

Quality of Service and Customer Satisfaction: A Case Study of Call Center Services

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Abstract—Quality of service and customer satisfaction have become priority aspects for call center services, especially in a context where their use is becoming more and more frequent. In the district of Los Olivos, Lima, Peru, 60% of users who receive telephone service consider the quality of the service to be deficient, which shows the need to delve into this issue. The objective of the study was to determine the relationship between service quality and customer satisfaction in call center services in a district of Lima. To this end, a non-experimental, quantitative, correlational and cross-sectional approach was used. A questionnaire was applied to 384 clients to measure both variables and their relationship was analyzed using Spearman's correlation. The results show a positive, very strong and significant correlation between service quality and customer satisfaction ($r=0.907$; $p<0.001$). Likewise, the dimensions of service quality were significantly related to customer satisfaction: reliability ($r=0.850$), responsiveness ($r=0.618$), safety ($r=0.473$) and empathy ($r=0.587$). It concludes by highlighting the importance of strengthening the quality of service to improve customer satisfaction and generate benefits for the company. Finally, the need to investigate additional factors that may influence this dynamic is raised.

Keywords—*Quality of service; customer satisfaction; call center*

I. INTRODUCTION

The quality of the service that a company provides is a fundamental aspect to gain customers, to keep them and make them pleasant and become loyal customers. Within call centers, one of the most important aspects of service is agent accessibility [1]. In this context, aspects such as the waiting time in the queue and the number of users who have to hang up because they are not attended to or have to wait a long time, the attention time since the call has started and the number of transfers until they reach the indicated agent, are important. In general, greater accessibility is associated with a perception of superior quality [2]. The shift towards an increasingly customer-centric vision of service leads organizations to the need to highlight the value of service, which can be considered as an added value to offer to increasingly demanding consumers who are looking for products or services capable of satisfying their needs and promising better results [3].

It is considered that, taking a holistic view as a reference, the level of customer service provision in call centers is a key indicator that has a direct impact on the user experience [4]. In line with service companies, their image and level of profitability are closely linked to their ability to manage the way they interact with users, any complaints and information [5]. Along these lines, it has been found in the United States, at

Harvard University, that call centers that make strong bets on the continuous learning of their operators together with the introduction of advanced call management technologies achieve significant levels of user satisfaction [6]. Along these lines, the Economic Commission for Latin America and the Caribbean prepared a comparative report in which it was understood that, in countries such as Brazil, Mexico or Argentina, working on the quality of service in call centers meant that the complaints received were considerably reduced [7]. This finding suggests that dissatisfactions are often linked to specific shortcomings, such as poor staff training and limited adoption of innovative technology solutions.

In Peru, during 2022, 2,337,975 claims were registered in the first instance by users of telecommunications services who went to the operating companies. This amount showed an increase of 42.9% compared to the previous year, according to what was reported by the Supervisory Agency for Private Investment in Telecommunications [8]. In addition, the institution pointed out that no operator reached the minimum expected performance score, set at 75 points. The results of the OSIPTEL User Service Quality Ranking reaffirmed the need for these companies to more rigorously direct their efforts towards improving the service provided [8]. Despite this, the telecommunications channel aimed at the public service showed some progress, as 54% of users said they were totally satisfied. In Lima, this percentage rose to 61%; however, in the Central Lima area, dissatisfaction exceeded 10%, which raises questions about the overall effectiveness of the service and the factors that influence its performance [9].

In specific areas, such as the Los Olivos district in Lima, Peru, the problem related to the quality of service in the call centers of service companies has intensified in recent years. This district has a remarkable population and economic growth, accompanied by a diverse community and a growing demand for services. However, this development has been accompanied by a significant increase in complaints related to telephone service [10]. It is reported that 60% of users in the area consider the quality of service provided by the call centers of telecommunications companies to be deficient. The most frequent reasons include long waiting times, limited effectiveness in solving problems and the lack of empathy shown by operators [9]. Despite the relevance of these figures, there is still a marked absence of studies that relate service quality with customer satisfaction. This is especially important, since, beyond business performance, the customer must be the

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main beneficiary of the service, so the dynamics between both variables require a contextualized analysis.

In this scenario, service quality is conceived as the difference between what the customer expects to receive and the performance that the company actually offers; In this way, an organization is perceived as of good quality when it effectively satisfies the needs of its users and, at the same time, preserves its competitive capacity in the market [11]. This quality has a direct impact on institutional growth, as it favors public acceptance and strengthens business positioning, which is why the continuous improvement of processes and their correct execution translates into more satisfactory results by responding more accurately to customer expectations [12]. From a structural perspective, quality of service comprises four dimensions. The first of these is reliability, which has to do with the ability to constantly deliver what is promised; the capacity to respond, which has to do with the speed or willingness of the staff to attend to any requirement; security, which is reflected in the trust generated by the agent when it multiplies in its domain, clarity and protection of user data; and finally, empathy, which we understand as the ability to attend to the user and offer effectively human care [13].

On the other hand, it is understood as the consumer's fulfillment reaction in broader terms, satisfaction as the level at which a service or product generates a pleasurable experience and an emotional reaction. Therefore, this level of satisfaction will have consequences on the possible future interaction of the customer with the organization, through the continuous use of the service, the recommendation to people and their loyalty [14]. For its analysis, satisfaction is usually organized into five dimensions or expectations: firstly, we have the initial expectations, which would be defined by the promises made by the company, which are derived from the testimonies or recommendations of other users; secondly, the perception of the customer, which represents the evaluation made between the comparison of what was expected versus what is actually obtained; the third element is the attention of complaints, in which the company has to give clear and effective responses that help increase user confidence; the fourth element, conformity, which is the feeling that their needs were met through appropriate solutions and, finally; the availability of info suggests being able to anticipate doubts and provide convenient information in a quick and appropriate way [15].

From the above, it can be corroborated that, in the context of the service company, the quality of customer service is essential, as well as guaranteeing the level of user satisfaction. In addition, this issue becomes more relevant in sectors such as telecommunications, insurance and customer service, where call centers play a fundamental role in becoming one of the main places of contact between the company and its customers. In these places, the relationship takes place in a non-face-to-face manner and depends, to the greatest extent possible, on verbal expressiveness and the proper management of time [16]. Consequently, it is important to study the problem, its well-defined interior dynamics, especially in a district with a continuity of economic growth, which is considered a commercial district and where a certain potential for consumer interaction is concentrated. In such scenarios, negative experiences not only affect the customer's perception of the

company, but also their well-being, by generating frustration and disorientation [17]. In this way, understanding the relationship between quality of service and satisfaction will strengthen organizational management, improve links with users and guide training strategies and technological adoption. Likewise, since these dynamics are not restricted to a single district, the findings can be replicated in other contexts of the country and even internationally.

Considering the impact that quality of service can have on customer satisfaction, and based on the problems described, the general objective is to determine the relationship between quality of service and customer satisfaction in call center services in a district of Lima, Peru. To support this purpose, specific objectives are formulated aimed at analyzing the relationship between each of the dimensions of service quality, including reliability, responsiveness, safety and empathy, and the level of customer satisfaction in these services. Although it can be hypothesized that there is a significant relationship between the main variables, this dynamic is not yet sufficiently understood in the selected city or in the sector studied, so it is necessary to address the problem with a broad approach.

II. STUDY BACKGROUND

There are multiple studies in different regions where different dynamics have been identified between service quality and customer satisfaction. In this sense, the work of Onofre and Márquez [18] studied how the elements associated with the quality of the service provided in the distribution of dairy products affect the perceptions of consumers who go to the points of sale, and for this they applied a quantitative design with surveys to 207 customers from different establishments. The results showed that more than 90% of the respondents considered both the product and the service received to be of high quality, and also saw that the quality of the service had a positive impact of 41.9% on customer satisfaction, while the Pearson coefficient showed a significant relationship between both variables at 0.60. which reiterates the relationship between the customer service experience and the general perception of the user.

Aguirre and Serrano [19] developed a study in supermarkets in order to understand how the quality-of-service influences customer satisfaction, for which they collected information from 392 participants through a quantitative design. When examining the data, they identified that the user's gender was significantly related to their level of satisfaction, reflecting that certain personal attribute can modify the perception of the service received. Likewise, the calculation of Spearman's correlation showed that the speed and willingness of the staff, a dimension associated with response capacity, maintained a positive link with the quality of the service, obtaining a coefficient of ($r = 0.705$; $p = 0.001$). This result demonstrates a statistically strong association between the two variables and highlights the role that timely care plays in the consumer experience.

In the study carried out by Cevallos [20], whose purpose was to explore how the quality of service influences the satisfaction of customers who frequent cafeterias located in airports, information was collected from 384 users through a quantitative design based on questionnaires. When analyzing the responses, it was observed that a large part of the participants expressed

dissatisfaction in several dimensions evaluated, especially with regard to the speed with which their requests were met and the empathetic treatment received by the staff. On the other hand, Pearson's correlation calculation showed a very strong and even statistically significant correlation link between service quality itself in the empathy and customer satisfaction dimension ($r=0.928$; $p=0.001$), which highlights the great importance of human interaction in this type of service.

Montero [21], in a study also based on user surveys, in the field of supermarkets had addressed the relationship between service quality and satisfaction in Tacna (Peru), based on a quantitative methodology; once the data were processed through the analysis of Spearman's correlation, a positive relationship of statistical significance ($r=0.747$; $p=0.001$) was found between both variables, that is, improvements in perceived quality can cause direct effects on the consumer experience. The author concluded with a strong service-satisfaction quality ratio and the need to strengthen service processes to improve the consumer's valuation and experience.

In Chiclayo, Hernández [22] carried out research whose objective was to explain the way in which service quality and customer satisfaction are articulated in the context of supermarkets. To do this, he resorted to a quantitative style and used a questionnaire applied to the 64 participants in the research. When processing the observed data, Pearson's coefficient pointed to a positive and significant relationship between the reliability of the service and the degree of satisfaction expressed by users ($r=0.770$; $p=0.001$). The most curious thing about the study was that all respondents reported being very satisfied, something that happened rarely and that suggests the presence of other elements, not explicitly considered that could be reinforcing this favorable perception of the consumer.

Masias [23] conducted research in the city of Cusco to find out how service quality is related to customer satisfaction within a clothing and footwear retail company. It opted for a quantitative approach and obtained the information through a survey of 369 users. The statistical analysis, based on Spearman's correlation, revealed a positive and significant association between both variables ($r=0.588$; $p=0.000$). In addition, when evaluating the dimensions of service quality, it was identified that safety presented an equally significant correlation with customer satisfaction ($r=0.590$), which underlines the determining role that the feeling of trust and security has in the evaluation that consumers make of the service received.

In research carried out by Alcántara [24] in a shopping mall in Lima, he wanted to determine how the quality of service is related to people's satisfaction. To this end, a quantitative design was used that was based on using surveys given directly to customers. In the processing of the information, the author found that the two variables were particularly strongly related, given the Spearman coefficient of $r=0.907$ and a confidence level of $p=0.000$. This result shows that when the customer perceives the service executed in the best of ways and consistent with what they expected, then the satisfaction of this person increases markedly, which highlights the strong relationship between the

customer service experience and the final valuation as customers.

III. MATERIALS AND METHODS

A. Type and Design

Considering the purposes of the research and the way in which the variables were addressed, the study is framed within the non-experimental approach, since the behavior of the analyzed phenomena is not intervened or altered, but their manifestation in the natural environment is observed [25]. To obtain accurate and verifiable results, a quantitative approach was chosen, which allows the collection of numerical information and processing it through statistical procedures in order to identify trends, variations, and possible links between the variables evaluated [26]. In accordance with this methodological choice, a cross-sectional correlational design was used, suitable for examining the relationship between variables at a specific time and under controlled observation conditions. This type of design provides a solid basis for analysis and, in addition, makes it easier for future research to reproduce the methodology or use it as a framework to deepen related studies [27].

B. Population, Sample, and Sampling

The population was made up of customers who interacted with the call center located in the district of Los Olivos, Lima, during the year 2024. This group included users who used the service during that period and who, in addition, met the criteria of residing in the district and having had a direct experience with the call center [28]. The delimitation of this population allowed the analysis to be focused on a specific set that is relevant to the objectives of evaluating service quality and customer satisfaction [29]. According to the last census of the National Institute of Statistics and Informatics (INEI) carried out in 2017, the population of the district amounted to 343,878 inhabitants. Based on this data, the study adopts this figure as a population reference, following the parameters established by the INEI for the demographic and statistical characterization of the district [30].

As for the sample, it is ensured that it allows valid conclusions to be drawn that are applicable to the total set [31]. To find the sample, the following formula was considered:

$$n = \frac{N \cdot Z^2 \cdot p \cdot q}{e^2 \cdot (N-1) + Z^2 \cdot p \cdot q} \quad (1)$$

Where:

- $N = 343,878$ (population)
- $Z = 1.96$ (95% confidence)
- $p = 0.5$ (expected success rate)
- $q = 0.5 (1 - p)$
- $e = 0.05$ (standard error)

Therefore, a representative sample of 384 inhabitants of the Los Olivos district was established to ensure reliability.

The research presented in this paper used Simple Random Probabilistic Sampling (MAS), which was the most appropriate

since it grants each of the elements that make up the population the same rights to be selected when forming a sample. This technique, widely known in research, is simple to execute and ensures the selection process randomly, a fact that facilitates the obtaining of representative and coherent samples with all the parameters of the population on which the research is focused [32].

C. Variables

- Quality of service

- Conceptual definition: It is defined based on the expectation that the customer places on it, and the performance that the company itself gives them. In this sense, an organization is said to provide a good service when it can meet the needs of users as it wants and, at the same time, sustains its ability to compete in the sector [33].
- Operational definition: It is the result of the interaction between the attention given during a service and how it adjusts the customer's expectations.

- Customer satisfaction

- Conceptual definition: It is understood as the customer's response achieved, a level that is considered as the feeling of satisfaction generated by the pleasant experience, by the positive emotional response of this product or service experience; and this satisfaction becomes the level of satisfaction that the customer will achieve in their future senses with the organization and with its continuity of use [34].
- Operational definition: It is the response expressed by the customer when their expectations have been met in the experience of valuing the acquisition of a good or service.

D. Technique and Instrument

1) *Technique*: This section of the document explains the procedure used to obtain the data that answered the questions that guided the development of this study, and at the same time, to contrast the hypothesis formulated. To this end, it was decided to use the survey as the main instrument for obtaining information, since this technique could be used to obtain information directly from the people who participated, in addition to organizing this information in a systematic way. The application of this data collection technique was the axis of the entire collection process that was directed towards the population traced, but it also allowed the collection of explicit evidence, adequate to counteract the analysis of the variables that were taken into account in the research [35].

2) *Instruments*: The questionnaire, which is understood as a research instrument, allows the measurement of the variables that have been described in the theoretical framework, as well as collecting the information needed to be able to answer the questions from which it is based and, little by little, to meet the objectives of the study that is carried out [11]. Therefore, it was decided to apply two questionnaires so that the first evaluated

the quality of the service and the second measured customer satisfaction. For both questionnaires, the well-known Likert scale was applied, a psychometric technique that allows the evaluation of the intensity with which the participants carry out attitudes or perceptions in the face of a set of statements or statements [36]. In this case, each item consisted of a statement, before which the respondents had to express their degree of agreement or disagreement, through the application of a scale that varied from 1 to 5 points.

The validation of an instrument requires the participation of people with the appropriate qualifications, who are experts in the subject to be evaluated and have experience in the development of measurement instruments [37]. Under this criterion, the study requested the participation of three professionals with solid training in administrative systems and customer satisfaction, all of them with a master's degree. The experts reviewed each item and made their judgments by applying Aiken's V coefficient, obtaining a value of 0.967, an indicator that confirms the relevance and adequacy of the questionnaire to measure the variables of service quality and customer satisfaction in a valid and consistent manner.

On the other hand, the reliability of an instrument refers to its ability to produce uniform and stable results whenever it is applied under comparable conditions. Within this approach, a Cronbach's alpha value equal to or greater than 0.7 is recognized as adequate [38]. Based on this parameter, this coefficient was calculated using the corresponding formula, in order to determine the internal consistency of the instrument.

$$a = \frac{k}{k-1} \left(1 - \frac{\sum V_i}{V_t} \right) \quad (2)$$

Where:

- a = Cronbach's alpha.
- k = Number of items.
- V_i = Variance of each item.
- V_t = Total Variance.

Through this, a reliability of 0.924 for quality of service and 0.903 for customer satisfaction is calculated, coefficients that attribute excellent reliability to both instruments.

A. Procedure

1) *Previous coordination*: In this phase of the investigation, a meeting was arranged with the legal representative of the selected call center services company and with other managers of the headquarters located in the district of Los Olivos, Lima. During the conversation, the objectives of the study, the planned schedule and the usefulness they could obtain by objectively knowing the state of the quality of the service and the satisfaction of its users were presented. This exposure allowed the company to grant authorization to develop the study within its facilities. Once the permit was granted, the human resources area coordinated with the auxiliary staff of the call center to access the necessary information to locate and contact the defined sample.

2) *Data collection*: The researchers reviewed the records provided about the company's customers and, through the selected sampling, proceeded to contact the 384 randomly chosen users. During each call, the purpose of the study was explained and the reason for the contact was clearly presented, using interactive techniques to motivate participation. Likewise, each client was asked for verbal confirmation of their decision to participate voluntarily. Next, it was indicated that the questionnaire previously prepared in Google Forms would be sent immediately through the social network WhatsApp. In order to achieve a good completion and resolve any doubts that may arise, telephone communication was maintained with each of the participants until the completion of the online form was completed. This article was applied to all the customers selected in the contact, estimating a time of ten minutes in this contact.

3) *Ethical considerations*: The ethical dimension is a fundamental aspect of all research involving people, since it ensures respect, protection and responsible treatment of the participating subjects. Therefore, to endorse strict ethical compliance, this study was subscribed to a meticulous analysis carried out by the Ethics Committee of the University of Sciences and Humanities, obtaining its respective approval through Act No. 024-2025.

In addition to this, in full guarantee of good faith and transparency, the participants were clearly informed of the reason for the survey and the treatment to be given to their data. In turn, to guarantee an ethical process, informed consent was incorporated before the application of the questionnaires so that each of the participants could know their role in the research and the way in which the information provided would be treated. With this, the study reaffirms its adherence to the responsible and confidential use of the data obtained through it.

The data were treated with the strictest confidentiality, safeguarding the privacy, anonymity and security of all the subjects participating in the study. In addition to this, to guarantee the reliability of the information, no records of any kind were altered or manipulated, but the results obtained reflect in a reliable way the reality analyzed in the research.

B. Data Analysis

Once the data collection was concluded, the information provided by the virtual form continued to be organized. This process was carried out in Microsoft Excel; There, the data was cleaned, as well as the coding of these data to facilitate the subsequent classification, which was carried out according to the variables, as well as their dimensions. Finally, the matrix was exported to the IBM SPSS version 30 software, in order to be able to carry out the corresponding statistical analysis, which would be carried out in two defined stages.

In order to carry out the information processing, a descriptive analysis was carried out based on tables and graphs that allowed to account for the sociodemographic characteristics of the subjects in the sample and with respect to the values observed for the variables of service quality and customer satisfaction. Subsequently, since the study aimed to meet the correlational objectives, an inferential analysis was carried out, starting with the verification of the normality of the data using

the Kolmogorov-Smirnov test, using the significance level of 0.05 as a reference criterion. The results showed a uniform p of 0.000 (< 0.05) for both the main variables and for each of their dimensions, which showed that the distribution was not normal. Given this, the use of non-parametric tests was used, choosing Spearman's Rho coefficient to establish the correlations. In this test, values close to one indicate a stronger relationship between the variables; In addition, positive correlations show a direct association, while negative correlations indicate an inverse relationship between the analyzed constructs [39].

IV. RESULTS

A. Descriptive Analysis

Table I shows that among the customers of the Call Center company, the majority correspond to the female sex, since this sex is composed of 262 (68.2%) of the sample, while the male sex was composed of 122 (31.8%) customers.

TABLE I. GENDER OF CALL CENTER COMPANY CUSTOMERS

		Frequency	%
Sex	Female	262	68,2
	Male	122	31,8
	Total	384	100,0

Fig. 1 shows the quality of service among the customers of the Call Center services, in this way it can be detected that most of the customers reported being very much in agreement with the quality of service provided, since those who expressed this were 164 (42.7%) customers, while only 15 (3.9%) customers stated that they strongly disagreed with the quality of service of the company.

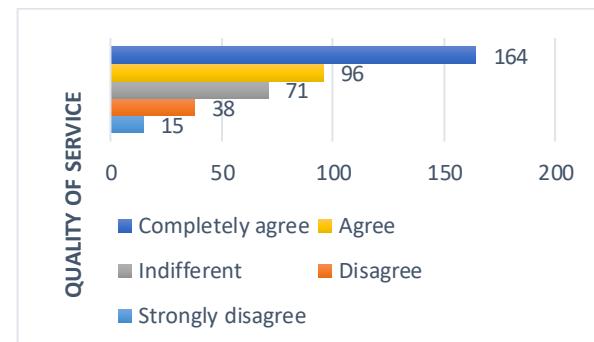


Fig. 1. Quality of service among call center service customers.

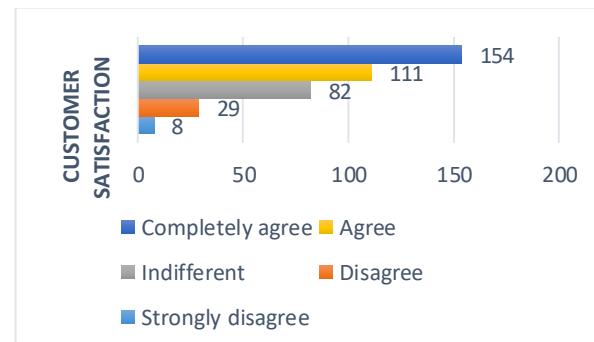


Fig. 2. Customer satisfaction among customers of call center services.

Fig. 2 shows customer satisfaction among the customers of Call Center services, in this sense it can be observed that most of them reported being in great agreement with the high customer satisfaction provided by the company, since 154 (40.1%) customers responded in this way, while only 8 (2.1%) of the customers reported being in total disagreement with the satisfaction of the customer received.

A. Correlational Analysis

Table II shows the relationship between service quality and customer satisfaction in call center services, where a positive association of great magnitude can be seen. Spearman's Rho coefficient reached a value of 0.901, with a significance level <0.001 (<0.05), which shows a very strong correlation between both variables. In practical terms, this result indicates that, as the quality of the service perceived by users increases, their satisfaction with the evaluated company also increases significantly.

Table III shows the correlation between the reliability dimension and customer satisfaction in call center services. The results show us a positive and large relationship that can be observed in a Spearman's rho coefficient of 0.850 and a significance level <0.001 ($p < 0.05$), which indicates that, to the extent that the company increases the reliability of its processes, the fulfillment of what was promised, the accuracy of information and the coherence of care, user satisfaction tends to increase in direct line.

Table IV illustrates how responsiveness and customer satisfaction are related in call center services, showing a positive correlation of medium magnitude. The analysis carried out with Spearman's Rho coefficient gave a value of 0.618, with a significance <0.001 (<0.05), which confirms that there is a statistically significant association between both variables. In simpler terms, this suggests that, as the company improves the speed and willingness to respond to user requests, the perception of satisfaction within the organization also increases.

TABLE II. CORRELATION BETWEEN SERVICE QUALITY AND CUSTOMER SATISFACTION IN CALL CENTER SERVICES

			Quality of service	Customer satisfaction
Spearman's Rho	Quality of service	Correlation Coefficient	1.000	0.901
		Sig. (bilateral)	.	<0.001
		N	384	384
	Customer satisfaction	Correlation Coefficient	0.901	1.000
		Sig. (bilateral)	<0.001	.
		N	384	384

TABLE III. CORRELATION BETWEEN THE RELIABILITY DIMENSION AND CUSTOMER SATISFACTION IN CALL CENTER SERVICES

			Reliability	Customer satisfaction
Spearman's Rho	Reliability	Correlation Coefficient	1.000	0.850
		Sig. (bilateral)	.	<0.001
		N	384	384
	Customer satisfaction	Correlation Coefficient	0.850	1.000
		Sig. (bilateral)	<0.001	.
		N	384	384

TABLE IV. CORRELATION BETWEEN RESPONSIVENESS AND CUSTOMER SATISFACTION IN CALL CENTER SERVICES

			Responsiveness	Customer satisfaction
Spearman's Rho	Responsiveness	Correlation Coefficient	1.000	0.618
		Sig. (bilateral)	.	<0.001
		N	384	384
	Customer satisfaction	Correlation Coefficient	0.618	1.000
		Sig. (bilateral)	<0.001	.
		N	384	384

TABLE V. CORRELATION BETWEEN THE SECURITY DIMENSION AND CUSTOMER SATISFACTION IN CALL CENTER SERVICES

			Safety	Customer satisfaction
Spearman's Rho	Safety	Correlation Coefficient	1.000	0.473
		Sig. (bilateral)	.	<0.001
		N	384	384
	Customer satisfaction	Correlation Coefficient	0.473	1.000
		Sig. (bilateral)	<0.001	.
		N	384	384

TABLE VI. CORRELATION BETWEEN THE EMPATHY DIMENSION AND CUSTOMER SATISFACTION IN CALL CENTER SERVICES

			Empathy	Customer satisfaction
Spearman's Rho	Empathy	Correlation Coefficient	1.000	0,587
		Sig. (bilateral)	.	<0.001
		N	384	384
	Customer satisfaction	Correlation Coefficient	0,587	1.000
		Sig. (bilateral)	<0.001	.
		N	384	384

Table V shows the relationship between the dimension of service security and customer satisfaction, since there is a positive, although weak, correlation between call center services. Thus, Spearman's Rho coefficient reached a value of 0.473 and a significance level $<0.001 (<0.05)$, which shows how increases in the perception of security (trust, clarity of information, data protection) have a direct, albeit moderate, impact on the level of satisfaction that users express.

Table VI shows the relationship between the empathy dimension and customer satisfaction in call center services, where a positive correlation of medium magnitude was identified. Spearman's Rho coefficient reached a value of 0.587, with a significance level $<0.001 (<0.05)$, which confirms a statistically relevant association between both variables. This result suggests that, when staff demonstrate a greater ability to understand the user, listen actively and offer more human attention, the perception of satisfaction on the part of customers tends to increase proportionally.

V. DISCUSSION

Regarding the general objective, the hypothesis initially proposed, which indicated the existence of a significant correlation between service quality and customer satisfaction in call center services in a district of Lima, Peru ($r=0.907; p<0.001$) was confirmed. In addition, this correlation was identified as very strong, which solidly reinforces the relationship between both variables. This finding coincides with what was reported by Alcántara [24], who obtained a similar correlation coefficient in his study also carried out in Lima. Although the customers analyzed belong to different sectors, the similarity between the results could be explained by the shared sociodemographic context, given that both studies were developed in the capital, where users can present comparable characteristics and expectations. However, the correlation found in this research is much higher than that indicated by Montero [21] or Onofre and Márquez [18], who, when finding coefficients lower than those found by us, had to take into account what occurs in face-to-face contact with the customer, which adds factors to monitor in addition to the quality of the service. than the one assumed by the client. These could be waiting, the number of clients left seated in the clinical center room, and the material conditions of the waiting room, among others.

In the case of specific objectives, positive and significant correlations were tested between the dimensions of service quality and customer satisfaction. Among the correlations found, the one with the greatest dimension was that of reliability and customer satisfaction, since it is the one with the greatest strength ($r=0.850; p<0.001$). This coincides with what Hernández [24] found, who also identified an important

correlation between these variables. This gives rise to interpreting reliability as the most important factor in the perception of service quality, since customers associate it with diligent, systematic and respectful attention from the first contact. On the other hand, a positive relationship was also found between the responsiveness of the service and customer satisfaction, with the correlation being of medium size ($r=0.618; p<0.001$), which may be decisive in decision-making to improve the quality of the service. This result is consistent with what was found by Aguirre and Serrano [19], a coincidence that could be explained by the similarity in the methodological approach and in the sample size of both studies. Likewise, these authors evidenced the influence of gender on customer satisfaction, which suggests the need to delve into how sociodemographic characteristics can affect the variables analyzed.

On the other hand, a positive, although weak, correlation was identified between safety and customer satisfaction ($r=0.473; p<0.001$), a result that differs from that reported by Masias [23], who found a relationship of medium magnitude between these variables. This discrepancy could be explained by the context of this author's study, developed in a province of the Sierra natural region of Peru, where the perception of security in service could have a greater weight in customer satisfaction. However, other factors associated with the environment or type of service may also play a role. Finally, a positive and medium-level correlation was found between empathy and customer satisfaction ($r=0.587; p<0.001$). This finding differs from that found by Cevallos [20], who obtained a very strong correlation between both variables. This difference could be due to the area analyzed, since their study was carried out in coffee shops, a direct consumption service in which empathy can more closely and immediately influence the customer experience. In contrast, call center services may involve other elements that modulate satisfaction beyond empathy.

In addition, although the objectives set were met, the study faced some limitations. One of the main ones was related to access to the call center services company, since it handled personal and contact information of its customers, which had to be protected without the possibility of disclosure. At first, research was perceived as a risk for this purpose; however, this difficulty was overcome by the execution of all the procedures required to authorize access, especially those related to the ethical aspects that guaranteed the non-maleficence of the study and its results. Likewise, contact with some customers was not received favorably at the beginning, as several interpreted the call as part of a sale. This situation was addressed through a pre-developed presentation strategy, which made it possible to clearly explain the purpose of the study and persuade users to participate voluntarily. Additionally, assertive communication and empathy techniques were used to promote an effective and

respectful dialogue, which facilitated a greater willingness on the part of the participants. Finally, because participants were selected using non-probability sampling, the results are subject to potential bias. A clear example of this is the gender imbalance, which may not adequately represent the target population. Similarly, variations in response times among participants may have introduced bias. These factors should be considered in future research.

VI. CONCLUSION

In conclusion, the existence of a positive, very strong and significant correlation between service quality and customer satisfaction in call center services in a district of Lima, Peru, an area little explored both nationally and locally, was demonstrated. This finding contributes to filling a gap in knowledge regarding the dynamics between both variables. The findings suggest that the quality of the service is not only an operating condition that call centers should meet, but that it is very directly related to the degree of user satisfaction and that this can be good for the company, since satisfied users tend to repeat the use of the service. However, it is necessary to verify other variables that may affect existing differences in the quality of service; variables related to the organization, the type of interaction or the number of resources available. In the same way, individual variables such as age or sex, in addition to those related to the context, could intervene in customer satisfaction.

In the same way, reliability was shown to be the dimension that had the most robust relationship with customer satisfaction, and this statement invites us to reflect on why providing the user with truthful information and minimizing errors in call center services can be decisive in the manifestation of user satisfaction. In this sense, the effectiveness of communication can be considered as a decisive element in the service process, so it can be very good for call centers and, in general, service companies to reinforce the training of their employees, especially those who are in contact with customers. enhancing effective, assertive and humanized communication skills. Likewise, it is important that the information related to the products, goods or services that are presented is truthful and mentions both the pros and cons; Misrepresenting or presenting erroneous information not only goes against the principles of business ethics, but can lead to an increase in dissatisfaction or loss of customer trust, and this would have an impact on a decrease in sales.

Finally, this work establishes a new line of research since it is dealing with a field of study in which immense attention is being invested and which is becoming increasingly important: the call center service in a city where commercial activity is very intense and in which a continuous offer of services is made. In this sense, future research is invited to focus on delving into these and other variables in similar contexts and on the analysis of other factors that may influence the quality of service and the satisfaction of the end customer. Given that both this study and other analyzed research show a significant correlation between service quality and customer satisfaction, future focus should be on exploring specific relationships between these variables and factors associated with their development, such as frequency of use and socioeconomic level, among others. Expanding these perspectives can enrich our understanding of the sector's complexity and improve evidence-based decision-making.

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