Determination of Indicators, Standards, and Features of Quality Level in Service Companies

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Abstract— The following paper presents and explains the implementation of a standard method for determining and evaluating the quality level of service sector entities. For this purpose, are established indicators, standards and features of the quality provided, with information on customer preferences previously analyzed.

The growth of that sector in the world and in Peru, and the constant increase of the number of companies that offer a combination of products and services, generates that these companies aspire to continue to grow and worry about the loyalty of their customers. Thus, they seek to offer a differentiated added value and meet a care quality level for satisfy customer's needs.

By applying this method in a particular company, weighted values (average) will be obtained, in preference order, together with a general qualification, according to the perceptions of its different types of customers. From this result, also, aspects considered important will be able to be improved, and their level of quality will be increased, generating specialization and customization in the service and growth of the sector.

Index Terms—Service Sector, Indicators of Quality, Procedure, Quality

I. INTRODUCTION

Over the past several years, service companies have been changing their perspectives, objectives and strategic approaches, focusing on the quality of customer service. "The services are activities, benefits or satisfactions that are offered in the rental or to the sale. They are essentially intangibles, and as a result they do not provide the ownership of something. A service is the result of applying human or mechanical efforts to people or objects, and that cannot be owned physically by the customer." [1] For these reasons, services must be measured; this involves assessing, improving and providing follow-up of each of the processes that are involved in their development, thus seeking to ensure and continue to provide a competitive and good quality service.

The use of indicators to measure service performance in the company, by determining standards and features to assess, will help in quantifying customer´s satisfaction and preferences, establishing a higher quality level each time.

Excellence in customer service is one of the greatest challenges for companies. It is a constant job, almost customized, that implies loyalty and identification of customers towards them.

II. METHODOLOGY

A. Bibliographic Review

The service sector, both in Peru and in the world, has been increasing significantly in recent years. Thus it is stated that no company offers only products as tangibles, but also a percentage of products tied to services. The percentage of each of the parties determines which one of these is being offered. In Peru, in 2015, a growth percentage approximately to 5% is expected, this being the third most attractive sector to invest in [2]. Also, job offers in the service sector have increased by 3.2%, 2.9% and 4.4% in Urban Peru, Metropolitan Lima and in the other Urban area respectively, according to the monthly report for April of this year performed by the Ministry of Work [3], reflecting the importance of the sector in Peru, and even more in the world.

Services, defined previously, how are consumed at the moment in which they are produced, imply a relationship hand to hand with the customer, in which both are benefited: the customer with a better level of care and quality, satisfying their needs, and the company, with the loyalty of its customers, increasing their earnings. That is why it may be considered as a "win-win" relationship.

Characteristics of Services

Among the most relevant, we can mention [4] [5]:

Intangibility is the most important characteristic, and the one that differentiates a service from a product. It means that a service cannot be perceived with the five senses. The being unable to prove or have an idea of the service before it is acquired generates uncertainty and anxiety in buyers, since they cannot determine beforehand and with precision the degree of satisfaction they will obtain from it. On the other hand, not being able to patent services prevents the putting of barriers of entry to the sector. Establishing a solid brand and generating loyalty in customers helps to balance this.

Perishability means that services cannot be stored or controlled in an inventory. They are perishable. There is a problem when the demand for the service is not constant, because this characteristic, together with the balance of the offer, would imply the need to generate offers or promotions during the off-peak seasons because of the low demand, planning products so as to control production to adjust the offer of the service, and scheduling and adjusting prices for each circumstance studied, contributing in that way to lowering perishability.

Inseparability means that production and consumption are inseparable: services are produced, sold and consumed at the same time. This also influences the customer-provider interaction because the characteristics of it affect the result.

Heterogeneity is because services depend directly on the capacities, mood, place and person that produces and delivers the service. That is why, to reduce this characteristic, companies must ensure a good selection and training of the human factor in order to define the minimum quality level of the service. Also, the risk of not satisfying the customer's needs as perceived in services is greater than in tangibles products, because it is almost impossible to do comparisons of pricing and quality of services before purchasing them.

Absence of ownership means that, when purchasing a service, the customer acquires a right to utilize it, but not the ownership of the tangible support of it. That is why it becomes difficult to maintain the advantage of a service in the long term, because it is not difficult to copy an existing service.

Variability is because services depend on whom, when and where they are provided; therefore the human factor is the main risk derived from this. In order to collaborate with this characteristic, companies can standardize the process of putting the service into action, monitoring customer satisfaction by complaints systems, surveys and comparisons of purchasing, and taking care of staff training.

Customer-provider interaction. This characteristic becomes essential because both (customer and provider) are present when the service is produced. This is why companies must implement a continuous monitoring system that allows supervisors observe how the relationship takes place during a real transaction.

In conclusion, these characteristics of services have very relevant strategic and operational implications for their successful commercialization. It is important to keep them in mind.

Classification of services

There are different classifications of services with different grouping criteria. For the purpose of this paper, we will present two classifications: the first will be a classification according to the type of services, as presented in Table I [6], and the second will be a classification by the behavior of the consumer, as shown in Table II [7] [8].

Both classifications will be useful in order to identify and comprehend the service to evaluate.

B. The role of services

Currently, companies aim towards a culture of service quality: that is, there are no pure companies, offering only either services or products. Therefore it is considered that every offer made to customers is a combination of both: a physical product and an intangible service.

This is produced in such a way that companies understand the need of satisfying, retaining, and creating loyalty in their customers, to generate competitive advantages.

Services of product companies, or related services, are those related to the sale of a product, and create an added value to the buyer, achieving differentiated from direct competitors and obtain customer's preference. Here influences the degree of customer's unconcern, that is, how much the cost of acquiring the product in exchange for the time, effort and money to get it, affects the customer. [9] [10].

In the services of service companies, the provision, or the degree of significance that the service has for the consumer, and the experience that determines the degree of satisfaction or dissatisfaction, are critical aspects, because they depend on the contact the company has with the customer [11].

Table I: Classification according to the type of services

Services	Types
Higher Services	*Financial services:* institutions whose main activity is around the monetary system and its variants.
	Services to companies: these provide support to people and entities, such as consultants. Sector considered to be highly important, as when companies develop these start showing up as vital.
Services to the consumer	*Services of education, health, well-being:* services provided directly to consumers (schools, hospitals, etc.)
	Recreational services: recreation centers, hotels, restaurants, movie theatres, etc.
	Personal services: aesthetic centers, dry cleaners, etc.
	Repair services: the most specialized sector. Aimed for consumers and companies
	Others.

Table II: Classification of services according to consumer behavior.

Type	Features
Convenience services	Products with frequent acquisition, used routinely, without looking for many alternatives, or making comparisons or efforts in the decision. Simple purchasing process. The consequences of the decisions are not very important. Services are little differentiated.
Purchasing services	Require more complex behavior by consumers. They may search for more information in their own experiences or in references from other people. They evaluate alternatives and perform comparisons. A more complex decision process because there is a greater risk.
Specialty services	Consumers show more thoroughness during the purchasing process. They search for truer and more specialized information, because the consequences are transcendental. Credibility of the company has an influence.
Special services	Given their special features, these require special effort for purchasing, in the sense that consumers head towards wherever it is necessary to get them.
Unwanted services	Those that are not known about, or that being known are not desired to be bought. However, sometimes there is no other option for the consumer, such as taking out insurance.

Process of Services

"It is the set of organized activities or tasks, mutually related among them, that admits elements of entry during their development, either at the beginning or along it, which are regulated or self-regulated under particular management models, in order to obtain outputs or expected results. The presence and interaction of components that are part of it, comprise a working system which should be called Management of the process."[12]

A process, as opposed to a procedure that indicates the steps to follow in order to perform a certain task, defines what should be done. It is comprised by: different types of inputs, with characteristics initially specified for each activity; a transformation (processes, operations) or strategic interaction among the resources of each step, in which the customer's characteristics will influence depending if an intangible property is offered or not; outputs, for internal or external customers, whether this is another phase of the process or the final customer, and a feedback or system of monitoring, controlling and evaluation, comprised by indicators and objectives that will allow the evaluation to reinforce or correct actions. That is shown in Pict. 1 [13]

The process of services must be oriented to the objective, according to the characteristics and values that are sought to be reached. It must be systematic, competent and legitimate. It also means that each activity or sub process that comprises it contributes with a share of the value, so that when they interrelate, the total added value that is sought is generated. In this case, customers are added as an additional element of the process, because they have a direct relationship with the production of the service.

Pict. 1: Parts of a process

Features of a process of services

From the user point of view [14],
Repeatability and Variability: by the human factor.
Specific characteristics of a process of services [15]:
Passage through departments: This means that a process, in order to reach its end, passes through departments with different roles; that is to say, horizontally, or vertically through different hierarchy levels.
Easily standardized: with established procedures so that each person meets their roles effectively and efficiently.
Measured by indicators and can always be improved, by assessing whether the economic amount needed to invest in the change will produce the benefits that are desired.

Identification of the Processes of Services

In companies, processes can be classified according to different criteria; two are mentioned relating to the subject

under study [16]: According to the perspective of the organization and the scope of the vision that is obtained, these may be macro processes, sub processes or micro processes. According to their role in the organization, they may be strategic, essential or for support.

To identify the essential processes of a service company, a list must be produced of all the activities performed by different services that are provided to the customer, from start to finish. Then they must be grouped in a set of interrelated actions and sequentially organized. Each group must have a name that reflects their mission. Example: reception service, guest records, etc.

To identify the processes of support, the same steps must be repeated with the activities that are used to provide support in performing the essential processes. Example: cleaning of the premises, maintenance of utensils, etc.

To identify strategic processes the same must be repeated with the activities that are directly involved with the management, and which are used to prepare the Strategic Plan and for obtain high quality in services. Example: Human Resources Area, Management of Processes, Internal Audits, etc.
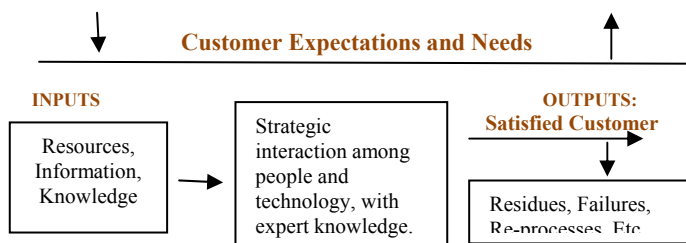
After identifying them, we can create **a map of processes**, which is a schematic graphic representation of processes, organized and sequential, where the relationships between them are shown, as well as relationships with external customers, providers and groups of interests.

An essential component in the analysis of processes is modeling them, assisted by a **flowchart.** This is an organized graphic visual representation, where all the activities that are performed by a person in a station or working area, while a product is being produced or a service provided to an internal or external customer, are recorded and represented, making it possible to obtain preliminary information of the scope, times and activities involved. Besides being simple and show the activities sequentially, they also show the flow of information, customers, employees, teams or materials through each process, facilitating the identification of those essential operations to obtain success, those which generate added value and those which produce the most frequent failures or consume time unnecessarily.

Additionally, companies must have, as a supporting and communication tool, a **Manual of Organization and Functions (MOF),** which indicates, in detail, the activities, objectives, roles, authority and responsibilities of the different work positions that comprise the structure of the organization and its responsible parties. Also are included in the Manual the regulations, strategic objectives and policies of the company; because of it, this is considered a source of information and instruction.

Management of quality of Services

As key elements in reaching a good service, according to the target customer, and to manage conveniently the resources and the people involved, the following should be considered, as also shown in Pict. 2 [17]:

The market: it is important to perform a good selection of the market segment, with the purpose of having well defined customers with homogeneous needs. This, with the objective of be able to anticipate them and satisfy them in a better way.

Concept of Service: understand what combination of tangibles and intangibles will be offered to be useful in what customers need: observable factors and motivations.

Operational Strategy: according to the objectives of the organization, a choice between 4 generic strategies known to compete in services should be made: Low Cost Services; Highly Differentiable; Highly Differentiable and of Low Cost; and Highly Differentiable and High Cost.

Operational Provision: this goes hand in hand with the selected operational strategy. Basically, it consists of designing the operations, technical and operational characteristics aligned to their positioning targets.

Positioning of the company: this is related to the target market, the product offered and the commercial positioning that it is desired to occupy, compared to competitors.

Profitability: this is the expected benefits of the orientation and positioning selected. It will depend on the use of resources to maximize the customer's satisfaction at a lower cost than the competition.

Integration: the result of policies, regulations and procedures of the organization, which allows for having a guideline of the behaviors to follow.

Design: this refers to the design of the relationship between the operational activities, for the purpose of establishing a convenient rendering system of the service.

Pict. 2: Basic strategy elements in Service Companies

Another method considered for the assessment of Quality in services is called "House of Quality". From its results, specifications from customers and their importance, technical characteristics and other characteristics that affect the specifications of the customers are obtained.

Customer loyalty

Currently, service companies adapt to a model of service culture focused on the customer, for the purpose of making the customer loyal, that is to say, seeking to retain a great number of customers, either making them glad to repeat the purchase of the service during a certain period of time or preventing them from defecting, because this connects them directly with the profitability of the company and helps them to achieve their exponential growth.

Also, they aim that the percentage of customers leaving the service be around 3% to 5% or less annually [18]. In this way, the corresponding provisions will be able to be performed, and service deficiencies found and solved. Here it is where complaints come into play, which should be transformed into opportunities for improvement for the companies.

A complaint is an opportunity to satisfy an unsatisfied customer, either by improving the service or fixing the failure of a product/service. Customers who complain are usually the most loyal: they take the time to complain because they continue trusting in the company and, in one way or another; they induce the company to maintain their level of service. That is why a complaint is a gift. In these situations, the customer should be handled as if they were you yourself, because of the impression that other customers that are present will get from the reactions of the person who offers the service.

There is also a percentage of 1 or 0.5% who will try to take advantage of some situation [19], a risk that is taken because of the sector of the company. Others customers will avoid doing it due to different reasons.

When handling a complaint, you need to thank the customer, explain why you are thanking them, apologize for the error, do something immediately in response to the customer, request information, fix the error, evaluate the customer's satisfaction and prevent future errors.

C. Key concepts in gathering information for determining quality standards and indicators in service sector.

Indicators

An indicator of quality, for a service activity, is a measuring and control tool that enables reflecting quantitatively, or qualitatively, the quality level that activity has: that is, it measures the level of compliance if specifications are determined in a certain process, as well as its deviations, and evaluates the degree to which customers are satisfied by a specific activity. Thus, it enables taking preventive and/or corrective measures for a constant improvement and a comparison over different periods of time. The measuring that is performed can be direct or indirect, in accordance to whether or not it specifically affects the aspect of quality that is being evaluated.

There are different classifications for the indicators, two of which will be discussed [20]:
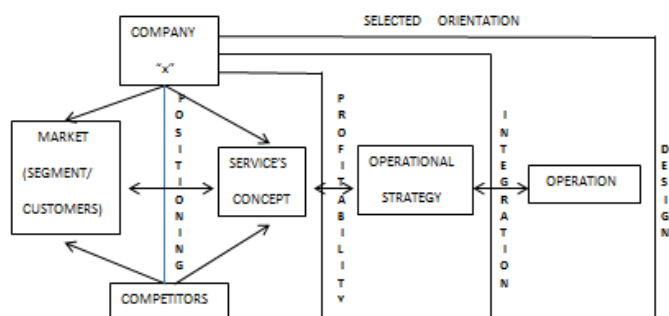
According to the severity of the event and the degree in which it can be avoided:

Sentinel or event indicators: these measure a severe, undesirable and often unavoidable event. This means a complete investigation of the activity, because its result is expressed in absolute terms.

Index based indicators or benchmarks: these measure events of practice in which a certain level or appearance of the fact can be accepted, and are investigated if a significant deviation with regards to benchmark or trend overtime is proven.

According to the concept that is of interest in evaluating:

Demand indicators: these measure the amount of request for assistance that is presented in the service, allowing for a comparison of the activity with other similar services.

Quality indicators of the activity: They can be <u>Indicators of Process</u>, if they quantify aspects of the process, from the beginning to the end, measuring the quality of these and its functioning (how things are done), or <u>Indicators of Results</u>, if they measure the final results of the activities, that is to say, the customer's reactions after receiving the service (quantity results of an activity regardless of how it was performed).

In any case, the indicators, as measures of service quality, should have a systematic character (should always follow the same phases), be normalized (any responsible party of the measuring should obtain the same value of the measured value), be homogeneous (the measuring units should always be the same ones, and that measurement should always be referred to the same population pattern, which provides "universality") and be continuous (in the sense of replication over time).

Standards and Features

We define standards as the existing categories of quality in the service, and features as the properties corresponding to each standard.
In order to identify standards and quality features that will determine a service, initially, there must be an investigation to assess what level of service customers expect for certain processes or activities, followed by identifying and assessing where companies are failing, in order to take action in the case. This also enables a measurement of the level of customer satisfaction, and increases their loyalty.

Tools for gathering information

In order to establish standards, we need to know the customer's expectations, and for this we should select the sectors of involved customers according to the company we are assessing.
We require qualitative and quantitative information, both for knowing what customers want, and to identify where companies are failing and take action on the case, which can be obtained by different methods, as shown below.

Interviews:
These are activities involving a series of questions (questionnaire) to customers. This generates the advantage of being able to talk face to face with customers, because human reaction is always variable and spontaneous. Talking with the generates qualitative data that really helps in identifying their needs according to their perceptions. Interviews can be thorough, sudden, of opportunity, by phone, and of focus group type.

Survey
A survey is the presentation of a type of questionnaire to the customers, by means of a document previously structured, impersonal and anonymous, which is comprised of a series of written, predefined, sequential questions separated by subject. An anonymous survey allows the customer to answer in a more honest way and without pressure, although it does not allow for observing customer reactions nor perform customized modifications. The information (quantitative or qualitative) obtained will depend on the way in which it has been structured and presented.

There are five phases for a successful survey project [21]:
1. Planning the survey project: Consists in specifying the commercial target of the business. The more precise, the clearer will be the necessary information. We will also define the target population, which should be segmented by customer types.
2. Perform the survey: Here, we also chose the size of the population.
3. Gathering data.
4. Processing data: Review the answer sheets, and disregards the incomplete ones, either suspect or in any way not useful.
5. Reporting data: Presentation of the results obtained.

D. Analysis and gathering information for determining the quality level of the service.

The quality indicators are the conversion of the intangibility of a service towards the tangible. These should have standards, and each one should be identify with features.

Preparation of interviews

The identification of indicators, quality standards and features of these standards in service companies should be achieved by open structured interviews, as shown in Annex 1 [22] for the features of standards already determined in a service.
The information obtained will allow a definition of the indicator, standards and features according to the case to be assessed for each product and/or service that companies offer. The purpose of this is that customers can quantify (quantitative indicator), and list, in order of importance, the quantitative indicators for each of the sectors studied.

Preparation of surveys

Once the standards and features to assess are obtained for each product/service offered by the company, we proceed to present them in a survey that will help achieve the targets proposed. We should carry out as many types of surveys as types of customers found. For that, we should have previously undertaken an analysis of the customers that the company has, according to its sector.

Each of the surveys should be divided in two parts:
One, where it is organized according to the priority, each standard and each feature that the customer considers important, and the other, where it is classified according to the satisfaction (generally from 1 to 10) with each one of the features previously organized, as shown in Annex 2 (a) and (b) [23], with regard to a service.

Analysis of customer segments

By selecting a certain type of service to analyze, its own features should be considered, as well as that of direct and indirect competitors for the purpose of being able to establish comparisons between them and achieve specific results without errors or deviations.
After defining the type of interviews and surveys to perform, according to the interests of the study, we should

analyze and group together the customers of the company into segments, because each segment will present specific features to assess, and each one will differ of others. From this, we may construct even more precise interviews and surveys, if necessary, and even orient the offered services, customizing them for each segment.

To determine the range of study, or amount of surveys to perform, from each segment of customers found for a certain service, we will use the determination statistics tool from a sample in finite populations (less than 100000 inhabitants):

$$n = \frac{Z^2 * P * Q * N}{E^2(N-1) + Z^2 * P * Q}$$

Where:

n: is the size of the sample to take.

N: is the size of the population.

Z: is determined by the reliability that is desired, and is determined with the table that provides areas of under the normal curve.

PQ: will be 0.25 in the worst case (maximum value it can take).

E Max: maximum sample error we are willing to commit. Normally, it is considered as between 1% and 10%.

The resulting value of the size of the sample should be close to the next greater number. For example, if it is 77.4, 78 surveys should be performed.

III. RESULTS

A. Summary Tables

Summary Tables of Priorities

The data obtained for each customer segment should be counted and organized according to the answers obtained, by priority of standards and by priority of the features of the standards. They should be inserted in tables with the following features (see Table III [24]):

Table III: Classification according to the priority

Priority Pn	Standard/Features			
	C_1	C_2	...	C_n
P_1	A_{11}	A_{12}	...	A_{1n}
P_2	A_{21}	A_{22}	...	A_{2n}
...	...	...	A_{ij}	...
P_n	A_{n1}	A_{n2}	...	A_{nn}
Total ($T_{i)}$	T_1	T_2	...	T_n

Where:

n: is the number of rows/ standards/number of features of the standards that are evaluated.

i: is the number of the row that is located in the table.

j: is the number of the column/ standards/ features that are evaluated. It should be emphasized that i = j.

P_i: Represents the value of the priority i. (1, 2, 3, 4…etc.) It will depend on the number of standards or features assessed.

C_j: is the name of the standard/feature of the standard that represents column j.

A_{ij}: Represents the number of customers that have assigned priority Pi to the feature/standard Cj.

T_j: Represents the totality of the customers of column j.

In order to read the results of this table for a specific segment, we should select the standard (j) with greater amount (A_{1j}) of electors of the first row (P_1). In second place, the standard (j) with greater amount (A_{2j}) of electors of the second row (P_2). If it is the same standard then the one selected in the first row (P_1), should be selected the second greater, and so on with the rest of the standards, and for all and each of the segments of customers. It will be stated: "(A_{13}) students from the total of (T_3)", or in a percentage way, "have chosen the standard (j=3) as the most important, while (A_{22}) from a total of (T_2) consider the standard (T_2) as the second most important". In the same way, we would read the features of each standard with greater relevance for the customers.

To analyze the information, after it has been grouped in the tables as mentioned above, we proceed to perform the following for each standard and feature:

$$X_i = \left[\frac{(a_i * x_1) + (b_i * x_2) + (c_i * x_3)}{(a_i + b_i + c_i)} \right]$$

Where:

$X_{i=1}$, when it refers to the standard/feature that occupies priority 1.

$X_{i=2}$, when it refers to the standard/feature that occupies priority 1.

a_i: number of customers that considered "i" as priority number 1.

b_i: number of customers that considered "i" as priority number 2.

c_i: number of customers that considered "i" as priority number 3.

And so on, according to the number of standards/features identified.

For the results we will obtain from applying the formula, see Table IV [25]:

Table IV: Results of relative weights

Priority	Standard/Features			
	C_1	C_2	...	C_n
P_1	A_{11}	A_{12}	...	A_{1n}
P_2	A_{21}	A_{22}	...	A_{2n}
...	...	...	A_{ij}	...
P_n	A_{n1}	A_{n2}	...	A_{nn}
Total (T_i)	T_1	T_2	...	T_n
X_i	X_1	X_2	...	X_j

From this, we can see that customers give greater priority to the standard with lesser X_i, while they consider as lower priority the one that has greater X_i. The same would happen when evaluating a feature of a standard. To transform these qualitative indicators to quantitative, we use the inverse of X_i, that is, $(X_i - 1)$.

To determine the percentage of importance "i" has with regard to the rest, we proceed to perform an operation of rule of three, where 100% would be the sum of all the inverse of X_i. We would use the following expression:

$$Y_{i=J} = \left[\frac{X_{i=J}^{-1}}{(X_{i=1}^{-1}) + (X_{i=2}^{-1}) + (X_{i=3}^{-1})} \right] * 100$$

For J= 1, 2, 3…

From this operation, we obtain the following operation (see Table V [26]):

Table V: Percentage of importance of each standard/feature

Operation	Standards/Features			
	Standard 1	Standard 2	…	Standard j
X_i	X_1	X_2	…	X_j
X_i^{-1}	X_1^{-1}	X_2^{-1}	…	X_j^{-1}
$Y_{i(\%)}$	$Y_{1(\%)}$	$Y_{2(\%)}$	…	$Y_{j(\%)}$

The standard that customers consider the most important will be reflected in a greater percentage and as they decrease in percentage the company will be able to observe the preference of these. The smaller percentage will indicate the standard they prefer less. The same would apply for the features of each standard.

We have to consider that these three summary tables must be performed for each standard, and for all the features that are determined from each one, from each segment of customers selected. For example, if for Segment "A" we determined 4 standards and 3 features for each standard, we will have as a result 5 tables of each type from the 3 explained previously, that is to say, 15 in total.

Summary Tables for the classification of the features of the standards

The results of the classifications of the features of the standards, in a scale from 1 to 10 for example, can be entered in a table as follows (See Table VI [27]):

Table VI: Classification of the Features

E_i	C_{ij}	Rating Vk				
		V_1	V_2	…	V_m	Total(T_{ii})
E_1	C_{11}	B_{111}	B_{112}	…	B_{11m}	T_{ii}
	C_{12}	B_{121}	B_{122}	…	…	…
	…	…	…	…	…	…
	C_{1r}	…	…	…	…	T_{1r}
E_2	C_{21}	B_{1r1}	…	…	…	…
	…	…	…	…	…	…
	C_{2s}	B_{2s1}	B_{2s2}	…	B_{2sm}	T_{2s}
…	…	…	…	…	…	…
E_b	C_{b1}	B_{b11}	…	…	B_{b1m}	…
	…	…	…	…	…	…
	C_{bt}	B_{bt1}	…	…	B_{btm}	T_{bt}

Where:
b: is the number of standards that are evaluated.
r, s, t: is the number of features for each standard evaluated
m: is the number of rating values that have been designated
i: is the row number in which a standard is located.
j: represents the row number of a feature.
k: is the column number of the priority value.
E_i: is the name of the standard i.
C_{ij}: is the name of the feature of the standard i, which is located in row j.
V_k: is the value of the rating that is located in column k.
B_{ijk}: number of customers that have scored with the value V_k to the feature C_{ij} from the standard E_i.
T_{ij}: represents the total of customers that have qualified for the feature j of the standard i.

To determine what feature is considered the most important, we proceeded to group the information as follows (see Table VII [28]):

Table VII: Percentage of the features from the standards.

E_i	C_{ij}	% of the Feature	% of the Standard	Total %
E_1	C_{11}	$Y_{11\%}$		$T_{11\%}$
	C_{12}	…	$Y_{1\%}$	…
	…	…		…
	C_{1r}	$Y_{1r\%}$		$T_{1r\%}$
E_2	C_{21}	$Y_{21\%}$		$T_{21\%}$
	…	…	$Y_{2\%}$	…
	C_{2s}	$Y_{2s\%}$		$T_{2s\%}$
…	…	…	…	…
E_b	C_{b1}	$Y_{b1\%}$		$T_{b1\%}$
	…	…	$Y_{b\%}$	…
	C_{bt}	$Y_{bt\%}$		$T_{bt\%}$

Where:
b: is the number of standards that are evaluated.
r, s, t: is the number of features for each standard
i: is the row number in which a standard is located.
j: Represents the row number of a feature.
k: is the row number of the value of the priority.

Y_{ij}: is the percentage obtained by the feature j from the standard i, according to the value obtained from the analysis of that feature in **Table V**: Percentage of importance from each standard/feature.

Y_i: is the percentage obtained by the standard i according to the value obtained in the analysis of that standard in **Table V**: Percentage of importance of each standard and each feature of standard.

T_{ij}: represents the total percentage (%) obtained for each feature. It is calculated by multiplying the percentage that is obtained for each feature of a certain standard specified by the percentage that is obtained for its respective standard.

The greater total percentage is the one considered as the most important by all the customers. The order of importance will be measured as that percentage decreases.

Summary Table of the Service General Indicator

Finally, in order to determine the overall indicator of the service studied, thus transforming the qualitative indicators to quantitative indicators, is proposed the resulting information in the following table (see Table VIII [29]):

Table VIII: Overall Indicator of the Service

E_i	C_{ij}	Weight of the Features (F_{ij})	Avg. Of the Scoring of the Features (G_{ij})	Weight of the Standards. (H_i)	Avg. Of the Scoring of the Standards (I_i)	Avg. Of the Scoring of the Serv. (J)
E_1	C_{11}	F_{11}	G_{11}			
	C_{12}	F_{12}	G_{12}	H_1	I_1	
	...	...	...			
	C_{1r}	F_{1r}	G_{1r}			
E_2	C_{21}	F_{21}	G_{21}	H_2	I_2	J
	...	...	...			
	C_{2s}	F_{2s}	G_{2s}			
...	...	...	...	...	...	
E_b	C_{b1}	F_{b1}	G_{b1}	H_b	I_b	
	...	...	...			
	C_{bt}	F_{bt}	G_{bt}			

Where:
b: is the number of standards that are evaluated.
r, s, t: is the number of features for each of the standards
i: is the row number in which a standard is located.
j: represents the row number of a feature.
E_i: is the name of the standard located in row i.
C_{ij}: is the name of the feature of the standard i, that is located in row j.
F_{ij}: is the value of the weight that has the feature C_{ij} from

the standard Ei; that is to say, represents the value that had that feature, represented in percentage, according to the data from **Table V**: Percentage of importance of each standard/feature.

G_{ij}: average of the feature C_{ij} from the standard E_i, which is obtained from the data from **Table VI**: Scoring of the Features, and the following formula:

$$G_{ij} = \frac{\sum_{k=1}^{m} V_k * B_{ijk}}{\sum_{k=1}^{m} B_{ijk}}$$

For each i: 1…b and j: 1…n.

H_i: represents the weight of the standard Ei; that is, it represents the value that standard obtained, expressed in percentage, according to the data from **Table V**: Percentage of importance of each standard/feature.

I_i: represents the average of the standard Ei, which is obtained by weighting the score by features (G_{ij}), and the weights from each feature (F_{ij}), performed with the following formula:

$$I_i = \sum_{j=1}^{n} F_{ij} * G_{ij}$$

For each i: 1…b

J: is the global score of the service obtained by multiplying each weighted score of the standards (I_i) with the weights of each standard (H_i), with the following formula:

$$J = \sum_{i=1}^{b} H_i * I_i$$

From this procedure, we can conclude that, for certain segment of customers studied, the global score of the service is J. This should be evaluate in this way for each segment of customers the company has, so that the company can improve the type of service that is offered to each segment, exceeding their expectations.

IV.   CONCLUSIONS

- The main difference between the product and the service is that the exchange of the service does not necessarily represent the ownership of something, but the benefit that is the result of having received the service. That is to say, a physical object is not translated towards the end of a transaction, but to the satisfaction (or not) of having received something in accordance with the expected quality.

-The world of services is very variable and subjective because it depends a lot on the human factor that intervenes. However, it can always be measured the degree of quality offered by utilizing indicators of quality.

-One of the advantages of using the indicators of quality is that it allows the evaluation of a certain scope of quality

in a service, and the performance of a follow up of that measure over time, comparing the quality of the good in different periods of time. Also, in the case of change, the fact that an indicator, feature and/or standard assessed is not relevant currently does not mean that it will not be in the future, because this depends directly of the customer preferences.

-To improve even more the level of quality of the service, we should perform evaluations like this periodically, put into practice the Manual of Operations (MOF) with the staff, train them, and establish a System of Complaint Care.

- By applying this method, we recommend the use of information gathering tools, such as open interviews and surveys, because these are useful for recognizing the qualitative and quantitative information necessary for the proposed purposes.

-The procedure established is standard and flexible, since the conditions of the answers that are needed are determined by the organization itself, which means an additional benefit for them, because they can customize them according to their specific targets as well as according to the segment of customers that they wish to make more loyal or of potential customers that they wish to incorporate in the organization,. Also, this can be applied to any type of service company and to any specific service activity, which does not necessarily imply benefits in the shape of earnings, evaluating the level that is offered, and exceeding the expectations of the recipients.

-We could improve the level of service even more with a Queuing Theory study to assess the times spent on each activity, and to determine the best ways of performing it.

-As a result of the procedure, we identify the determined standards and features in a service, prioritize them and establish their score. After analyzing mathematically, statistically and systematically, we obtain a global indicator or general classification of the service offered, meeting the objectives of the study.

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Annex 1: Example of a Structured Interview

Annex 2 (b): Example of a Survey to Identify Indicators, Standards and Features at the level of Quality of the Services. Part II.

Structured Interview - Coffee Shop (Results)

1. What are the product's features that you consider most?
- Price: 11
- Presentation: 11
- Variety: 7
- Quantity: 5
- Availability: 5

2. What other features may you consider for the "product"?
- Nutrition: 4
- Dosage: 2

3. What are the service's features you consider most?
- Attention quickly 10
- Kindness: 9
- Punctuality: 7

4. What other features may you consider for the "service"?
- Weather in queues 8
- Capacity Operation: 7
- Quality accessories: 6

5. What are the cleansing's features you consider most?
- Personal presentation 11
- Linen: 9
- Accessories: 9

6. What other features may you consider for the "cleansing"?
- Local cleaning: 6

7. What are the infrastructure's features you consider most?
- Environment: 11
- Facilities: 9
- Local capacity: 8

8. Put an X in the blank that you believe the coffee shop is located, for each of the indicators shown.

Standard	Features	Very bad 1	2	Bad 3	4	More or less 5	6	Good 7	8	Excellent 9	10
Product	Presentation										
	Price										
	Quantity										
	Dosage										
	Variety										
	Availability										
	Nutrition										
Service	Quickness										
	Kindness										
	Quality of Accessories										
	Queuing Time										
	Punctuality										
	Attention span										
Cleanliness	Local										
	Accessories (cutlery, dishes)										
	Linen										
	Staff Presentation										
Infrastructure	Facilities										
	Environment										
	Internal Order										
	Local Capacity										

9. If you want, you can write suggestions for the coffee shop can serve you better.
_____
_____
_____

Annex 2 (a): Example of a Survey to Identify Indicators, Standards and features at the level of Quality of Services. Part I.

Survey about the level of service in a coffee shop

1. Put an X in the blank, How regularly uses the cafeteria?
___ Everyday   ___ 2 or 3 times per week
___ Once per week   ___ 2 or 3 times per month
___ Once per month   ___ Never

2. Put an X in the blank, the reason or reasons that more frequents the local cafeteria:
___ Meeting   ___ I've invited (Guests)   ___ Have Breakfast
___ Have Lunch   ___ Snacks   ___ Takeaway

3. List the following items at your criteria (with 1 being the most important and 4 the least important):
___ Infrastructure   ___ Product   ___ Service
___ Cleanliness

4. In the category "product", list the following indicators according your criteria (being 1 the most important and 7 the least important):
___ Presentation   ___ Price   ___ Quantity
___ Dosage   ___ Variety   ___ Availability
___ Nutrition

5. Within the category "Service", list the following indicators according your criteria (being 1 the most important and 6 the least important):
___ Quickness   ___ Kindness   ___ Quality Accessories
___ Queuing Time   ___ Punctuality   ___ Attention span

6. Within the category "cleansing", list the following indicators according your criteria (being 1 the most important and 4 the least important):
___ Local   ___ Accessories (cutlery, dishes) ___ Linen
___ Staff Presentation

7. Within the category "infrastructure", list the following indicators according your criteria (being 1 the most important and 4 the least important):
___ Facilities   ___ Environment   ___ Internal Order
___ Local Capacity