 items that make up the SERVQUAL scale. According to Parasuraman, Berry and Zeithaml (1988), the 22 elements are distributed into 5 dimensions of quality, which are classified as follows: Tangible aspects (E1 to E4); Reliability (E5 to E9); Responsiveness (E10 to E13); Safety (E14 to E17); and Empathy (E18 to E22).

Table 1 - The SERVQUAL instrument

Dimensions	Elements	Features
Tangible Aspects	E1	Companies must have modern equipment.
	E2	Your physical facilities must be visually appealing.
	E3	Your employees should be well dressed and look good.
	E4	The appearance of the physical premises of these companies must be kept in line with the type of service offered.
Reliability	E4	When these companies commit to doing something within a certain timeframe, they must fulfill it.
	E6	When customers face problems, these companies should be supportive and helpful.
	E7	These companies must be reliable.

	E8	Companies must deliver their services on time.
	E9	Companies must keep their records up to date.
Responsiveness	E10	Companies should not be expected to tell customers exactly when services will be completed.
	E11	It is unrealistic for customers to expect immediate service from the employees of these companies.
	E12	Your employees don't always have to be willing to help customers.
	E13	It's no problem if the staff are too busy to respond promptly to customer requests.
Security	E14	Customers must be able to trust the employees of these companies.
	E15	Customers must be able to feel secure in their dealings with the employees of these companies.
	E16	Your employees must be kind.
	E17	Your employees must receive adequate support from their companies in order to do their jobs well.
Empathy	E18	These companies should not be expected to pay individual attention to customers.
	E19	The employees of these companies cannot be expected to give personalized attention to customers.
	E20	It's unrealistic to expect employees to know what your customers' needs are.
	E21	It is unrealistic to expect these companies to be deeply interested in customer welfare.
	E22	These companies should not be expected to operate at convenient times for all their customers.

Source: Fitzsimmons and Fitzsimmons (2010, p. 143).

In other words, table 1 above, "The SERVQUAL instrument", describes the dimensions, elements and characteristics that represent each of the 5 dimensions. The characteristics range from "Companies should have modern equipment", in Element 1, to "These companies should not be expected to operate at convenient times for all their customers", characterized as Element 22.

Company Characterization - Auto Elétrica Nacional

Auto Elétrica Nacional, the subject of this study, is a car electrical repair shop workshop founded in 1987, and is a small business of the limited company nature. It is located in the city of Passos, in the state of Minas Gerais. The workshop is made up of ten employees and two owner-partners, who are distributed between vehicle repair and administrative functions.

The researched company offers automotive maintenance and repair services, with the main focus on heavy-duty vehicles (trucks, agricultural machinery and tractors), but also light-duty vehicles (cars and SUVs). The main services provided by the company are battery changes, repair and replacement of starter motors and alternators, air conditioning

maintenance and electrical services in general, including preventive electrical overhauls. The company has five vehicles for servicing in the city, nearby towns and rural areas. Services carried out at the company's base are organized on a first-come, first-served basis.

The company has a few *banners* around the city of Passos, but in general it doesn't invest in marketing. Many of the customers come through referrals from other customers and partners in the city, but also by displaying the *banners* and consulting search engines, in which Auto Elétrica Nacional is the company with the highest number of reviews. The fact that the company is small helps to establish a close relationship with the customer, favoring a long-term relationship.

METHODOLOGICAL PROCEDURES

In order to respond to the general objective presented, this research is descriptive in nature. The data collection technique used was a questionnaire survey. The research problem was approached quantitatively, using the SERVQUAL tool to evaluate vehicle electrical services.

According to Vergara (2006), descriptive research exposes the characteristics of a given population, establishing correlations between variables and where opinion research can be used. In addition, descriptive research makes it possible to gauge the proportion of components in a specific population that have certain particularities or behaviors (GUIMARÃES, 2020).

The research data was approached quantitatively, as it was a structured survey, with quantification of data and generalization of the results of the sample to the target audience. According to Mussi et al. (2019), quantitative research allows the researcher to characterize indicators and trends present in reality, i.e. representative and objective data. Also according to the author, the quantitative approach is interested in the collective, in the characteristic that may be the main characteristic of the group.

The survey was used as a means of research because its use made it possible to collect the expectations as well as the perceptions of the customers of the company studied. According to Mineiro (2020), the survey aims to provide predominantly quantitative characteristics, collecting data through questions applied to people. The data collected was the basis for subsequent analysis. As Gil (2008) adds, a field survey is characterized by the direct questioning of people whose behaviour you want to know, and has the advantages of

direct knowledge of reality, economy and speed, and quantification, the latter of which was used to create the results tables at the end of this work.

A structured questionnaire model was used as the data collection instrument, consisting of 2 questionnaires with 22 questions each, totaling 44 questions, built on the work developed by Parasuraman, Berry and Zeithaml (1988) and adapted by Pulita, Theis and Schreiber (2015), known as the SERVQUAL tool. The 44 questions are distributed across five dimensions, which are the criteria for judging the quality of a service, namely: tangibility, reliability, responsiveness, assurance and empathy (MONTEIRO et al., 2019).

The first questionnaire, with 22 questions, aims to measure customer expectations of service quality, and the other 22, perception. The questions assessed by the questionnaire were placed on a Likert scale from 1 to 5, ranging from totally disagree to totally agree. Each question in the expectations questionnaire has a perception equivalent, which was used to generate data and tables to compare the relationship between customer expectations and their perception of the quality of service at the company surveyed (REIS, 2011; OLIVEIRA; FERREIRA, 2008).

The questionnaires were administered on May 31, 2022 and ended on June 14, 2022, a total of 15 days. The first stage was to administer a pre-test to one of the company's clients, in order to check their understanding. As there were no doubts or questions about the content of the test, the questionnaire answered was considered valid for the research, becoming the first questionnaire collected.

Once this was done, the research subjects, who were volunteers, had access to the questionnaires via e-mail or in printed form, available physically at the company studied. The type of questionnaire, online or printed, was the respondent's preference, since the content of both was the same. At the same time as the questionnaire was administered, a free and informed consent form (FICF) was signed, with one copy in the hands of the researcher and the other with the respondent. The use of company data was authorized by the owner, who signed the institutional authorization letter.

The research subjects were the customers themselves, consumers of services at Auto Elétrica Nacional, and as the aim of the research was to measure the quality of the company's services, the only criterion for respondents to take part was that they had already used the workshop's services at least once. In this way, the survey population is considered undefined, as there is no way of measuring it, since the company surveyed does not have a register of

all its customers, making it impossible to identify the total number of consumers. According to Manzato and Santos (2012), non-probabilistic samples are often used in statistical work due to their simplicity or the impossibility of obtaining probabilistic samples, as would be desirable. That said, for this research, the sampling process used is non-probabilistic random sampling, since the questionnaire was applied randomly, i.e. as customers arrived at the company, they were invited to take part in the survey. According to Santos (2012), the results of random sampling will be equivalent to those of probabilistic sampling if the population is homogeneous and there is no possibility of the researcher being unconsciously influenced by some aspect of the elements of the population. The corresponding population can be considered homogeneous, since they are all customers of the company studied.

Table 2 - Process of inviting the client to participate in the survey

1) A customer at the workshop was asked if he had used the company's services on another occasion.	2) If the answer was yes, the customer was invited to answer the questionnaire.	3) With the affirmative response to the questionnaire from several clients, the researcher obtained the data necessary for analysis, description and conclusion of the research.

Source: Own elaboration, 2022.

In a nutshell, the invitation to customers was made in three stages: first, as the customer arrived, they were asked if they had used the company's services on another occasion. Secondly, if the answer was yes, the customer was invited to answer the questionnaire. Finally, once the customers had accepted and taken part in the survey, the researcher obtained the data needed to analyze, describe and conclude the research.

The sample reached 40 customers, 33.3% more than the sample reached in the research by Pulita, Theis and Schreiber (2015), which was one of the base articles for this work. All the questionnaires were answered physically at the company, in printed form. This was the preference of the 40 research subjects.

The data collected from the 40 questionnaires was tabulated, sorted and arranged in figures and tables to make it easier to interpret. For the calculations, the average was used as a means of comparing the two quantities, perceptions and expectations. The tool used to tabulate the data and answer the research problem was Excel 2013.

In the Excel tool, the data was arranged individually manually, with 44 columns placed horizontally, with every two columns providing a comparison between expectations and perceptions of an equivalent question. Vertically, the respondents were arranged in 40 rows, and their answers were transcribed one at a time, also manually. Subsequently, in a

new tab, the averages of each of the 44 questions applied were entered to create figures and tables that were used in the analysis and discussion of the results. The step in the Excel 2013 tool was carried out over a period of 7 days, totaling 1,760 answers transcribed, tabulated, sorted and arranged in graphs to discuss the results of the work.

RESULTS AND DISCUSSION

This section presents the data obtained from the questionnaire, which refers to the expectations and perceptions of Auto Elétrica Nacional's customers about the services provided by the company. By analyzing and discussing the data, it was possible to ascertain, from the customers' point of view, which are the most important aspects for consumer satisfaction at an electrical workshop, as well as measuring the quality of the services provided at the company.

The data on customer expectations will be presented first, followed in another subsection by perceptions and then comparisons between the two. In other words, the results obtained and presented in table 3, in the middle of the section, are the result of the comparison between the perceptions and expectations of the company's customers interviewed. From this correlation, the *gaps are* calculated as the difference between the mean perceptions and expectations (Mean Perception - Mean Expectation). The results of the *gaps* can be positive (satisfactory quality service), negative (unsatisfactory quality service) or equal to zero, acceptable quality service (ANDRADE *et al.,* 2019).

Expectations

The 22 questions relating to customer expectations are listed in Table 1 below, with the average for each question based on the responses of the 40 interviewees. The questions, as explained above, range from whether the company has modern equipment to whether the opening hours are convenient for the customer.

Table 1 - Result expectations

	Expectations	Average
1	Electrical workshop must have modern equipment.	4,78
2	The physical facilities of electrical workshops must be visually attractive.	4,58
3	Your employees should be well dressed.	4,58
4	The appearance of workshops should be kept in line with the type of service offered.	4,45

5	When workshops commit to doing something by a certain deadline, they have to stick to it.	4,78
6	When customers face problems, garages should be supportive and helpful.	4,83
7	Electrical workshops must be reliable.	4,88
8	The workshops must deliver their services on time.	4,65
9	Workshops must keep their records up to date	4,55
10	Garages must inform the customer exactly when the service will be completed.	4,40
11	Garages must always offer the service immediately.	3,35
12	Employees must always be willing to help the customer.	4,53
13	Employees must be available to respond promptly to customer requests.	4,30
14	Customers need to be able to trust the employees of these companies.	4,83
15	Customers need to feel safe doing business with the workshop.	4,85
16	Your employees must be kind and polite.	4,80
17	Employees must receive adequate support to perform their tasks well.	4,70
18	Garages must give individual attention to their customers.	4,10
19	Garages must give their customers personalized attention.	3,90
20	Employees must know what their customers' needs are.	4,30
21	Workshops must be interested in the customer's well-being.	4,43
22	Workshop opening hours should be the most convenient for your customers	4,33

Source: Prepared by the author with data obtained from the survey, 2022.

An analysis of table 1 above shows that on a scale of 1 to 5, twenty of the twenty-two items obtained an average score of more than 4. The question with the highest customer expectations is number 7 (Electrical workshops must be reliable), with an average score of 4.88. The second best rated question was number 15 (Customers need to feel safe when dealing with the workshop), with a score of 4.85. It can thus be seen that these two items are the most important in an Auto Electric, according to the customers' assessment. On the other hand, question 11 (Garages should always offer immediate service) and question 19 (Garages should give customers personalized attention) are the questions with the lowest customer expectations, so it can be said that both are the items that customers least expect to find in an Auto Electric.

Perceptions

The 22 questions relating to customer perceptions are listed in Table 2 below, with the average for each question based on the responses of the 40 interviewees. The questions range from whether the company has modern equipment to the opening hours.

Table 1 - Result perceptions

	Perceptions	Average
1	Auto Electric Nacional has modern equipment.	4,60
2	The physical facilities of Auto Electric Nacional are visually attractive.	4,63
3	The staff at Auto Electric Nacional generally dress well.	4,40

4	The appearance of Auto Electric Nacional is appropriate to the type of service offered.	4,63
5	When Auto Electric Nacional commits to doing a job within a certain time, it keeps its promise.	4,45
6	Auto Electric Nacional is supportive and helpful when you have a problem.	4,68
7	Auto Electric Nacional is reliable.	4,80
8	Auto Electric Nacional delivers its services on time.	4,53
9	Auto Electric Nacional keeps its records up to date.	4,40
10	Auto electric Nacional will let you know exactly when the service will be completed.	4,40
11	Auto Electric Nacional always offers immediate service.	4,48
12	The staff at Auto Electric Nacional are always willing to help the customer.	4,65
13	The staff at Auto Electric Nacional are always available to respond promptly to customer requests.	4,58
14	You trust the staff at Auto Electric Nacional.	4,80
15	You feel safe doing business with Auto Electric Nacional.	4,75
16	The staff at Auto Electric Nacional are kind and polite.	4,73
17	Auto electric Nacional's employees have adequate support to do their jobs well.	4,58
18	Auto Electric Nacional gives you individual attention.	4,58
19	Auto Electric Nacional gives you personalized attention.	4,38
20	The staff at Auto Electric Nacional know what you need.	4,38
21	Auto electric Nacional is interested in the well-being of its customers.	4,53
22	Auto Electric Nacional's opening hours are convenient for its customers.	4,43

Source: Prepared by the author with data obtained from the survey, 2022.

Evaluating the data obtained in Table 2, it can be seen that the perceptions achieved high scores in the customers' classification, since all 22 items achieved an average score higher than 4. The two questions that show the highest score in the customers' perception obtained an average of 4.80, being questions 7 (Auto Elétrica Nacional is trustworthy) and 14 (Do you trust the employees of Auto Elétrica Nacional).

It can therefore be seen that the items with the highest scores are the company's most satisfactory, according to customer perception. It can therefore be seen that the company under study transmits confidence to its customers. However, questions 19 (Auto Elétrica Nacional gives you personalized attention) and 20 (Auto Elétrica Nacional employees know what your needs are) are the items that achieved the worst perception score, according to the customers. However, even though the items in questions 19 and 20 are the worst from the customers' point of view, they still meet the interviewees' expectations and are therefore considered to be satisfactory quality services.

Dimensions of quality

The five dimensions of quality are distributed among the 22 basic questions of the SERVQUAL instrument and are present in both the perception and expectation

questionnaires. Table 3 below shows the averages for each dimension, as well as the *gap* obtained due to the difference between the averages of the customers' perceptions and their expectations. The 22 questions are divided into Tangible aspects (E1 to E4); Reliability (E5 to E9); Responsiveness (E10 to E13); Safety (E14 to E17); and Empathy (E18 to E22).

Table 2 - Averages of the dimensions and their gaps

| Dimension	Average Expectation	Average Perception	*Gap*
Tangible Aspects	4,60	4,57	-0,03
Reliability	4,74	4,58	-0,16
Responsiveness	4,15	4,53	0,38
Security	4,79	4,72	-0,07
Empathy	4,21	4,46	0,25

Source: Prepared by the author with data obtained from the survey, 2022.

Table 3 above shows that 2 *gaps* have positive values, which characterize them as satisfactory services, since the service provided exceeds the customer's expectations. However, 3 of the 5 *gaps* have a negative *gap, which* means they are considered unsatisfactory services (FREITAS; BOLSANELLO; VIANA, 2008). Despite this, the negative *gaps* have small values, close to 0, which constitutes small negative satisfaction (CHIROLI et al., 2011). Overall, when all 5 *gaps are* analyzed together, it can be seen that the company's overall *gap,* considering all dimensions, is positive, as it obtained a *gap of* 0.37. Thus, analyzing the dimensions in general, the service provided by the company as a whole is considered satisfactory (ANDRADE et al., 2019).

Comparison of expectations and perceptions

Figure 2 below shows a comparison of the results obtained between customer expectations and perceptions with regard to the 22 questions assessed by the SERVQUAL tool. The blue bars represent expectations and the orange bars represent customer perceptions.

Figure 2 - Comparison of average expectations and perceptions
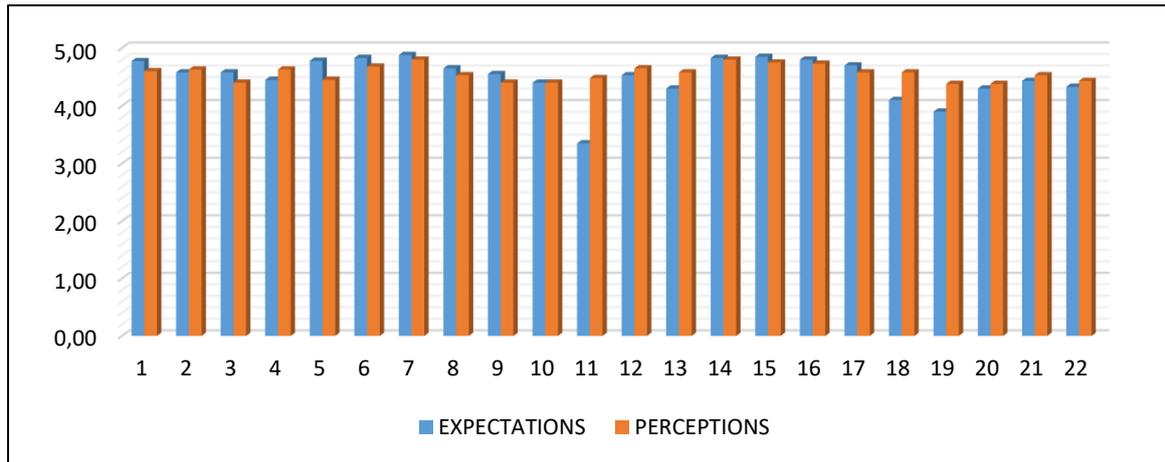
Source: Prepared by the author with data obtained from the survey, 2022.

An analysis of figure 2 above shows that in 11 of the 22 questions, expectations exceeded perceptions, i.e. they had a negative *gap* (ANDRADE et al., 2019). The three questions that showed the greatest negative difference between the comparison of expectation and perception were numbers 1 (Electrical workshops must have modern equipment), 3 (Their employees must be well dressed) and 5 (When workshops commit to doing something within a certain timeframe, they must meet it), with values of -0.18, -0.18 and -0.30, respectively. Of the remaining 11 questions, in 10 the perceptions exceeded expectations, achieving a positive *gap* (CHIROLI et al., 2011). Of the 10, questions 11 (Auto Elétrica Nacional always offers service immediately), 18 (Auto Elétrica Nacional gives you individual attention) and 19 (Auto Elétrica Nacional gives you personalized attention) showed the greatest positive difference when comparing expectations with customer perceptions, with *gap values of* 1.13, 0.48 and 0.48, respectively.

In only one of the 22 questions were expectations and perceptions equivalent, with a zero *gap.* The question with a zero gap, relating to question 10 (Garages should inform the customer exactly when the service will be completed), shows that at this point, the service provided is acceptable, since the expectation, although not exceeded, is met (ANDRADE et al., 2019).

Table 4 below shows the average expectations, perceptions and *gaps* for each of the 22 questions answered by the customers interviewed at Auto Elétrica Nacional. The *gap* is provided by the difference between the average perceptions and expectations (*gap=P-E*) for each question in the SERVQUAL questionnaire.

Table 3 - Averages of expectations, perceptions and gaps of the questions applied

	SERVQUAL statements	Average expectations	Average Perceptions	*Gap*
	Electrical workshops must have modern equipment.	4,78	4,60	-0,18
	The physical facilities of electrical workshops must be visually attractive.	4,58	4,63	0,05
	Your employees should be well dressed.	4,58	4,40	-0,18
	The appearance of workshops should be kept in line with the type of service offered.	4,45	4,63	0,18
	When workshops commit to doing something by a certain deadline, they have to stick to it.	4,78	4,45	-0,33
	When customers face problems, garages should be supportive and helpful.	4,83	4,68	-0,15
	Electrical workshops must be reliable.	4,88	4,80	-0,08
	Workshops must deliver their services on time.	4,65	4,53	-0,12
	Workshops must keep their records up to date	4,55	4,40	-0,15
0	Garages must inform the customer exactly when the service will be completed.	4,40	4,40	0,00
1	Garages must always offer the service immediately.	3,35	4,48	1,13
2	Employees always need to be willing to help the customer.	4,53	4,65	0,12
3	Employees must be available to respond promptly to customer requests.	4,30	4,58	0,28
4	Customers need to be able to trust the employees of these companies.	4,83	4,80	-0,03
5	Customers need to feel safe doing business with the workshop.	4,85	4,75	-0,10
6	Your employees must be kind and polite.	4,80	4,73	-0,07
7	Employees must receive adequate support to perform their tasks well.	4,70	4,58	-0,12
8	Garages must give individual attention to their customers.	4,10	4,58	0,48
9	Garages must give their customers personalized attention.	3,90	4,38	0,48
0	Employees must know what their customers' needs are.	4,30	4,38	0,08
1	Workshops must be interested in the customer's well-being.	4,43	4,53	0,10
2	Workshop opening hours should be the most convenient for your customers	4,33	4,43	0,10

Source: Prepared by the author based on data obtained from the survey, 2022.

Looking at table 4 above, it can be seen that in 11 of the 22 questions, perception failed to exceed expectations, leaving a negative *gap.* However, the gaps for these questions were close to zero, which are considered to be services with little negative satisfaction or low satisfaction. For the rest of the questions, one question had a zero gap (The service provided is acceptable) and the other 10 had a positive *gap, which was* considered by customers to be a service that exceeded expectations.

Thus, based on the results presented and the theoretical framework discussed, and seeking to answer all the objectives of the work, the service provided by Auto Elétrica Nacional is generally considered to be of satisfactory quality by its customers. However, based on the information obtained in the survey, it is proposed that the company should work to maintain its strengths and improve its weaknesses. To achieve this goal, it is suggested that Auto Elétrica Nacional use tools such as SWOT analysis or 5W2H, so that it can carry out structured strategic planning to correct the flaws observed and continue with the positive points.

FINAL CONSIDERATIONS

This study sought to investigate the concepts of services, quality and the measurement of service quality, in order to use the SERVQUAL instrument to research the expectations and perceptions of the quality of the services provided by the company Auto Elétrica Nacional.

In order to achieve the proposed objective, four specific objectives were drawn up. The first specific objective was to investigate the main conceptual notions of services, quality and the measurement of service quality, which was achieved through the theoretical framework presented. The second objective was to research customer expectations and perceptions of the service provided by the company under study, which was achieved by applying questionnaires based on the SERVQUAL model. The third objective, to analyze the responses in order to understand whether Auto Elétrica Nacional is providing a quality service to its customers, was completed by tabulating and analyzing the data presented in the paper. The last objective, to propose tools for the company to maintain its strengths and improve its weaknesses, was achieved by proposing and suggesting tools for the company's strategic planning.

By meeting the objectives and achieving the results, it was possible to verify the strengths and weaknesses of the Auto Elétrica Nacional company, which overall provides a satisfactory quality of service to its customers. The relevance of the work can be seen in the application of the recognized SERVQUAL tool and its results, providing indicators so that the company studied can improve the performance of its services. In addition, in the city of Passos/MG, this tool has never been applied in the area of automotive workshops, thus broadening the scope of the instrument in the research city.

However, one of the limitations of the work was the difficulty in administering the questionnaire to all the company's customers, as the company did not have an up-to-date and reliable register of customers. Another difficulty was waiting for customers to arrive before carrying out the questionnaires, because if no customer came in for a whole day, no questionnaire would be answered. Another limitation was the fact that the survey was carried out in just one company in the sector and that there was a lack of more information, such as age, income, gender and measuring the length of time the customer consumes the company's services.

Finally, for future research, a new survey is proposed with the same respondents, for new information and to obtain current perceptions of the company's service. In addition, we suggest new surveys with more data, such as income, gender and schooling, as well as surveys with companies from other industries and especially with Auto Elétrica Nacional's competitors, making it possible to compare them.

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