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A proposed AHP-SERVQUAL model for hotel service quality management: Evidence from Algeria

Um modelo AHP-SERVQUAL proposto para gestão da qualidade de serviços hoteleiros: evidências da Argélia

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Abstract: *This study proposes an AHP-SERVQUAL model to evaluate service quality in the Algerian hotel industry, emphasizing the gap between customer expectations and managerial perceptions. The research involved four hotels in Constantine, Algeria, and analysed responses from 12 managers and 77 customers. Utilizing the SERVQUAL dimensions—tangibility, reliability, assurance, empathy, and responsiveness—this study examines 19 selection criteria, weighted through the Analytic Hierarchy Process (AHP). The findings reveal significant discrepancies: managers overestimate tangibility and reliability, while underestimating empathy, responsiveness, and assurance. In contrast to the managerial focus on tangibility, the responsiveness dimension is valued most by customers. This misalignment highlights the need for managerial strategies that align better with customer priorities to enhance service quality and competitiveness. This study contributes to the literature by integrating AHP with SERVQUAL, thereby offering insights into improving service delivery and customer satisfaction in the hospitality sector. Future research should explore broader geographic contexts and additional service dimensions to gain a more comprehensive understanding.*

Keywords*: Service Quality, Hotel Industry, SERVQUAL, MCDM, AHP.*

Resumo: *Este estudo propõe um modelo AHP-SERVQUAL para avaliar a qualidade do serviço na indústria hoteleira argelina, enfatizando a lacuna entre as expectativas do cliente e as percepções gerenciais. A pesquisa envolve quatro hotéis em Constantine, Argélia, analisando as respostas de 12 gerentes e 77 clientes. Utilizando as dimensões SERVQUAL — tangibilidade, confiabilidade, garantia, empatia e capacidade de resposta — o estudo examina 19 critérios de seleção, ponderados pelo Analytic Hierarchy Process (AHP). As descobertas revelam discrepâncias significativas: os*

gerentes superestimam a tangibilidade e a confiabilidade, enquanto subestimam a empatia, a capacidade de resposta e a garantia. A dimensão da capacidade de resposta é mais valorizada pelos clientes, contrastando com o foco gerencial na tangibilidade. Esse desalinhamento destaca a necessidade de estratégias gerenciais que se alinhem melhor com as prioridades do cliente para melhorar a qualidade do serviço e a competitividade. O estudo contribui para a literatura ao integrar o AHP com o SERVQUAL, oferecendo insights sobre como melhorar a prestação de serviços e a satisfação do cliente no setor de hospitalidade. Pesquisas futuras devem explorar contextos geográficos mais amplos e dimensões de serviço adicionais para uma compreensão abrangente.

***Palavras-Chave**: Qualidade de Serviço, Indústria Hoteleira, SERVQUAL, MCDM, AHP*

1. Introduction

In an increasingly competitive business environment, the quality of products and services has become a crucial determinant of organizational performance and customer loyalty. The hospitality industry depends heavily on consistent service quality to meet diverse and evolving customer expectations. Within this context, Algeria's hotel sector presents a valuable case for exploring service quality standards because of its growing importance in the national economy and heightened expectations of both local and international customers.

The tourism industry remains a key driver of global economic growth, shaped by a complex interplay of factors such as cultural dynamics, infrastructure, visa policies, natural attractions, and hotel pricing, as noted by Khan et al. (2020). For example, China's Sixth Five-Year Plan (1981–1985) prioritized hotel development to boost economic and social progress, but this rapid expansion led to overdevelopment and subpar service quality. Tsang and Qu (2000) documented issues such as unqualified staff, inadequate maintenance, unreliable booking systems, and poor sanitation in Chinese hotels, prompting the government to implement hotel classification standards in 1988 to address these shortcomings. Zhang (1987) attributed these systemic failures to insufficient education and training in hospitality management. Parallel challenges are evident in Algeria, where the government has reformed policies to attract investment in Saharan and cultural tourism, capitalizing on its geographic diversity, historical legacy, and strategic location bridging Africa, Europe, and the Middle East (OBG, a2016). However, the Oxford Business Group (OBG, 2018) warns that Algeria risks mismanaging its tourism growth because of its underdeveloped infrastructure and lack of skilled personnel. Xavier Arnoux (OBG, b2016) observed that private investors often delegate hotel operations to management firms, resulting in services that fail to meet global benchmarks. Both countries highlight a critical lesson: while infrastructure development is essential, neglecting workforce training and certification can undermine tourism ambitions, as seen in China's earlier struggles and Algeria's current hurdles. Sustainable growth requires balancing physical expansion with investments in human capital to align service quality with international expectations.

The hotel sector has gradually come to understand the importance of service quality in achieving a competitive edge and maintaining its clients (Callan and Kyndt, 2001; Nasution, 2016). It has also been determined that the hotel sector depends on high-quality service, which is measured to help management make decisions that will increase overall productivity and profitability and better meet the demands and expectations of their clients. Wu and Ko (2013) found that hotel organizations struggle to accurately evaluate and enhance their customer-focused service performance. They also miss out on knowing what consumers care about and when to share their hotel experience. As a result, the hotel sector uses SERVQUAL (Parasuraman et al., 1985), a widely accepted assessment scale. According to Augustyn and Seakhoa-King (2004), the SERVQUAL scale is a crucial but insufficient quality measure in the tourism industry. Although leisure, tourism, and hospitality services are understood to share many similarities with other service industries, they are distinguished by their unique characteristics. These include transient and shared access rights, as well as the collaborative participation of the public, private, and non-profit sectors, and local communities. That is why

integrating the Analytic Hierarchy Process (AHP) a multi-criteria decision-making (MCDM) method, could address many of the limitations of the SERVQUAL scale in tourism identified by Augustyn and Seakhoa-King (2004). AHP, allows for the structured prioritization of complex, interrelated factors, making it well-suited to capture the nuanced, context-specific, and dynamic aspects of tourism service quality. AHP refers to screening, prioritizing, ranking, or selecting a set of alternatives, typically under independent, incommensurate, or conflicting attributes. These methods have been applied in a wide range of decision-making areas. Hence, combining other techniques or changing the original SERVQUAL method would be appropriate. Thus, AHP is a structured decision-making tool developed by Thomas Saaty in the 1970s, it helps prioritize and evaluate complex choices by breaking them into a hierarchy of criteria, sub-criteria, and alternatives

Although managers' perspectives have been overlooked, most studies on the hotel industry concentrate primarily on the evaluation of customers for service quality using the renowned SERVQUAL measurement scale. The primary goal of this study was to quantify the differences in customer and manager expectations regarding the level of hotel service. Determining whether these factors alter priority in comparison to each viewpoint is another goal of this study. Instead of using model scale items for this purpose, five main variables based on a modified AHP-SERVQUAL (5) dimension and 19 related sub-factors were identified within the context of the hotel selection criteria. A series of interviews and survey techniques revealed that the selection criteria were significant in the choice of Algerian hotels. Subsequently, these factors were categorized using the multi-criteria decision-making method (MCDM) Analytic Hierarchy Process in light of data collection (AHP). As a result, the relative weights of the elements were determined, and the consistency ratio of pairwise judgments is explained and described.

The fact that this study uses the AHP approach for its analysis sets it apart from earlier investigations on how to gauge hotel service quality. The research of the literature revealed that numerous studies on the measurement of the gap in service quality using survey methodologies and a Likert scale had been carried out. We are only aware of a relatively small number of studies that integrate the SERVQUAL-AHP model and use factor weights, as opposed to survey mean Likert scores. To our knowledge, no study has been conducted on the Algerian hotel industry. In fact, Stefano et al. (2017) noted that when using the SERVQUAL scale model with the fuzzy AHP approach, it could be shown that the highest and lowest customer expectations line up with the weight value when compared to mean Likert scores and global fuzzy AHP weights. However, the use of the AHP weights approach in conjunction with managers' views of customer demand has not yet been investigated. This study's attempt to offer a taxonomy of Algerian hotel selection criteria is another important aspect. These factors are examined to determine whether their importance varies from that of the managers and customers. Given these components, this study adds to the body of knowledge.

This study is comprised of four sections. The introduction is the first section and discusses the goal and significance of the study, as well as methodologies for measuring hotel service quality gaps, with a focus on managers' views of customers' expectations. The second section presents the literature. Within the context of the literature, this section examines the gaps in hotel service quality and choice. In addition, the AHP method and a review of the literature on AHP-based collective decision-making are presented. The final section includes the scope of the methodology, and then presents the results and explanation.

2. Literature review

The significance of service quality in the hospitality industry has been widely explored, with numerous studies underscoring its direct impact on customer satisfaction, loyalty, and overall business performance. A consistent theme across the literature is the critical role of service quality dimensions, such as assurance, empathy, responsiveness, tangibles, and reliability, in shaping customer perceptions and driving competitive advantage.

Assaf and Tsionas (2018), Pulina et al. (2010), Sainaghi et al. (2017), King et al. (2021) are only a few of the many works of literature that explore the performance evaluation of hotels. Data envelope analysis (DEA), content analysis, the stochastic frontier approach (SFA), Delphi, and AHP, among other multiple methods, have all been used in the implementation of numerous methodologies. Although the focus on service quality has recently increased, there is little research on how to reduce the gaps between management and consumers in the hotel business. To gain a more accurate evaluation, we adapted hotel evaluation criteria to the SERVQUAL (Parasuraman et al., 1985) service model through a thorough literature review.

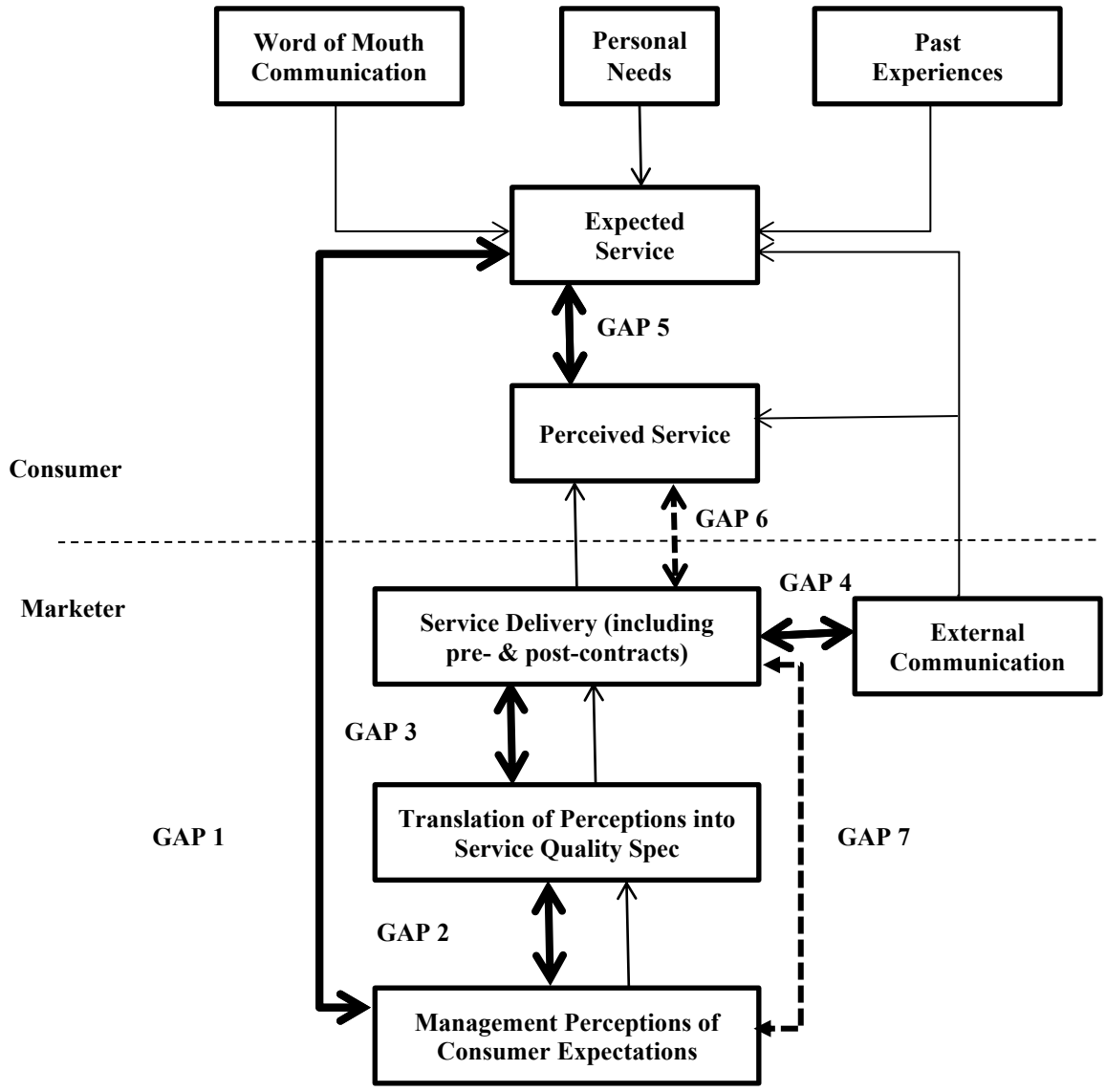
2.1. Hotel service quality gaps

The performance of businesses and their market positions are substantially affected by service quality, client loyalty, and satisfaction. These links and the importance of service quality were supported by numerous research studies in various sectors (Bontis et al., 2007; Zkan et al., 2020; Dam and Dam, 2021). Many of these have been used in the hotel industry (Kandampully and Suhartanto, 2000; Saleem and Raja, 2014; Liat et al., 2014). Earlier studies by Parasuraman et al. (1985) provided service quality aspects based on the dependability, responsiveness, competence, access, courtesy, communication, trustworthiness, security, understanding, and knowledge of consumers and tangibles. Moreover, Parasuraman, Zeithaml, and Berry (PZB) (Parasuraman et al., 1988; De Lazari and De Souza, 2021; Oliveira, da Silva, da Silva Filho, Monteiro and Gonçalves, 2023) reduced the 10 elements of service quality into five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. They also established a multiple-item scale (SERVQUAL) to measure the service quality. Next, using gap analysis, there were three suggestions for customer service troubleshooting: promoting customer complaints and making it simpler for them to do so; establishing timely, personal touch with consumers is an essential component of the customer service program. It also encourages and equips employees with the tools they need to effectively handle customer issues.

In fact, the foundation of the SERVQUAL instrument was the gap model. The model shown in Figure 1 identifies five original gaps and three revised gaps (Tsang and Qu, 2000; De Lazari and De Souza, 2021):

- Gap 1: Understanding the distinction between what customers anticipate and how management perceives customers is the first knowledge gap.
- Gap2: Service Standards, which is the discrepancy between management's beliefs of customer expectations and service quality requirements.
- Gap 3: Service performance is the discrepancy between the expected level of service quality and what is actually provided.
- Gap4: Communications: The discrepancy between the provision of the service and the information provided to customers.
- Gap5: Service quality, which is the discrepancy between customers' expectations for service quality and their assessments of the effectiveness of the company.

Figure 1 - Service quality model



Source: Zeithmal et *al*. (1985).

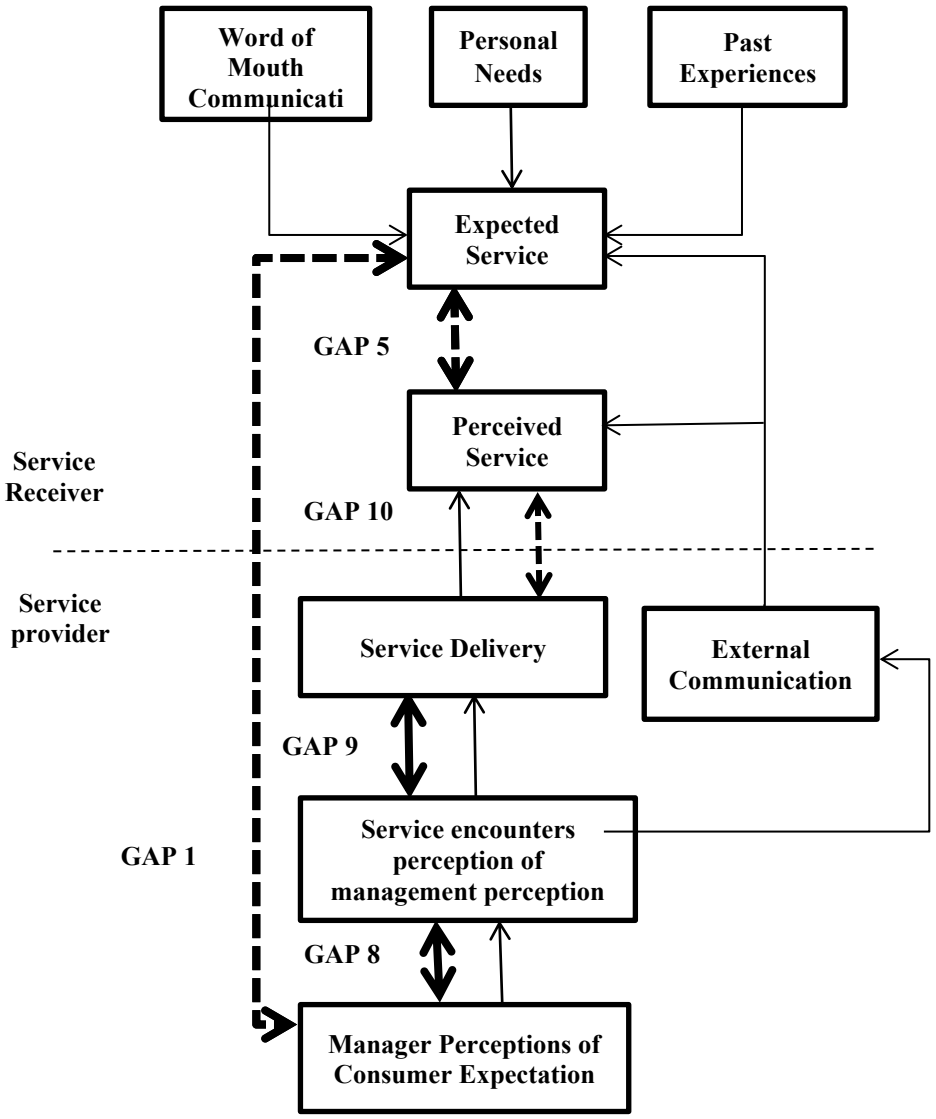
Tsang and Qu (2000) revealed two more holes in the service quality model through their research. Parasuraman et al. (1985) suggested two additional gaps in their service-quality model. These gaps are identified in Figure 1 as Gaps 6 and 7, respectively, and they are described as follows (Tsang and Qu, 2000):

- Gap 6: the discrepancy between what management believes it delivers and how customers perceive services as being delivered. The straightforward inquiry, "Do managers overestimate their organization's service delivery in satisfying consumer expectations of service quality in China's hotel industry?" is relevant to this gap;
- Gap 7: the discrepancy between how management views consumer expectations and how it views the provision of its services. Does management believe they deliver as much as customers expect? This gap assesses the internal situation. Because management perceptions of service quality have a direct impact on service quality standards, assessing them is just as crucial as measuring customer opinions.

A revised gap analysis, validated by researchers, aligns with the focus of this study and effectively identifies service quality issues while offering critical insights for management. Specifically, Lee et al. (2007) refined the original Parasuraman, Zeithaml, and Berry (PZB) model (1985) by decomposing service activities and emphasizing **Gap 5** (the overall discrepancy between customer expectations and perceptions), **Gap 1** (the mismatch between management's understanding of customer expectations and actual expectations), and three newly identified gaps: **Gap 8** (disconnect between management's perceptions and frontline staff's interpretations), **Gap 9** (gap between staff interpretations and service delivery), and **Gap 10** (difference between service delivery and customer perceptions). While the original PZB model posits that Gap 5 results from the cumulative effect of Gaps 1–4 (related to service design, delivery, and communication), Lee et al.'s revised framework redefines this relationship. Instead, their model establishes a functional equation to quantify the service quality gaps: Gap 5=Gap 1+Gap 8+Gap 9+Gap 10.

This equation highlights how Gap 5 in Lee's model arises from a chain of misalignments across management, frontline staff, and service delivery processes—a structural improvement over the original PZB framework. The revised model, illustrated in Figure 2, enables precise identification and measurement of these gaps, empowering managers to address root causes systematically.

Figure 2 - Revised service quality model



Source: Adapted from Lee et al. (2007).

The following gaps appear to be presented (Lee et al., 2007; Lee et al., 2016):

- Gap 8 is the difference between management perceptions of customer expectations and service encounter perceptions of management perceptions.
- Gap 9 is the distinction between the supply of services and how they are perceived by management. This gap symbolizes the disparity in service perceptions experienced during service delivery.
- Gap 10 is the difference between service delivery and perceived service.

Although managers' perceptions have been disregarded (Dedeoğlu and Demirer 2015), the majority of studies on the hotel industry in the literature concentrate primarily on the evaluation of customers for service quality (Gap 5) using the well-known SERVQUAL measurement scale (Parasuraman et al., 1985). Gaps (Gap 5, Gap 1, Gap 6 Gap 7, Gap 8, Gap 9, Gap 10) could offer hotel managers better insights for assessing and detecting service quality issues, according to Tsang and Qu (2000) and Lee et al. (2016). Additionally, they said that managers would be able to determine if their service exceeded, met, or fell short of consumers' expectations by analysing the degree and direction of these three gaps and would acquire information about how to improve any gaps.

It appears that assessing service quality in the hotel sector is important from both the managers' and customers' perspectives. Consumer perceptions had a greater impact on how the services were evaluated than management perspectives had on how the services were designed, developed, and delivered. Therefore, it is crucial to understand how managers' perspectives compare with those of their clients'. Coyle and Dale (1993) examine how managers and consumers rate the quality of service in the hotel sector. The study found several discrepancies between customers' and suppliers' perceptions. Managers, for instance, thought that a crucial aspect of the service transaction was the staff's competency, whereas customers did not share this opinion. Consumers also gave less importance to the "tangibles" of service than management had anticipated, including decor, facilities, and cleanliness. They also said that managers' belief that they know best was one reason for consumer-manager discrepancies. Although senior managers were typically given the primary role of being aware of and comprehending customers' expectations, historically they had the least contact with consumers and were unable to effectively analyse customer needs.

Tsang and Qu (2003) evaluated how both foreign visitors and hotel managers perceive the level of service in China's hotel business. The findings indicate that managers overestimated the level of service delivery, while tourists' evaluations of service quality fell short of their expectations. The primary causes of service quality deficiencies are delivery gaps and internal evaluation gaps. In addition, Ting (2003) used PZB to remind hotel owners that discrepancies exist between employee and customer expectations of service quality and actual perceived performance, which serves as a roadmap for hotel owners to make adjustments.

Despite this, Seakhoa-King (2004) analysed the strengths and weaknesses of the SERVQUAL scale in gauging quality in the leisure, tourist, and hospitality industries. It is concluded that the SERVQUAL scale is an important but insufficient way to gauge the level of quality in various industries, and has implications for further study. Nonetheless, some advocate changing the scale of measurement. A number of measurement scales have been created in the tourism business, including HOLSERV by Wong Ooi Mei et al. (1999), LODGSERV by Knutson et al. (1990), and DINESERV by Stevens et al. (1995). Others contend that different approaches might be required to determine quality levels. As a result, multi-criteria decision-making (MCDM) procedures are used to filter, rank, or choose among alternatives. The most active research areas in the literature are typically those that deal with independent, incommensurate, or competing qualities. These topics have been used in various decision-making contexts and in conjunction with managerial issues (Subramanian and Ramanathan,2012; Baki, 2020; Chin and Tsai, 2013; Choedon and Lee,2018; Wu et al., 2018).

2.2. AHP method

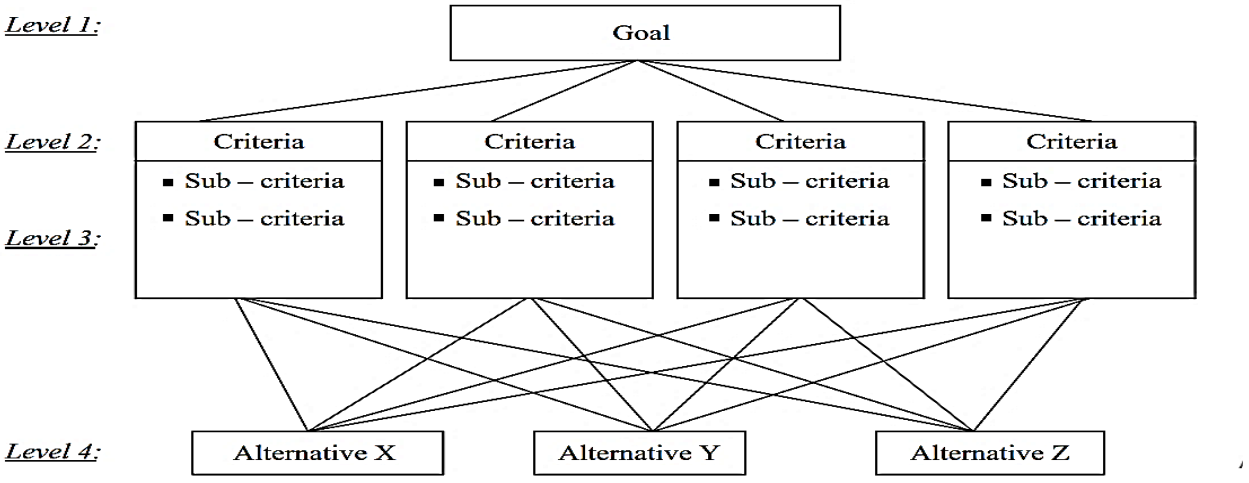
Decisions involve selecting the best option from a range of alternatives. Planning issues involving numerous criteria are organized and solved using MCDM methodologies. In the past 20 years, Saaty developed the well-known MCDM technique known as AHP. In 1971, Professor Thomas Saati and Wind developed the pyramid analysis method. (Saaty,1980; Saaty 1988). Hierarchical Analysis, a book that first presented theory in 1980, has gained widespread acceptance in the scientific community. It was also committed to institutional and individual decisions as well as conferences, seminars, and applications of all types.

The application of AHP for hotels involves four major sub-steps (Wind and Saaty, 1980; Zahedi, 1989):

- Simplify the service evaluation process into a manageable number of criteria and attributes (no more than seven), and then arrange these criteria and qualities in a hierarchical manner.
- Perform a series of pairwise comparisons between the features and criteria based on how customers perceive the level of service quality.
- Based on the survey of hotel visitors, estimate the relative weights of the criteria and qualities. Find out the local priority rankings and rankings of the individual hotels for the quality of their services.
- In order to determine the ultimate assessment of service performance, combine and synthesize these local priority scores.

First, to "simplify the complexity", the decision-making criteria are arranged hierarchically. The decision criteria were arranged in accordance with the criteria, sub-criteria, and decision criteria, with the primary aim at the top of the hierarchy. The hierarchical organization of the issue is comparable to a more ordered web. It resembles a tree that has been flipped. Figure 3 depicts the general hierarchical arrangement. The hierarchy's base is the goal or objective of the subject under investigation. Knots are options that require comparisons. Between these two levels, numerous criteria and sub-criteria were defined. Figure 3 shows the broad hierarchical structure.

Figure 3 - AHP selection structure



Source: adapted from Saaty (1980) and Saaty (2004).

The second stage involved a pairwise comparison of the criteria. Decision makers must now conduct pairwise comparisons of the items at all levels of the hierarchy (who are frequently subject matter experts). The decision objectives are taken into consideration as pairwise comparisons are

performed to determine each criterion's relative level of importance on the second level of the hierarchy. Table 1 shows the nine-point scale that was applied for these pairwise comparisons.

Table 1 - Saaty scale for pairwise comparisons

Importance	Definition	Explanation
1	Equal importance	Element ***a*** and ***b*** contribute equally to the objective
3	Moderate importance of one over another	Slightly favour element ***a*** over ***b***
5	Essential importance	Strongly favour element ***a*** over ***b***
7	Demonstrated importance	Element ***a*** is favoured very strongly over ***b***
9	Absolute importance	The evidence favouring element over ***a*** over ***b*** is of the highest possible order of importance
2, 4, 6, 8	Intermediate values between the two adjacent judgments	When compromise is needed. For example, 4 can be used for the intermediate value between 3 and 5
1/3, 1/4, 1/5, 1/6, 1/7, 1/8, 1/9	These values represent the opposite of the reciprocal whole numbers. For example, if "9" means that x is much more important than y, "1/9" means that x is much less important than y.	

Note: Element *a* and *b* are any two of the criteria.
Source: adapted from Saaty (2004).

There is also a consistency test that uses the AHP technique. The comparisons are regarded as adequately consistent if the pairwise comparisons' relevant consistency ratio (CR) is less than 10%. (Saaty, 1980). The consistency index can be calculated by adding the columns in the pairwise comparison matrix and multiplying the resulting vector by the vector of priorities (i.e., the previously discovered estimated eigenvector) (CI). Thus, the largest eigenvalue, denoted by _max, was almost accurate. Using the following calculation, CI = (max − n)/ yields the CI value (n − 1): The Random Consistency Index (RI) (Triantaphyllou and Mann, 1995), which is depicted in Table 2, is then subtracted from the CI value to provide the consistency ratio (CR).

Table 2 - Consistency ratio values

Number of criteria	1	2	3	4	5	6	7	8	9	10	11
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49	1.51

Source: adapted from Saaty (2004).

Weight values are created based on the relative relevance of alternatives to one another in light of a common criterion.

When evaluation calls for a variety of factors that are difficult to translate into observable units and when a number of conflicting parameters are likely to affect the assessment, MCDM utilizing AHP is used. Although many studies have utilized AHP techniques in other disciplines, many researchers have employed AHP techniques to assess hotel service quality issues. Hence, when choosing fast-food restaurants, Siew et al. (2017) ranked the importance levels of price, customer service, environment, flexibility, efficiency, location, and cleanliness. Also, Min and Min (1996) attempted to integrate analytical and empirical work to produce objective measurements of the hotel's relative service performance from the perspective of South Korean customers as well as the actual service quality provided to guests. According to the study's findings, the cleanliness of the guest room and personnel civility were the two service characteristics that most affected customers' perceptions of the quality of the service. The study also discovered that price has less of an impact than expected on how customers evaluate the value of the room. The suggested methodology can also be used to evaluate trade-offs between various aspects of hotel service quality.

Ku and Fan (2009) examined the variables that affect customers' decisions when booking hotel rooms on travel company websites. Doğan and Gencan (2013) used the AHP technique to examine four five-star hotels in the Cappadocia region from the perspective of travel agencies, utilizing the following criteria: price, service quality, referral rate, hotel location, and guest security. Gupta and Srivastava (2011) proposed a method to assess hotel service quality in India using a questionnaire based on the HSQ-CS Model and AHP to determine the weight of each questionnaire variable. Based on customer satisfaction (CS) and the calculation of the degree of customer satisfaction, several useful techniques are employed to gauge service quality (CSD). Indian Taj Lake Palace Hotel Case Study. According to Göral (2020), the variables that vacationers consider while choosing a hotel are outlined and ranked in order of importance. The data were analysed using the Analytical Hierarchy Process (AHP) approach and a panel of professors working at the S.U. Beyşehir Ali Akkanat Campus who take at least one annual vacation were the subjects of the survey. According to research, the top considerations for consumers are security and safety, enjoyment, accommodations, information, parking lots, and network services.

Nguyen (2021) used the SERVQUAL approach and Fuzzy Analytic Hierarchy Process (FAHP) to assess the quality of hotel services. The findings showed that tangibles and assurance are the most important service quality criteria, followed by accurate records, consistent services, and appropriate accommodations for people with disabilities, flexible services, and delivering services when promised. Stefano et al. (2015) did in fact compared the fuzzy SERVQUAL and fuzzy AHP scores to assess the quality of major hotels. The findings indicate that there are still many areas where services need to be enhanced, which is critical when considering how customers would evaluate the level of satisfaction that a certain service offers and their overall shopping experience. Due to the intangibility, heterogeneity, and inseparability of service production and consumption, service quality is an elusive and abstract concept.

3. Methodology

Nguyen (2021) presented a comparable AHP-SERVQUAL model, but with a different goal of using the Fuzzy AHP approach instead of AHP. To assess service quality in the hotel business, this study employed a hybrid SERVQUAL approach and AHP. In this regard, Souto and Correia-Neto (2017) note critiques of SERVQUAL, such as its operational complexity and instability over time. However, integrating SERVQUAL with the Analytic Hierarchy Process (AHP) addresses these limitations by weighting dimensions dynamically and prioritizing criteria based on stakeholder input, thereby enhancing reliability (Stefano et al., 2015).

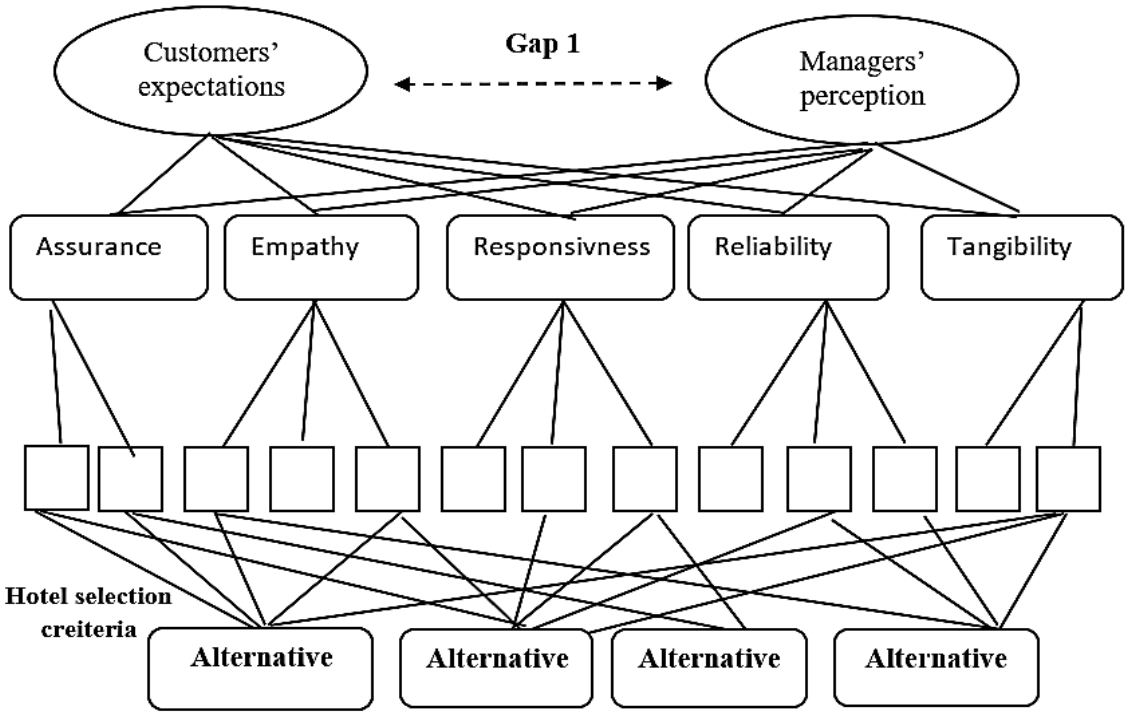
3.1. The proposed AHP- SERVQUAL

AHP-SERVQUAL was introduced for certain studies in the hotel business (Min and Min, 1996; Nguyen, 2021; Stefano, 2015; Lupo, 2013; Bahdioglu, 2017; Büyüközkan et al., 2011). However, the research objectives for earlier studies ranged from a straightforward comparison of the AHP and SERVQUAL results to an evaluation of the Quality Gap 5 and competitive benchmarking of hotels. The suggested approach investigates the discrepancy between managers' expectations and customers' views. Thus, it can be acquired as follows:

- Hotel selection criteria have been proposed in a wide range of literature reviews and combined with Min and Min (1996) and Nguyen (2021) are selected by performing interviews and survey methods for both manager and customer samples. According to Chen and Li (2012), the sample size selection for the AHP survey is suitable for a carefully chosen small sample size, particularly in a study that focuses on a particular subject. Few sample groups, or those with two to five participants, are referred to in collective decision-making using AHP, whereas large sample groups, or those with more than five participants, are referred to (Ossadnik et al., 2016).

- The selected criteria are considered in the AHP model by considering their categorization with five SERVQUAL dimensions;
- The AHP weights are calculated for both managers and customers as in (Stefano, 2015)
- Gap differences were estimated for each criterion and SERVQUAL sub-dimension. According to Stefano (2015), expectation scores (Expec), and perceptions (Perc.) on a Likert scale, and the gap between expectations and perceptions in comparing the global weight of fuzzy AHP (sub-criteria) showed that the highest and lowest expectations coincided with the weight value. This demonstrates that the two methods can be used simultaneously and thus show satisfactory results.
- The obtained criteria are ranked for both managers and Customers, and then a ranking comparison is performed.

Figure 4 - Proposed AHP- SERVQUAL Model



Source: Authors' compilation.

For the proposed model, the following hypotheses are derived:

- An existing Gap 1 is expected between Algerian Hotel Managers' perceptions of customers' expectations.
- The selection criteria consideration of Algerian Hotel Managers is differently perceived compared to customers' point of view.

3.2. Case study

Four hotels among four- and five-star Algerian Hotels in Constantine city were chosen for this study. For the chosen hotels, twelve (12) managers were interviewed for pairwise comparisons and seventy-seven (77) questionnaires were returned from hotel customers. 26 hotel selection criteria were proposed, and 19 were maintained by the sample scores (1 not important at all – 5 very important) for the AHP model. The proposed criteria are as in Table 3.

Table 3 - Maintained Selection Criteria

Dimensions		Selection Criteria	Symbol
Tangible (T)	1.	Easy access to the hotel	(T1)
	2.	Leisure Facilities	(T2)
	3.	Hotel exterior and interior design	(T3)
	4.	Wi-Fi Internet	(T4)
	5.	Room Equipment	(T5)
	6.	Enough parking for guests	(T6)
Reliability (R)	1.	Hotel Food Services	(R1)
	2.	Daily room cleaning service	(R2)
	3.	E-Banking service	(R3)
	4.	Online Booking service	(R4)
	5.	Laundry services	(R5)
	6.	Transport services	(R6)
Assurance (A)	1.	Safes in room	(A1)
	2.	First Aid Service	(A2)
	3.	Hotel Security	(A3)
Empathy (E)	1.	Flexibility and special treatment for guests	(E1)
	2.	Flexible check-in and check-out times	(E2)
Responsiveness (RE)	1.	Ability to provide additional services on request	(RE1)
	2.	Behaviour of hotel employees	(RE2)

Source: Authors' compilation.

4. Results

The AHP-SERVQUAL model is performed with the *Expert Choice* program; the obtained results of weights, local- weights and ranking are presented in the following section.

4.1. Service quality gap analysis

The gap 1 estimation is performed for both managers' perception and customers' expectations as presented above; the findings are summarized in the following Table 4.

Table 4- Weights and Gap Calculation for SERQUAL Dimensions

Dimensions	Cust.	Mang.	Gap 1	Gap type
Tangible	0.132	0.326	+ 0.197	Positive
Reliability	0.190	0.269	+ 0.079	Positive
Assurance	0.243	0.104	**- 0.139**	**Negative**
Empathy	0.183	0.122	**- 0.061**	**Negative**
Responsiveness	0.252	0.178	**- 0.074**	**Negative**

Note: CR <10%
Source: Authors' compilation.

From Table 4, Algerian hotel managers perceive customers' expectations differently. The tangible dimension –with 0.326–is perceived as the most important factor for customers' hotel selection criteria. Subsequently, reliability and responsiveness are less important, and assurance is considered the least important dimension of the hotel selection criteria. Algerian hotel customers think differently, where the responsiveness dimension— 0.252–is the most expected dimension for hotel selection criteria. Tangibility is the least important dimension, followed by assurance and reliability.

Therefore, Algerian hotel managers overestimate two dimensions: reliability with a 0.079 gap calculation, and tangibility with the highest deviation of 0.197. However, a positive gap indicates that hotel managers meet customer expectations. Indeed, three dimensions appear to be underestimated by Algerian hotel managers: empathy with (-0.061), responsiveness with (- 0.074) and lastly, assurance with the highest deviation of (-0.139). The negative gap indicates that Algerian

managers failed to fit the right customers' expectations and were not satisfied with the selection criteria.

Furthermore, to be more precise and for more detailed results, Tables (5) and (6) offer more specific results for each dimension weight for both managers and customers, as follows:

Table 5 - Calculating Managers' perceptions

Dimensions	Weight	Symbol	Local Weights	Local Rank	Global Weight	Global Rank
Tangible	0.326	(T1)	0.186	3	0.061	8
		(T2)	0.147	4	0.048	10
		(T3)	0.197	2	0.064	7
		(T4)	0.123	5	0.040	12
		(T5)	0.277	1	0.090	3
		(T6)	0.070	6	0.023	17
Reliability	0.269	(R1)	0.247	2	0.066	5
		(R2)	0.358	1	0.096	1
		(R3)	0.067	6	0.018	19
		(R4)	0.108	4	0.029	15
		(R5)	0.146	3	0.039	13
		(R6)	0.074	5	0.020	18
Assurance	0.104	(A1)	0.227	3	0.024	16
		(A2)	0.326	2	0.034	14
		(A3)	0.447	1	0.046	11
Empathy	0.122	(E1)	0.527	1	0.064	6
		(E2)	0.473	2	0.058	9
Responsiveness	0.178	(RE1)	0.465	2	0.083	4
		(RE2)	0.535	1	0.095	2

Note: CR <10%
Source: Authors' compilation from Expert choice program.

Table 6 - Calculating Customers' expectations

Dimensions	Weight	Symbol	Local Weights	Local Rank	Global Weight	Global Rank
Tangible	0.132	(T1)	0.057	6	0.008	19
		(T2)	0.100	5	0.013	18
		(T3)	0.150	4	0.020	17
		(T4)	0.164	3	0.022	15
		(T5)	0.281	1	0.037	9
		(T6)	0.248	2	0.033	11
Reliability	0.190	(R1)	0.163	4	0.031	12
		(R2)	0.201	2	0.038	8
		(R3)	0.111	6	0.021	16
		(R4)	0.120	5	0.023	14
		(R5)	0.177	3	0.034	10
		(R6)	0.228	1	0.043	7
Assurance	0.243	(A1)	0.101	3	0.025	13
		(A2)	0.298	2	0.072	4
		(A3)	0.601	1	0.146	2
Empathy	0.183	(E1)	0.256	2	0.047	6
		(E2)	0.744	1	0.136	3
Responsiveness	0.252	(RE1)	0.223	2	0.056	5
		(RE2)	0.777	1	0.196	1

Note: CR below 10%
Source: Authors' compilation from Expert choice program.

The presented tables provide further information, where local weights provide the relative importance of each criterion within a given dimension. Thus, the tangible dimension is seen for both managers and customers as follows: Managers perfectly fit customers' expectations by perceiving room equipment as the most important criterion for customers. However, managers perceive the "parking capacity" criterion to be the least important criterion, something that is differently expected by customers, with "easy access to the hotel" to be the least important. The reliability dimension is well detailed, where local weights display "transport service" as the most important criterion expected by customers. In addition, e-banking services are perceived as the least important criterion. The assurance dimension is perceived by managers as the least important; however, Algerian hotel managers perceive well their customers' expectations, with "hotel security" being the most important selection criterion for this dimension. For both, "safe in the room" is meant to be the least important criterion with this dimension. For the empathy dimension with only two criteria, the situation was quite different. For managers, "flexibility and special treatment for guests" are the most important criteria for customers. Customers expect flexible check-in and check-out times. The last dimension is responsiveness as well, with only two criteria: the situation is different from empathy. Here, managers perceive customer expectations perfectly. Employees' behaviour is the most important criterion, and the ability to provide extra service on request is the least important criterion.

Finally, further valuable information was provided using global weight calculations. Therefore, the calculated local weights were good only within the dimension comparison. However, to define the most important criterion among all existing 19 criteria, the global weights are calculated. The next step is to compute the gap between the managers and customers. The results are shown in the following Table 7.

Table 7 - Gap calculation for selection criteria

Dimensions	Dimens Gap	Symbol	Mang. per	Cust. Exp.	Gap 1	Gap type
Tangible	**+ 0.197**	(T1)	0.061	0.008	0,0530	positive
		(T2)	0.048	0.013	0,0350	positive
		(T3)	0.064	0.020	0,0440	positive
		(T4)	0.040	0.022	0,0180	positive
		(T5)	0.090	0.037	0,0530	positive
		(T6)	0.023	0.033	**- 0,0100**	**negative**
Reliability	**+0.079**	(R1)	0.066	0.031	0,0350	positive
		(R2)	0.096	0.038	0,0580	positive
		(R3)	0.018	0.021	**- 0,0030**	**negative**
		(R4)	0.029	0.023	0,0060	positive
		(R5)	0.039	0.034	0,0050	positive
		(R6)	0.020	0.043	**- 0,0230**	**negative**
Assurance	**- 0.139**	(A1)	0.024	0.025	**- 0,0010**	**negative**
		(A2)	0.034	0.072	**- 0,0380**	**negative**
		(A3)	0.046	0.146	**- 0,1000**	**negative**
Empathy	**- 0.061**	(E1)	0.064	0.047	0,0170	positive
		(E2)	0.058	0.136	**- 0,0780**	**negative**
Responsiveness	**- 0.074**	(RE1)	0.083	0.056	0,0270	positive
		(RE2)	0.095	0.196	**- 0,1010**	**negative**

Note: CR below 10%
Source: Authors' compilation from Expert choice program.

From Tables 5 and 6, 19 gaps are calculated; we define 11 gaps as positive. The highest positive calculated gap 1 was for daily cleaning room services. Thus, managers seem to be expending considerable effort in this regard. However, the least positive gap is figured with 'Laundry services,' where the customers seem to be just enough satisfied with the right efforts spent from the Algerian hotel managers.

On the other side, among the existing gaps, the most important seems to appear with 'employee' behaviour', while the least negative gap is with "safe in the room." Managers do not require much effort to meet these criteria.

4.2. Hotel criteria ranking

In connection with previous findings, a negative gap occurs when the criterion ranking for managers' perceptions is above that for customers. Conversely, a positive gap occurs when the criterion ranking for managers' perceptions is below the criterion ranking for customers.

The following Table 8 reveals that the "daily room cleaning service" criterion, figuring with the reliability dimension, is perceived by managers to be the most important selection criterion; however, customers expect the "employee's behaviour" to be the most important selection criterion.

Table 8 - Ranking of Hotel selection criteria

Dimensions	Symbol	Cust. Loc. Rank.	Mang. Loc. Rank.	Cust. Glob. Rank	Mang. Glo. Rank	Gap 1
Tangible	(T1)	6	3	19	8	0,0530
	(T2)	5	4	18	10	0,0350
	(T3)	4	2	17	7	0,0440
	(T4)	3	5	15	12	0,0180
	(T5)	1	1	9	3	0,0530
	(T6)	2	6	**11***	**17***	**- 0,0100***
Reliability	(R1)	4	2	12	5	0,0350
	(R2)	2	1	8	1	0,0580
	(R3)	6	6	**16***	**19***	**- 0,0030***
	(R4)	5	4	14	15	0,0060
	(R5)	3	3	10	13	0,0050
	(R6)	1	5	**7***	**18***	**- 0,0230***
Assurance	(A1)	3	3	**13***	**16***	**- 0,0010***
	(A2)	2	2	**4***	**14***	**- 0,0380***
	(A3)	1	1	**2***	**11***	**- 0,1000***
Empathy	(E1)	2	1	6	6	0,0170
	(E2)	1	2	**3***	**9***	**- 0,0780***
Responsiveness	(RE1)	2	2	5	4	0,0270
	(RE2)	1	1	**1***	**2***	**- 0,1010***

Note: CR below 10%

Source: Authors' compilation from Expert choice program.

Moreover, by comparing the absolute value of the negative gaps, it appears that gap deviation importance raises with customers' perceptions for the most important selection criteria (1; 2; 3; 4; 7; 11; 13; 16), respectively.

5. Discussion

The proposed AHP-SERVQUAL model was designed as an easy and powerful tool for hotel managers. The research findings reveal that Algerian hotels, as for the rest of the worlds hotel industry, request more attention to fit customers' expectations, as underlined by Wu and Ko (2013). Furthermore, as in Wai and Hoe (2017), Min and Min (1996), Doğan and Gencan (2013), Nguyen (2021), Stefano et al. (2015), Tsang and Qu (2003), Ting (2003), Liu (2005), the quality dimension importance changes through different nations and gender categories. Tangibility is the most important dimension for Algerian managers. However, our findings contravene the Coyle and Dale (1993) study, where Algerian managers believe that 'daily room cleaning service' to be the most important and "employee' behaviour" to be customers' last expectations. However, Coyle and Dale pointed out

that staff competence is the most determinant factor, with less importance for cleanliness being less expected by customers.

On the other hand, our findings match with Min and Min (1996) and Liu (2005), who suggested that the service attribute that contributed most to customers' impressions of service quality was the courtesy of employees. In addition, the findings are partially supported by Nguyen's (2021) findings, which considered tangibles and assurance to be the most critical service quality criteria. Here, tangibility is to be conserved with the highest positive gap, and an accepted manager's effort is required. Despite this, assurance requires more attention from managers with the highest negative gap.

Indeed, from previous findings, e-banking services are perceived and expected to be the least important criterion for both managers and customers. This is well understood due to the delay in registration for Algerians in this regard (Chouit and Haddadi, 2021; Mostfaoui, 2016). Another interesting point comes from the empathy and responsiveness gap comparison: Algerian hotel customers do not expect extra service provided or special treatment, but expect to find the right service provided.

Finally, from customers' perspective, Algerian hotel managers' selection criteria are viewed differently. Thus, three primary scenarios for improvement are identified:

- For selection criteria neglected by managers, such as T6; R3; R6; and A1, Little effort is required by managers to fit customers' expectations;
- For selection criteria neglected by managers, such as A3, E2, and A2, much effort is required by managers to fit customers' expectations;
- For selection criteria not neglected by managers, such as RE2; Little effort is required by managers to fit customers' expectations.

6. Conclusion

This study applied the AHP-SERVQUAL model to assess service quality in Algeria's hotel industry, providing unique insights into the alignment—or misalignment—between hotel managers' perceptions and customer expectations. Unlike most studies that primarily evaluate customer perspectives on service quality, this research incorporated managerial assessments, highlighting significant service gaps. Algerian hotel managers prioritize tangible and reliability aspects, focusing on physical features and consistent service, whereas customers place higher value on assurance, empathy, and responsiveness. The largest perceptual gaps were identified in assurance-related areas, including security and employee behaviour, which are critical to customers but are undervalued by management.

This discrepancy emphasizes the need for a strategic shift in service quality management within Algerian hotels. Managers are encouraged to enhance the assurance, empathy, and responsiveness dimensions through employee training, refined service protocols, and an increased focus on customer interactions to better meet customer expectations. Additionally, despite the widespread usage of the SERVQUAL measuring scale, the output parameters may alter if the price dimension is ignored (Rozman et al., 2009), which is observed as one of the most crucial selection factors (Lockyer, 2005; Haque, 2013). It is possible that the service attributes used to gauge service quality may not accurately reflect a standard of service quality and do not include all of the essential elements of the service. As a result, future studies might use different measuring scales or pair AHP with a modified SERVQUAL.

Ultimately, this study provides a practical framework for Algerian hotel managers to realign service strategies with customer needs, fostering satisfaction and competitive advantage in the regional hospitality market. Future studies might extend this approach by incorporating dynamic factors such as technology adoption and seasonal customer expectations, as well as conducting in-depth analyses on a per-hotel basis to build a more comprehensive understanding of service quality

in Algeria's evolving hotel sector. Addressing these facets will not only enhance service delivery but also reinforce Algerian hotels' positioning within the broader hospitality industry.

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