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Analysis of perceived service quality measurement models applied to the hospitality industry

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ABSTRACT The consumer's demands have given way to researching into tools that allow to measure service quality. These instruments are called measurement models and help to know customer's opinions in order to determine their needs and apply them to establishments. This work aims to assess service quality measurement models applied to the hospitality industry. The basic concepts of service quality will be presented and the main measurement models developed over time will be explained. The quality measurement models commonly used by restaurants and hotels will be analyzed to conclude that the Servqual model is the most recognized and adopted by the hospitality industry.

KEYWORDS perceived service quality, measurement models, customer service.

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RPE

Análisis de los modelos de medición de calidad percibida del servicio aplicados en la industria de hospitalidad

RESUMEN Las exigencias de los consumidores han dado paso a la investigación de instrumentos que permitan medir la calidad del servicio. Estos instrumentos son llamados modelos de medición, los cuales ayudan a conocer las opiniones de los clientes para determinar sus necesidades y poderlas aplicar en los establecimientos. El presente artículo tiene como objetivo evaluar los modelos de medición de calidad del servicio que se aplican en la industria de hospitalidad. Se darán a conocer los conceptos básicos de calidad del servicio, y se explicarán los principales modelos de medición que se han desarrollado a lo largo del tiempo. Se analizarán los modelos de medición de calidad del servicio más utilizados en restaurantes y hoteles, para concluir que el modelo Servqual es el más reconocido y el que mayor acogida tiene en la industria de hospitalidad.

PALABRAS CLAVE calidad percibida del servicio, modelos de medición, servicio al cliente.

Análise dos modelos de medição de qualidade percebida do serviço aplicados na indústria de hospitalidade

RESUMO As exigências dos consumidores têm dado espaço para a pesquisa de instrumentos que permitem medir a qualidade do serviço. Esses instrumentos são chamados modelos de medição, os quais ajudam a conhecer as opiniões dos clientes para determinar suas necessidades e poder aplicá-las nos estabelecimentos. O presente trabalho tem como objetivo avaliar os modelos de mediação de qualidade do serviço que são aplicados na indústria de hospitalidade. Apresentam-se os conceitos básicos de qualidade do serviço e explicam-se os principais modelos de medição que são desenvolvidos ao longo do tempo. Analisam-se os modelos de medição de qualidade do serviço mais utilizados em restaurantes e hotéis, para concluir que o modelo Servqual é o mais reconhecido e o que maior acolhimento tem na indústria de hospitalidade.

PALAVRAS CHAVE qualidade percebida do serviço, modelos de medição, serviço ao cliente.

Introduction

The hospitality industry has experienced significant growth around the planet. According to the latest UNWTO World Tourism Barometer (2014), international tourist arrivals increased worldwide by 5% in the first eight months of 2014. These data demonstrate that when providing their services, hotels and restaurants should be at the forefront of tourist or customer expectations. Therefore, in order to adapt the tourist offer to the socio-economic evolution of the environment, companies have been forced to abandon the competitive strategy based on prices to use a new one, based on the offer of quality products and services that satisfy customer needs to a greater extent.

The evolution of services in today's society has promoted great interest of service companies to improve and innovate. They have experienced the need to focus especially on how the user perceives and therefore evaluates the quality of establishments. As a result, they have been required to apply a measurement model that allows identifying customer needs and certain factors to get the satisfaction expected (Crosby, 1979).

With such change in the hospitality industry, it is important to know the trends that the globalized world brings to service entrepreneurs. For this reason, this article deals with service quality measurement models, which determine customer satisfaction and success of the companies which are part of the industry.

Therefore, based on consumer demand, some service quality measurement models, which are part of the Nordic and American schools, have been created. The most widely recognized and used measurement models in the industry come from these two schools (Duque, 2005). They are the Servqual model, by Parasuraman, Zeithaml & Berry (1985) and the Servperf model, by Cronin & Taylor (1992). The first model allows determining service quality through surveys and questionnaires to clients. However, this model has some disadvantages, so the authors Cronin & Taylor (1992) decided to create a new model called Servperf. The same authors point out that this new model has a more concise scale, which is based only on the assessment of perceptions and leaves aside expectations, which are considered by Servqual.

This background has allowed us to determine the objective of this work, which is to evaluate service quality measurement models used in the hospitality industry. The methodological approach is interpretative and qualitative, which implies a descriptive conceptual analysis. The latter was conducted through an analysis of the service concept and a revision of service quality concepts and features. Then, a brief explanation of the contributions made by the Nordic and American schools to the study of the construct is included. Afterwards, the evolution of service quality measurement models based on the influence of Servqual in the creation of new modified models is considered. Subsequently, there is a description of the models that have been created for the hospitality industry. Finally, an analysis and a discussion on the issue are included to determine the most commonly used measurement models in this industry.

Literature Review

Current lodging and gastronomy industries are the result of social and cultural evolution for many centuries. Hygienic, comfortable accommodation was once considered a privilege of the wealthiest, but as time passed it became accessible to the ordinary citizen. Transportation progress allowed more people to travel longer distances at a lower cost and that boosted tourism around the globe. From this humble beginning, hospitality and tourism grew until they became the two largest industries worldwide (Varela, Prat, Voces & Rial, 2006).

Currently, the hotel industry is complex and diverse. From lodges in biblical times to complex modern resorts nowadays, the evolution of accommodation establishments has influenced and in turn has been influenced by social, cultural, economic and political changes of society. Quality and service are crucial for the success of the strategies developed in the hospitality industry.

All companies want to satisfy their customers. That is why it is necessary to know the meaning of these words, as well as how they should be interpreted by an establishment (Monfort, Defante, De Oliveira & Mantovania, 2013).

There are different concepts of service. However, this work is based on those related to the hospitality industry.

Some meanings of service are presented in the following table:

TABLE 1. Definitions of service

DEFINITION	AUTOR
Economic good that constitutes the terciary sector. Everyone who works and does not produce goods is supposed to provide services.	Fisher & Navarro, (1994, p. 185)
Work done by other people	Colunga (1995, p. 25)
An activity or series of activities of intangible nature that normally, but not necessarily, takes places through interactions between the customers and the service company employees.	Grönroos (2001, p. 151)

Source: Own elaboration

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After analyzing the definitions included in the table, it is also necessary to know the 0065lements that characterize services, such as intangibility, heterogeneity and inseparability, given that service is very difficult to measure and qualify. Service provision can vary a lot between products, customers or days, because it is not possible to know how it will turn out. Therefore, a service cannot be guaranteed in advance, but only once it has been provided. Then, it is possible to verify its quality (Duque, 2014).

Moving on to the word "quality", there is also a myriad of concepts about it, but some are more related to the hospitality industry than others, as expressed by Juran, (1990): quality is a characteristic of a product that is based on customer needs to provide satisfaction. On the other hand, Civiera (2008) identifies quality as the satisfaction provided by a service or product based on previously exposed requirements, while Maqueda & Llaguano (1995) identify it as the group of properties, circumstances, characters, features and other human insights that give value to an object by comparing it to another one with the same characteristics.

Besides these meanings, it is important to emphasize that there are two trends within the concept of quality that cannot be ignored, such as the distinction between objective and subjective quality. The former can be understood as the fulfillment of technical specifications from the perspective of the producer, while the latter is perceived by the client (Arroyo, 2004; Duque, 2005; Zeithaml, Berry & Parasuraman, 1988).

Once the individual concepts of quality and service are clear, it should be noted that in the hospitality industry there has been a need to create a new concept that includes the meaning of both words as a whole. For some authors as Zeithaml, Berry & Parasuraman (1988), service quality is the customer's judgment about the excellence of the product or service used. Instead, Stevens, Knuston & Patton (1995) state that it is the consumer's perception of superior service, where two dimensions are involved: the intangible one, which is customer care, and the tangible one, which relates to the physical facilities or the staff working there. It is also said that when a company provides a service, it should meet customer expectations and generate positive attitudes to promote a greater percentage of customer return, increasing the company's profitability (Fernandez, 2006).

The most knowledgeable authors on the subject are Grönroos (1978) and Parasuraman et al. (1985), as they were the first researchers that dealt with service quality studies using a systematic approach. In addition, they agree on defining service quality as a fairly complex construct that has been determined based on the discrepancy between service expectations and perceptions. In other words, it is the gap between the expectations of the customers in relation to a service and the level of perception that they actually experience when that service is offered to them (Grönroos, 1988; Parasuraman, Berry & Zeithaml, 1994).

Perceived quality measurement models of service

Before analyzing measurement models, we must first deal with the dimensions and type of assessment included in the concept of service quality. Some authors have determined assessment levels and their corresponding dimensions. Parasuraman, Berry & Zeithaml (1994) are the most recognized and they establish five performance evaluation levels, according to customer satisfaction.

The five dimensions of such assessment are shown below:

— Reliability: fulfilling promises, interest in problem solving, accomplishment of the service as the first option, within the time agreed to and without any errors.

— Capacity: open, fast, collaborative and informed staff, with a positive attitude to help customers to solve their needs within the shortest possible time.

— Security: friendly and well-trained staff that instills confidence to customers. Reliability and safety.

— Empathy: individual attention to customers, convenient hours, personal attention from collaborators, concern for client interests and understanding of client needs.

— Intangibility: services cannot be inventoried. The total production capacity of a service is always used, without any pending issues or stock.

On the other hand, Parasuraman, Zeithaml & Berry (1985) determine three very significant dimensions of quality:

— Physical quality: physical aspects of the service.

— Corporate quality: image of the company.

— Interactive quality: relationship between workers and customers or customers and customers.

Grönroos (1994) argues that the experience of service quality is influenced by two other dimensions, which are technical quality and functional quality. Technical quality occurs when the service is technically correct to get an acceptance from the customer. Instead, functional quality focuses on the way the consumer is served while the service is provided, as shown in figure 1.

Once the dimensions and assessment modes are established, construct evaluation scales are developed. These are based on two service quality measurement models (Duque, 2014). These models are the Nordic, created by Grönroos in 1984, and the American, established by Parasuraman, Berry and Zeithaml in 1985.

The Nordic school

The Nordic model, also called the image model (Grönroos, 1982), states that when talking about service quality it is essential to pay attention to the dimensions mentioned in the previous paragraph (technical quality and functional quality), as they are influential in determining corporate image and, at the same time, quality of the service as perceived by the client.

This model is reviewed in a subsequent work (Grönroos & Gummenson, 1987), where Grönroos' technical and functional quality dimensions are combined with the 4Q (quality of design, quality of production, quality of provision and quality of the relationship) identified by Gummensson (1987). Also, some conditions are established to achieve quality, such as specialization and service integration.

The following graph represents the Nordic model.

Grönroos' contributions are the basis for authors such as Rust & Oliver (1994) and Brady & Cronin (2001) to develop the three-component model and the hierarchical model, respectively. These models will later be developed in this work.

The American school

Like Grönroos, authors Parasuraman, Berry & Zethaml (1985, 1988), developed an instrument

FIGURE 1. Nordic model of service quality
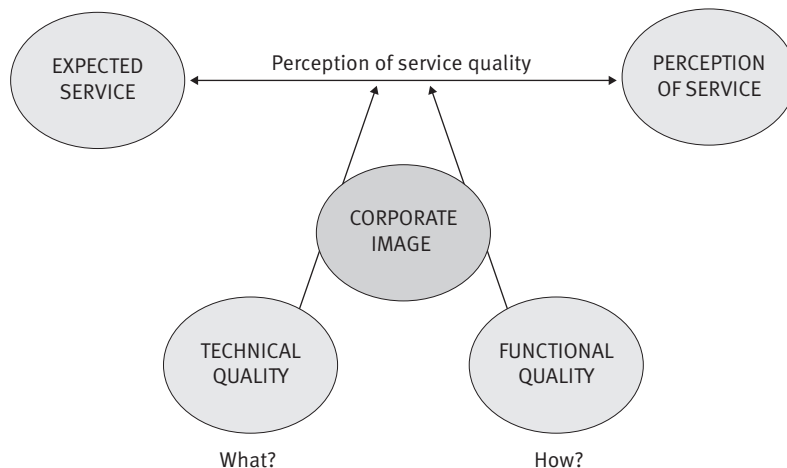
Source: Gronroos, 1984, p. 40

that could measure perceived service quality and it was called Servqual.

This model helped to obtain a separate measurement of customers' expectations and perceptions through a questionnaire comprised of 22 items (Hak-Seon, Hyun-Woo, Yi-Hua, Chihkang & Jau-Jiin, 2009).

TABLE 2. Definitions of service

DIMENSION	DESCRIPTION
Trust	Individual attention or care given to clients.
Reliability	Ability to provide the service offered properly and accurately.
Response capacity	Willingness to help the customers and offer a fast service.
Responsibility	Employees' knowledge and courtesy and their willingness to instill trust and confidence.
Tangibility	Related to physical facilities, equipment, personnel and written materials.

Source: The authors, based on Parasuraman et. al, 1991

The questionnaire initially consisted of ten variables. Later, some statistical studies were carried out and the relationship between some variables was found, reducing them to five. These variables are: trust or empathy, reliability, response capacity, responsibility and tangibility, which are listed in table 2 (Chen & Chen, 2010).

After having clear assessment dimensions, Parasuraman et al (1991) realize that there is a discrepancy between consumer expectations about the service that they will receive and their perceptions about the service actually provided by the company. Such differences during the process is what they call gaps (Parasuraman et al., 1991; Zeithaml & Bitner, 1996). The authors have proposed five gaps based on the results of their original work and the consequences brought by such evaluations.

Gap 1: discrepancy between customer expectations and the perceptions that the company has about those expectations. One of the main reasons why service quality can be perceived as poor is not knowing exactly what customers expect.

Gap 2: discrepancy between the perception of managers about customers' expectations and quality specifications. Sometimes, even having enough, accurate information about what customers expect, service companies do not manage to meet these expectations. This may happen because service quality specifications are not consistent

with the perceptions of customers' expectations, which means that perceptions are not translated into customer-oriented standards.

Gap 3: discrepancy between quality specifications and the service actually provided.

Knowing customers' expectations and having guidelines that reflect them accurately does not guarantee the provision of a high-quality service. If the company does not provide, encourage or require compliance with the standards in the process of producing and delivering the services, their quality might be affected.

Gap 4: discrepancy between the real service and what is communicated to customers about it. This gap means that promises made to customers through marketing communication are not consistent with the service supplied. The information received by customers through advertising, sales staff or any other means can raise their expectations, therefore exceeding them will be more difficult.

Gap 5: difference between consumer expectations and perceptions. This gap occurs as a consequence of the previous deviations and it measures service quality. It can be expressed with the following formula:

Gap 5 = f (gap 1, gap 2, gap 3, gap 4)

This model shows how service quality is determined and the steps to consider when analyzing it and planning for it. Figure 2 is a representation of the Servqual model. The upper area contains aspects related to the clients or users, who, according to their personal needs, previous experiences and information received, have some expectations about the service to be received. The lower area includes aspects about the service to be received and aspects related to the service provider. Specifically, it shows how the perceptions of managers about customers' expectations lead the organization's decisions concerning service quality specifications when communicating and delivering them (Garza, Badii & Abreu, 2008).

Measurement models based on the Nordic and American schools

With the pass of time, the Nordic and American schools were influential for new research on service quality measurement. Modified models emerged, despite the great dissemination and popularity of the Servqual model, which was

FIGURE 2. Representation of the Servqual model
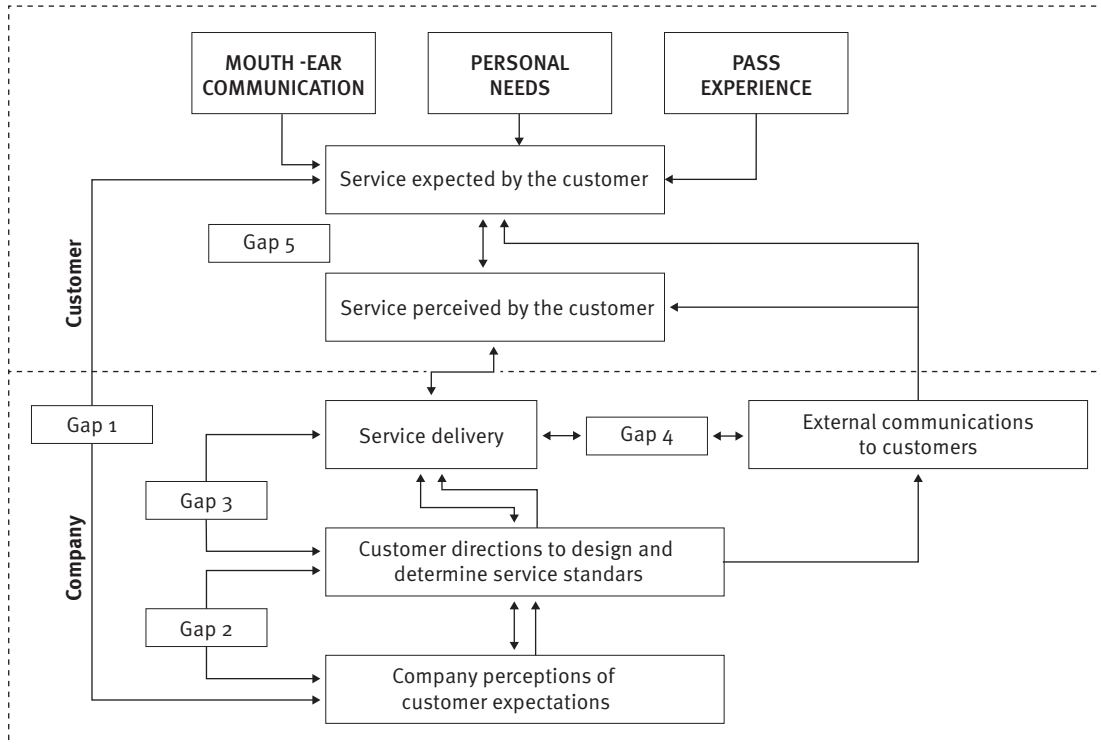
Source: Parasuraman, Zeithaml y Berry, 1985, p. 44

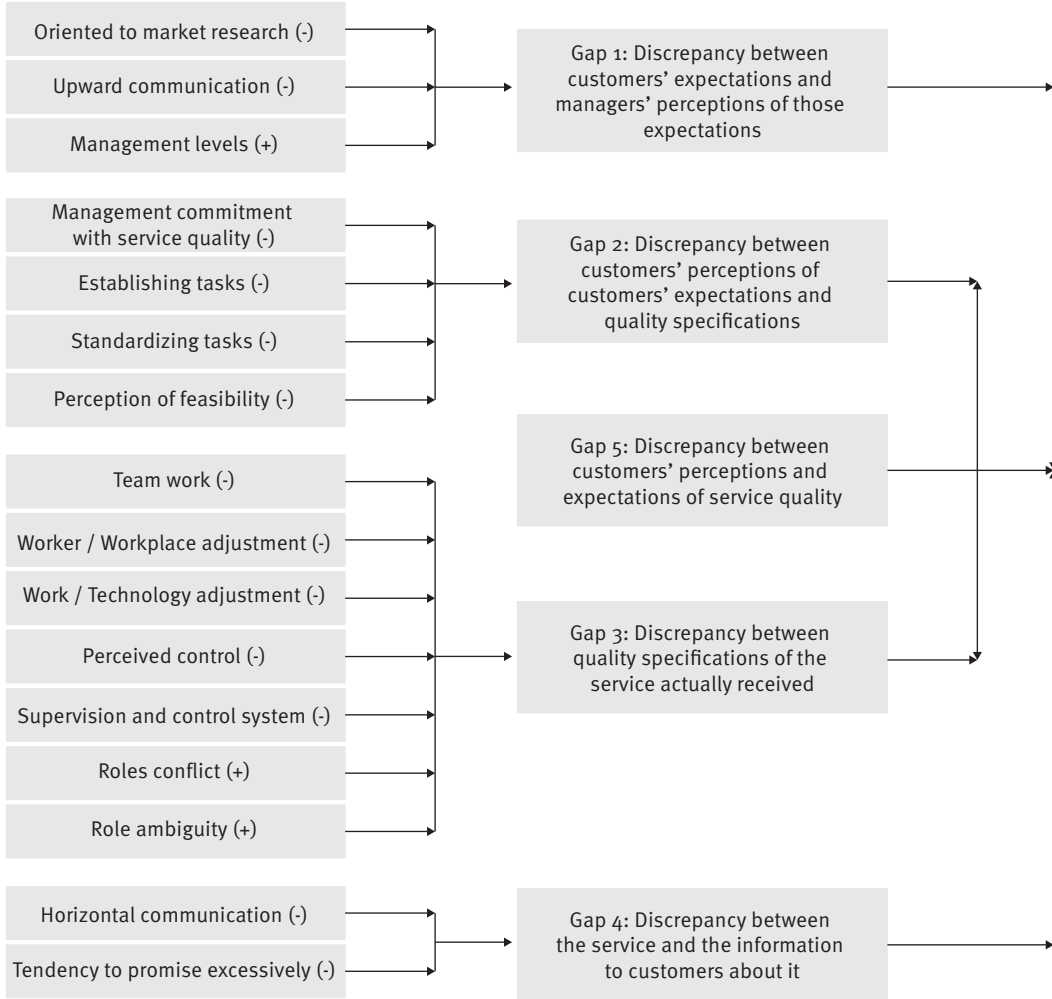criticized by multiple authors who questioned its validity and suggested that it posed implementation problems (Markovic & Raspor, 2010). For example, Teas (1993) mentions that the increase of the difference between perceptions and expectations may not reflect a continuous increase in the levels of perceived quality, as the Servqual model apparently states. Other authors such as McDougall & Levesque (1994) believe that it is inefficient and unnecessary to include expectations in an instrument for measuring service quality. They base their claim on the fact that people tend consistently to describe many expectations, while their perceptions can rarely exceed them (Babakus & Mangold, 1992).

In response to criticism, Cronin & Taylor (1992) proposed a measurement based only on perceptions and created a new measurement model called the Servperf scale. It is a modification of the Servqual model. It is shorter and has fewer validity issues. Servperf consists of the 22 items from the Servqual scale, but it is only used to measure perceptions of service. This new model is a better choice, as there is little evidence that customers rate the perceived quality of a service

in terms of the differences between expectations and perceptions. The statistics show a common tendency to assess expectations with a higher scale and perceptions are the biggest component when measuring service quality (Maldonado, Jimenez, Guillen & Carranza, 2013). In addition, it explains total variance better when measuring service quality. It also has better psychometric properties in terms of construct validity and operational efficiency (Cronin & Steven, 1994). The figure 4 shows how the Servperf model works.

On the other hand, Rust & Oliver (1994) presented an untested conceptualization that supports Grönroos (1988). Its justification lies on the evidence found by authors like McDougall & Levesque (1994) in the banking sector. The model consists of three elements: service and its features (service product), the process of service delivery and the environment that surrounds the service (Rust & Oliver, 1994). His initial proposal was for physical products. When applying it to services the focus of attention changes, but as they say, in service or product companies the three elements of service quality are always present, as shown in Figure 5.

FIGURE 3. The five gaps of the Servqual model

| Oriented to market research (-) | → | Gap 1: Discrepancy between customers' expectations and managers' perceptions of those expectations |

Oriented to market research (-)

Upward communication (-)

Management levels (+)

Gap 1: Discrepancy between customers' expectations and managers' perceptions of those expectations

Management commitment with service quality (-)

Establishing tasks (-)

Standardizing tasks (-)

Perception of feasibility (-)

Gap 2: Discrepancy between customers' perceptions of customers' expectations and quality specifications

Gap 5: Discrepancy between customers' perceptions and expectations of service quality

Team work (-)

Worker / Workplace adjustment (-)

Work / Technology adjustment (-)

Perceived control (-)

Supervision and control system (-)

Roles conflict (+)

Role ambiguity (+)

Gap 3: Discrepancy between quality specifications of the service actually received

Horizontal communication (-)

Tendency to promise excessively (-)

Gap 4: Discrepancy between the service and the information to customers about it

Source: Parasuraman, Zeithaml & Berry, 1985, p. 44

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FIGURE 4. Representation of the Servperf model

Trust / Reliability
Response capacity
Empathy
Tangibility
Guarantee

Perceived service

Perceived service quality
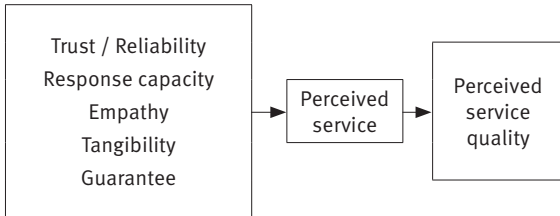
Source: Cronin & Steven, 1994

FIGURE 5. Representation of the three-component model

Características del servicio

PRODUCTO FÍSICO

Ambiente

Entrega

Source: Rust & Oliver, 1994, p. 11

There is a different alternative proposed by Brady & Cronin (2001), who formulated a third-order multidimensional and hierarchical structure. The authors call it "multidimensional hierarchical model" and it is based on Grönroos (1984), Parasuraman et al. (1988) and Rust & Oliver (1994). Here, consumers define the perceptions

of service quality based on a performance eva-luation at multiple levels and then they combine those evaluations to find the global perception of service quality, as seen in the following graphical representation.

As it can be seen in the figure, quality of a service experience is determined by three direct dimensions: quality of the interaction, the physi-cal environment surrounding the service and the result of the transaction. At the same time, each of these dimensions is composed by specific sets of attributes called sub-dimensions (Brady & Cronin, 2001). These sub-dimensions are evaluated by customers to generate their perceptions about the performance of the organization in each of the three primary determinants.

Thus, if detailed evaluations on the different factors of service quality are required, multidi-mensional hierarchical models can be built to provide a structural multi-level vision of percei-ved quality. These models have a large number of items, since quality factors are latent variables that manifest themselves through observable in-dicators. The length of the questionnaire depends on the level of aggregation of the study. For a more detailed level, the evaluation would be done from

the sub-dimensions, while for less detailed levels, the assessment would be done from the dimen-sions (Brady & Cronin, 2001).

Scales applied in hospitality

Based on the models mentioned, other scales were created to be used especially in the hospi-tality industry. For example, the Lodgserv scale for measuring service quality in hotels (Knutson, Stevens, Wullaert & Yokoyama, 1990); the Logqual scale, applicable to hospitality (Getty & Thompson, 1994); Dinerserv, which is proposed for restau-rants (Stevens et al., 1995); Hotelqual for ac-commodation services (Falces, Sierra, Becerra & Brinol, 1999) and Histoqual, for historic homes (Frochot & Hughes, 2000).

Lodgserv Scale

Lodgserv was designed to measure the ex-pectations of customers at hotel establishments (Knutson et al., 1990). The study is based on servi-ce quality in the hotel industry, which is difficult to measure due to the characteristics of services and

FIGURE 6. Representation of the multidimensional hierarchical model
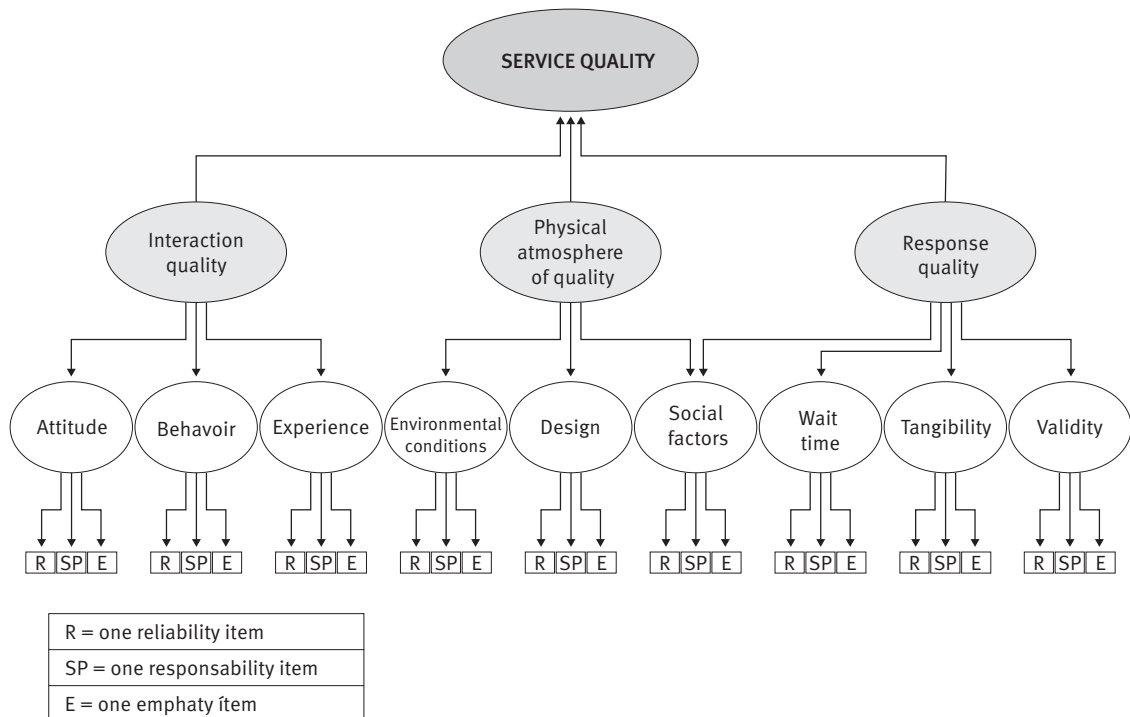
Source: Brady & Cronin, 2001, p. 37

hotels in particular. To carry out this research, the authors designed a questionnaire in order to evaluate service quality (perception of service minus expectations), based on the work of Parasuraman et al. (1985). After preliminary studies, the questionnaire consisted of 26 questions. The results confirm the five dimensions of service quality of the Servqual model. The order of importance according to the variance of each dimension is first related to reliability issues; second, security issues; third, response capacity; fourth, tangible elements of the establishment and finally there is the empathy dimension (Rios & Santoma, 2008).

Lodgqual Scale

The study wanted to provide a valid instrument (Lodgqual) to measure customer perceptions of service quality in the hotel industry. That explains its name (Lodging + Qual), which means lodging quality. The basis of the study was the Servqual model, which was modified based on a literature review and interviews with consumers and professionals from the hospitality industry. The results obtained after completing the study confirm three attributes of service quality in hospitality: tangible elements, reliability and contact (which includes the attributes "response capacity", "security" and "empathy"). The results were confirmed when it was demonstrated that the Lodgqual model has high reliability for predicting quality of the stay from a global perspective (Getty & Thompson, 1994).

Hotelqual Scale

This study was done by Falces et al. (1999) and its objective was to develop a scale to measure quality as perceived by customers of lodging services. This scale was called Hotelqual and had two phases. In the first phase, after a literature review the authors used the Servqual model and used a questionnaire adapted to the hotel industry. The second phase consisted in applying the questionnaire to a representative sample of hotels users. Then, the new measurement scale was validated. The results obtained show that the five attributes of the Servqual model are not valid, because after factor analysis, the study shows groups of three attributes: evaluation of personnel providing the service, evaluation of hotel facilities and perception of the operation

and organization of the services provided by the hotel (Rios & Santoma, 2008).

Dinerserv Scale

Another model for service quality measurement is Dinerserv. It is based on the first articles published by Stevens et al. (1995, p. 57), where the Dinerserv model is described as "a tool to measure the quality of services in restaurants". The objective is to provide restaurant operators and owners with a guide to measure and have a general overview of the quality of services at their establishments. They should be willing to take the necessary actions so that the problems can be solved or adjusted to customers' needs and desires. Dinerserv consists of a questionnaire with 29 items and has a service quality standard, according to common aspects in the areas of quality: security, empathy, reliability, response capacity and tangibility. This model was based on Servqual and Lodgeserv (Knutson et al., 1990).

All of these scales have some characteristics that identify them and allow them to work better in different companies within the hospitality industry. Therefore, the variables and dimensions that customers want and need will be identified in these service areas. For this reason, a comparison chart was created for all the measurement models mentioned in this article. Their specific features can be observed there.

Analysis of models in the hospitality industry

The big question is: Which service quality model is better suited for the hospitality industry? To answer this question, a comparative analysis is needed to study their similarities, differences, advantages and disadvantages.

The similarity that most of them have is that they are based on the five dimensions: reliability, response capacity, tangibility, security and empathy. Similarly, customer perception is a common element among the models to determine service quality. Therefore, all models include the dimensions and the perception element in a questionnaire or survey. This survey is the means used by customers and employees to communicate with company managers to determine service quality.

TABLE 3. Comparative chart of models or scales measuring perceived service quality

SCALE AND AUTHOR	ITEMS AND SECTOR	DIMENSIONS
Servqual Parasuraman *et al.*, 1988	22 in services in general	Tangible, reliability, response capacity, security and empathy
Servperf Cronin y Taylor, 1992	22 in service companies	Based on the five dimensions of Servqual
Lodgserv Knutson *et al.*, 1990	26 in hotels	Based on Servqual
Lodgqual Getty y Thomson, 1994	22 in hospitality	Only three from Servqual: tangibility, reliability and contact
Hotelqual Falces *et al.*,1999	20 in lodging	Staff, facilities and service organization
Dinerserv Stevens *et al.*, 1995	29 in restaurants	The five dimensions of Servqual are identified

Source: Own elaboration

The main difference that can be found is that only the Servqual model includes customer expectations. The authors of the other models believe that customer perceptions against expectations are not always real or easy to obtain for a service establishment. For this reason, they decided to focus only on customer perception.

Another difference has to do with the sector where each model is used. The Lodgserv, Lodgqual and Hotelqual models were created to be applied exclusively in hotels, while the Dinerserv model is available for restaurants. On the other hand, Servqual and Servperf can be used in any type of service companies, such as banks, airlines, public utilities and, of course, hotels and restaurants.

Concerning advantages, all the models have the objective of measuring service quality, so they provide detailed information on customer opinions about the service, perceived levels of performance, comments and suggestions, customer satisfaction and employees' perceptions of service quality. That way, needs can be recorded instantly, creating a competitive advantage over the competition.

There isn't any verified disadvantage about the use of service quality measurement models. The only aspect observed is the opinion of the authors Babakus & Mangold (1992), Cronin & Taylor (1992), Cronin & Steven, (1994), McDougall & Levesque (1994) and Teas (1993), who call into question the Servqual model due to the reliability and validity issues it poses at the time of calculating measurement results. According to them, the rest of the models have a simpler structure that allows for a better interpretation of the measurements.

Next, the most commonly used service quality measurement model in service companies was analyzed. Studies focused on measuring perceived quality of service in the hospitality context and which were part of the Ebsco database were used as reference. It means that in order to be selected, they should be applied in hotels or restaurants. This is how 20 documents and research papers from Mexico, Colombia, United States, Croatia, Malaysia, Taiwan, India, Mauritius and Turkey were found (annex 1).

50% of those studies corresponds to hotels and the other 50% to restaurants. Out of the 10 hotels, 7 used Servqual and only 3 Servperv. In contrast, 6 restaurants used Servqual for measuring service quality, 3 used Dinerserv and only one used Servperf. That means that in terms of percentages 70% of the hotels used Servqual and 30% Servperf, while 60% of the restaurants used Servqual, 30% Dinerserv and 10% Servperf.

Therefore, 13 establishments used Servqual, 4 used Servperf and 3 used Dinerserv. That means that 65% of hotels and restaurants use the Servqual model, 20% use Servperf and 15% use Dinerserv, as shown in table 4.

Although the literature states that the Servqual model created by Parasuraman, Zeithaml & Berry (1985) has many validity flaws and therefore new models were developed, after analyzing these 20 studies it was observed that managers prefer to use the original one. The other models are virtually the same, except that they want to obtain a

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clearer perception of the customer, but in the end they use the same dimensions, since the only changes are related to survey formulation and area of application. It is worth noting that the Dinerserv model, developed by Stevens et al. (1995) to be used exclusively by restaurants, has actually been well received by the sector, which means that its effectiveness and validity are high.

TABLE 4. Most commonly used service quality measurement models in hotels and restaurants

MODEL USED			
	Servqual	Servperf	Dinerserv
Hotels (10)	7	3	0
Restaurants (10)	6	1	3
APPLICATION PERCENTAGES			
Hotels (10)	70%	30%	0
Restaurants (10)	60%	10%	30%
HOTELS AND RESTAURANTS COMBINED			
Total (20)	13	4	3
Percentages	65%	20%	15%

Source: Own elaboration

Conclusions

This study allows for a real insight into service quality measurement models.

From this analysis, each person will have to make the decision to use a specific service quality measurement model based on the needs of their establishment and not on other people's choices.

The world is continuously evolving and the hospitality industry has had to face many changes. Service quality in hotels and restaurants is gaining strength and managers in the area are looking for ways to satisfy their customers. Thanks to the Nordic and American schools there are some models to measure service quality and their scales and dimensions allow consumer assessment and determine their needs. The contributions from the Nordic school are conceptual rather than practical and they constitute the basis for further studies and the creation of new models. On the other hand, the contributions of the American school focus on the design and the development of a multidimensional conceptual model, but they also added the design of a measuring tool for in-depth evaluation of service quality, which boosted its acceptance and implementation in organizations.

This document contributes to the identification of the meanings of quality, service and service quality, which are the basis for the development of service quality measurement models. The Nordic and American schools have led the way to understand customers' perspective more easily, which has motivated the emergence of new strategies to meet customers' needs and expectations.

Based on Parasuraman et al. (1985) and Grönroos (1984), models such as Lodgserv, Lodgqual, Hotelqual and Dinerserv were proposed. Their modifications were especially focused on the characteristics of the hospitality industry, given the specific aspects of hotels and restaurants.

According to the literature reviewed, the Servqual model is the most widely recognized and used in the hospitality industry, followed by Servperf and finally Dinerserv. These findings are inconsistent with the statements made by theory, since some authors claim that the Servqual model is not the best to measure service quality. However, in practice it can be seen that companies do rely on the results given by this model and they use it very often. Some application discrepancies, rather than conceptual, can be seen.

Therefore, it can be reaffirmed that in many cases there are discrepancies between the information from some articles that criticize the Servqual model and the reality. This can be said because even with the very specific aspects of the hospitality industry, Servqual is the most widely used model. Servperf, which is basically the same as Servqual and measures only expectations, comes second. It is interesting to see that a standard scale can be applied equally to financial services and hospital services, commercial services or, as in this case, hospitality services.

A limitation of this review is that since there are not many studies on the hospitality industry, the use of a service quality measurement model cannot be verified in all related sub-sectors. However, the gastronomic and hotel sub-sectors are fairly representative for the sector. Further research about the use of service quality measurement models in the tourism and transport sub-sectors, for example, would shed some light on the issue.

This work allows the reader to understand the importance of service quality in the hospitality industry. The entire environment might be perfect, but if the client does not perceive the service received as having good quality, the establishment

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will very likely have problems and low profitability. For this reason, all service entrepreneurs must know clearly that service quality is the backbone of the business and the way of measuring it has to be taken into account, since customers' perception of quality in a service company is different from the one perceived by owners and managers, who often do not understand the causes of problems that may occur. Therefore, it is essential to know when, how and where a service quality measurement model must be applied, in order to get positive results.

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ANNEXES

ANNEX 1. Analysis chart of application studies on service quality measurement models

TITLE	AUTHORS	YEAR	OBJECTIVE	DATA OBTENTION	SAMPLE	MODEL USED	DIMENSIONS
Measuring Service Quality: An Application in Hotel Companies	Sara Joana Gadotti dos Anjos y Aline França de Abreu	2009	To measure service quality as perceived by customers of Brazilian sun and beach hotels	Interview	Customers and employees of hotels from diverse sun and beach categories	Servqual	Tangibles, sensibility, efficiency, security and empathy
Financial Management and Service Quality of the Hotel Sector in Riohacha Municipality, La Guajira Department	Wilmar Sierra Toncel, Ángela Nair Ortiz Rojas, Karen Nahyr Sierra Ortiz, Marelis Alvarado Mejía y Olivia Rangel Luquez	2014	To present the results of the research entitled "Financial Management and Service Quality of La Guajira Hotel Sector"	Meeting; multiple Lykert-type questions and answers	Managers of hotel establishments in Riohacha municipality	Servqual	Tangibles, sensibility, efficiency, security and empathy
The Role of Restaurant Service Quality as a First Step for Customer Loyalty	Jorge Vera M. y Andrea Trujillo L.	2009	To provide some explanation about the extent in which service quality factors predict the general opinion of customers	Structured questionnaire	Sample comprised of 111 diners at table-service restaurants	Dinerserv	Facilities, accessibility, staff, environment, food, persistence, honesty
Service Quality Evaluation: A Case Study. Los Fresnos Family Restaurant	Artemiza Guzmán López y María de Lourdes Cárcamo Solís	2013	To evaluate customers' perception of service quality at Los Fresnos Family Restaurant	Survey	Random representative sample of the total of customers who dined at the restaurant in June, 2013	Dinerserv	Tangibles, reliability, response capacity, security and empathy
Fast Food: Service Quality and Customer Loyalty in franchises and family restaurants in Aguascalientes	Maribel Feria Cruz, Sasi Herrera Estrada y María Angélica Rodríguez Esquivel	2013	To measure the influence of service quality over customer loyalty in two fast food restaurants in Aguascalientes	Questionnaire	Students and workers of Instituto Tecnologico de Aguascalientes who have eaten at the institute's restaurants	Servqual	Reliability, tangibility, response capacity, empathy and security
A New Scale for Evaluating Hospitality Services Quality	Jesús Varela Mallou, Remei Prat Santaolàri, Carmen Voces López y Antonio Rial Boubeta	2006	To have some insight on perceived quality assessment at restaurants	Likert-type personal interview	2,407 customers of 180 restaurants in Santiago de Compostela	Modified Servqual	Access, staff, service, product, facilities

TITLE	AUTHORS	YEAR	OBJECTIVE	DATA OBTENTION	SAMPLE	MODEL USED	DIMENSIONS
Cafeteria Service Quality According to User Perception	Isela Romero Castillo y Virginia Guadalupe López Torres	2013	To study user perception about service quality at a college cafeteria	Questionnaire	380 people (administrative staff and students), UANC, UE	Modified Servqual	Reliability, kindness, service, facilities and product
Service Quality Determinants at a Public University Cafeteria	Sonia Elizabeth Maldonado-Radillo, Ana Ma. Guillén Jiménez y Rafael Ernesto Carranza Prieto	2013	To validate a 19-item scale that can be used at public universities to evaluate cafeteria customers' perceived service quality	Likert-type scaling technique survey with five response categories	297 users of 4 cafeterias at a public university in Mexico	Modified Servqual	Staff, facilities and product
Service Quality and User Satisfaction Analysis at Two Five-Star Hotels in Cartagena (Colombia) Through a Structural Equation Model	Juan C. Vergara, Víctor M. Quesada and Ingrid	2011	To analyze service quality at two five-star hotels in Cartagena	Survey based on a 6-point Likert scale	350 customers of two five-star hotels in Cartagena	Modified Servqual	Perceived price, perceptions, perceived service quality, customer satisfaction, repurchase intention, word of mouth
Quality Perceived by Guests After a Service Flaw: a Study on Service Improvement in the Hospitality Segment	Aline Regina Santos, Tiago Savi Mondo y Jane Iara Pereira Da Costa	2011	To determine perceived quality based on the actions taken at lodging establishments after receiving a complaint	Complaint questionnaire at an Internet link	418 people who had experienced flaws in the service offered by ten hotel companies at Santa Catarina state	Servqual	Tangibles, reliability, response capacity, security and empathy
A Trans-Level Analysis of the Relationship Between Service Quality, Expectation Confirmation and User Satisfaction	Rosa M. Sánchez-Hernández, Vicente Martínez-Tur, M. Gloria González-Morales Ramos y José M.	2009	To analyze expectation confirmation (individual variable) and service quality as perceived by work units (group level) for predicting satisfaction (individual variable)	Questionnaire with a 7-point Likert-type response scale	52 restaurants that were part of 3-star (N = 34) and 4-star (N = 18) hotels in the Valencian Community and the Balearic Islands, Spain	Servperf	User satisfaction, expectation confirmation, functional quality/ workers and relational quality/workers
Service Quality Dimension and Customer Satisfaction: An Empirical Study in the Malaysian Hotel Industry	Muslim Amin, Zatilaziya Yahya, Wan Faizatul Aniza Ismayatim; Siti Zaroha Nasharuddin, y Emilia Kassim	2013	To examine the relationship between the service quality dimension and customer satisfaction in the Malaysian hotel industry	250 questionnaires with a Likert-type scale from 1 to 5	250 guests at the hotels operating in the Klang valley	Servqual	Tangibles, sensibility, efficiency, security and empathy

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TITLE	AUTHORS	YEAR	OBJECTIVE	DATA OBTENTION	SAMPLE	MODEL USED	DIMENSIONS
Measuring Perceived Service Quality Using Servqual: A Case Study of the Croatian Hotel Industry	Suzana Markovic y Sanja Raspor	2010	To examine customers' perceptions of service quality in the Croatian hotel industry	Questionnaires with a 5-point Likert-type scale	Data obtained at 15 hotels of Opatija Riviera (Croatia)	Servqual	Tangibles, sensibility, efficiency, security and empathy
The impact of HRM practices on service quality, customer satisfaction and performance in the Indian hotel industry	Mohinder Chand	2010	To investigate the effects of HRM practices on service quality, customer satisfaction and performance in the hotel industry	Survey	At 52 Indian hotels, the questionnaire was answered by their managers, 260 employees (5 from each hotel) and 260 guests (5 from each hotel)	Servqual	Tangibles, sensibility, efficiency, security and empathy
Measurement of Service Quality in the Hotel Industry	Ibrahim Yilmaz	2009	To measure hotels' service quality performance from the customer perspective	Surveys	234 guests who stayed at 3, 4 and 5-star hotels in Capadoccia	Servperf / Servqual	Tangibles, sensibility, efficiency, security and empathy
Perceived Service Quality in Restaurant Services: Evidence from Mauritius	Prabha Ramseeook-Munhurrun	2012	To identify the key service quality dimensions that affect customer satisfaction and behavioral intentions in restaurant services in Mauritius	Questionnaire based on a 5-point Likert-type scale	256 Port-Luis customers	Servperf	Tangibles, sensibility, efficiency, security and empathy
The Influence of Service Quality and Price on Customer Satisfaction: An Empirical Study on Restaurant Services in Khulna Division	Md. Arifur Rahman, Abul Kalam, Md. Moshiur Rahman, Md. Abdullah …	2012	To identify some key drivers of customer satisfaction on restaurant services	Survey based on a Likert scale from 1 to 5	450 restaurant customers in Khulna city	Modified Servqual	Perceived price, restaurant image, product and service quality, service satisfaction and physical satisfaction
Applying Importance-Performance Analysis as a Service Quality Measure in Food Service Industry	Tzeng Gwo-Hshiung y Chang Hung-Fan	2011	To identify both the importance and performance of restaurant service quality in the Taiwan food service industry	Survey with a 5-point Likert scale	Taiwan's top 10 restaurants with 500 customers, but only 154 answered	Servqual and IPA models	Tangibles, sensibility, efficiency, security and empathy

TITLE	AUTHORS	YEAR	OBJECTIVE	DATA OBTENTION	SAMPLE	MODEL USED	DIMENSIONS
Disparities between services demanded and services received in Taiwanese restaurants	Jui-Kuei Chen y I-Shuo Chen	2010	To evaluate the service quality performance of Taiwanese foreign restaurants	Surveys	Restaurants in Taiwan, 311 customers surveyed	Dinerserv	Tangibles, sensibility, efficiency, security and empathy
Compensation Practices in Restaurants and the Impact on Service Quality	Brian Miller	2010	Identifying the relationship between the use of tipping and employee commitment could have significant implications for service quality in the restaurant industry	Questionnaires with a 7-point Likert-type scale	1,181 hospitality industry employees	Servperf	Tangibles, sensibility, efficiency, security and empathy