Determining the Most Appropriate Hotel with Multi-Criteria Decision Making Techniques: The Example of Mersin Province

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Abstract- Tourism enterprises are obliged to keep at the highest level the service quality and customer satisfaction in order to compete with the competitors in the sector within today's increasing competitive environment. Accommodation enterprises, which are among the cornerstones of tourism sector, have a quite important position. Therefore, the services offered by these enterprises and their capability of meeting the customers' needs and desires are also a matter of great importance. Certain features of accommodation enterprises should be taken into account in this regard. The criteria of hotels and weighting these criteria are determinant in assessment of multi-criteria decision making process.

In this study, the hotels, which are located in the province of Mersin of great importance with regards to domestic tourism and situated in Turkey's Mediterranean Region and rank among the top 5 based on customer points on Booking.com website, were evaluated. The level of weights were determined with Analytical Hierarchy Process (AHP) method on the basis of the criteria scored by customers such as number of stars, cleanliness, location, personnel, wifi, comfort, opportunities, price/benefit balance. The hotels were assessed by using the resulting weights in TOPSIS method which is among the multi-criteria decision making techniques and the best hotel in this province was found out.

Index Terms- Multi-Criteria Decision Making, Analytical Hierarchy Process, TOPSIS.

I. INTRODUCTION

Tourism industry is one of the most rapidly growing sectors in the world. According to the data of World Travel and Tourism Council (WTTC), the world tourism sector has been growing by 6% on average per year since 2003 (World Travel and Tourism Council, 2015). The number of hotel enterprises has also increased with this growth. Hotel enterprises constitute the main units of tourism sectors. These enterprises consist of the businesses where the production and consumption of touristic goods and services occur simultaneously. Consumers experience intensely at the same time the financial, sociological and psychological aspects of the goods and services within the process of getting the service of accommodation, eating-drinking, recreation and entertainment in the hotel enterprises where the service is experienced intensely (Gönenç Güler, 2009: 61-62).

One of the basic objectives also for hotels as in all enterprises is to be superior to their competitors. Customers' preferences related to the quality, the change and progress of their expectations have turned the quality in an indispensable competitive factor for hotel enterprises. Hotel enterprises must adopt a quality approach that will satisfy the expectations of customers. The hotels that have adopted this approach, are more advantageous compared to their competitors in respect of business profitability and continuity by gaining customer pleasure (Kemerlioğlu, 2014: 58). In this context, the policies followed for customers who take an important part in the continuity of businesses, even the reason of their existence, are of vital importance. The purchase of a product not meeting the expectation may cause conflicts that arise or may arise between the customer and the enterprise, even this circumstance may result in not preference of that enterprise again by this customer. In this case, there will be considerable economic losses for this enterprise. Specifically, this matter is even more important in terms of hotel enterprises which are the labor-intensive service enterprises. Because the intangibility of the products produced by these enterprises in general and the complexities resulted from this situation for ensuring customer satisfaction in particular, direct hotel enterprises to struggle much more on this subject (Emir, Kılıç and Pelit, 2010: 292). From this point of view, nowadays consumers get access to e-information sources about the places where they stay and refer to the comments. Potential consumers perceive e-comments as expert opinions. E-comments are important references with respect to assessment and inference. In this sense, e-comments seem more convincing than the information available on other marketing instruments and advertisement by consumers as the source of information. The websites publishing consumers' comments direct consumers as the source of information for these purposes. For example, Booking.com, which is a platform related to tourism and travel, independently provides consumers with the information that they can use in the selection of facilities, besides it offers rankings on the basis of enterprises in the sector. To take part among top rankings in these comment pages of this and such platforms, directs the preferences of consumers although being a source of commercial credibility (Göral, 2015).

The purpose of this study is to determine the most convenient hotel that is able to provide the highest satisfaction to hotel customers and able to meet sufficiently the requests of customers by taking advantage of the scoring in the electronic media done by hotel customers with the method of TOPSIS

based on AHP. In this context, five hotels operating in the province of Mersin and having the highest evaluation scores on Booking.com website were evaluated. The hotels dealt within scope of the study, were assessed with respect to the criteria for customer satisfaction specified by Booking.com website.

II. Hotel Businesses and Customer Satisfaction

Hotels are described in 67th Article of the 'Regulation on Tourism Investment and Enterprises Qualifications' based on Tourism Encouragement Law numbered 2632 in Turkey as follows: "Hotels are the facilities having at least 10 rooms, which are supposed to meet overnight requirements of customers as their main function, in addition to this service, they may also contain auxiliary and complementary units for eating and drinking, entertainment requirements" (Andaç, 2013).

Customer can be defined as "a person or organization who purchases a specific brand product of a specific enterprise for commercial or personal purposes" (Taşkın, 2000: 19).

Customer satisfaction can be defined as "cognitive and emotional response of the service, emerging as a result of comparison of the customers' expectation towards a service and the service experience" (Yağcı et al., 2004: 53). In another words, customer satisfaction is the extent of satisfaction of a customer's needs, desires and expectations that affects the subsequent demand for goods or services and the interest in goods or services during the consumption of goods and services" (Atılgan, 2001). Meanwhile in another source, customer satisfaction is defined as "evaluations of the post-consumption experience obtained by the customer, depending on the relationship between the perception of a product by the customer and the objective elements of that service or product" (Oliver, 1997). In general, customer satisfaction occurs at the intersection of the customer's expectations and the benefits provided by the good or service purchased (Kılıç and Pelit, 2004: 114).

It is possible to mention many advantages provided by customer satisfaction to enterprises. When examined the studies carried out on the subject; it is observed that there are many positive impacts upon increase of the customer satisfaction such as the increase of customer's desire for establishing and continuing relationship with the enterprise (Kelley and Davis, 1994; Morgan and Hunt, 1994; Lee and Heo, 2009), sharing positive experiences with others and in this direction being a positive reference on behalf of the enterprise (Söderlund, 1998), creating customer loyalty (Anderson et al., 1994; Oliver et al., 1999; Selvi and Ercan, 2006), providing positive feedback to the enterprise (Söderlund, 1998, Webb and Jagun, 1997), the increase of number of customers and accordingly increase in profitability (Durmaz, 2006; Çakıcı, 1998; Hançer, 2003), contributing to customer citizenship behavior (Bettencourt, 1997) and eventually enhancement of enterprise performance (Gronholdt et al., 2000).

Satisfaction criteria in respect of the services offered to the customers who prefer these enterprises, become more complex since the hotel enterprises have a labor-intensive characteristic and the products produced rather have intangible characters. Enterprises are required to make further efforts on this subject (Emir, vd, 2010: 294). In this direction, customers in hotel enterprises determine the satisfaction by comparing the service and products offered and the goods and service they hoped for (Lau et al., 2005: 47, Emir, 2007). Although the assessment of satisfaction in hotel enterprises is made during the service delivery in general, it consists of an interaction between the customer and the employee offering the service (Pizam and Ellis, 1999: 330).

Satisfaction in tourism is among the fundamental concepts that help explaining the tourism behavior. As a travel activity, customer satisfaction in tourism can be achieved by considering firstly customers' demands and expectations (Dunnross and Iso-Ahola, 1991).

Nowadays, the studies intended for achievement of customer satisfaction have also been accelerated since the customers become more conscious and customer protection movements gain intensity. The factors like the increased international competition, new developments in quality concept and emergence of relational marketing concept, awareness of consumers along with the rising education level in particular have revealed the importance required to be placed on the customer satisfaction (Kılıç and Pelit, 2004: 114).

Customer satisfaction is important in hotel enterprises operating in constantly developing tourism sector with respect to the customer expectations to be met by hotel enterprises, the sustainability of activities and the continuity of profitability when the business success and accordingly the economic inputs brought to the country are taken into account.

III. Analytical Hierarchy Process (AHP) and TOPSIS Techniques

The analytic hierarchy process (AHP) is a multiple criteria decision making tool for organizing and analyzing complex decisions and firstly developed by Thomas L. Saaty (1980). This method is used to solve a complex decision making problem having several attributes by modeling unstructured problem under study into hierarchical forms of elements. The essential components of a hierarchical system are the main goal, criteria that affect the overall goal, sub-criteria that influence the maincriteria and finally the alternatives available to the problem. To obtain the degree of relative importance of elements at each level, a pairwise comparison matrix is developed using Saaty 1-9 preference scale as shown in Table 1. Then the eigenvector and the maximum eigenvalue (λmax) are derived from pairwise comparison matrices. The significance of the eigenvalue is to assess the strength of the consistency ratio CR (Saaty, 2000) of the comparative matrix in order to validate whether the pairwise comparison matrix provides a completely consistent evaluation. The final step is to derive the consistency index and consistency ratio.

Table 1: Saaty AHP Paired Comparison Scale

Significance values	**Value Description**
1	Status of both factors' equal importance
3	Status of Factor 1 is **more**

	important than Factor 2
5	Status of Factor 1 is **far more important** than Factor 2
7	Status of Factor 1 is **highly significant** compared to Factor 2
9	Status of Factor 1 is **very highly significant** compared to Factor 2
2,4,6,8	Intermediate values of degrees in the above description in the choice between two factors

Reference: Saaty, 2008;86.

In problem solving with AHP, object (problem) is determined first, then AHP solution steps are implemented starting from the object. Solution phase with AHP operates in the following way (Timor 2011;18, Önder and Önder 2014;23-24);

Step 1: Decision problem is defined and purpose is determined.

Step 2: Necessary decision criteria are set to achieve the objective.

Step 3: Possible decision alternatives are determined.

Step 4: The hierarchical structure of decision problems are created.

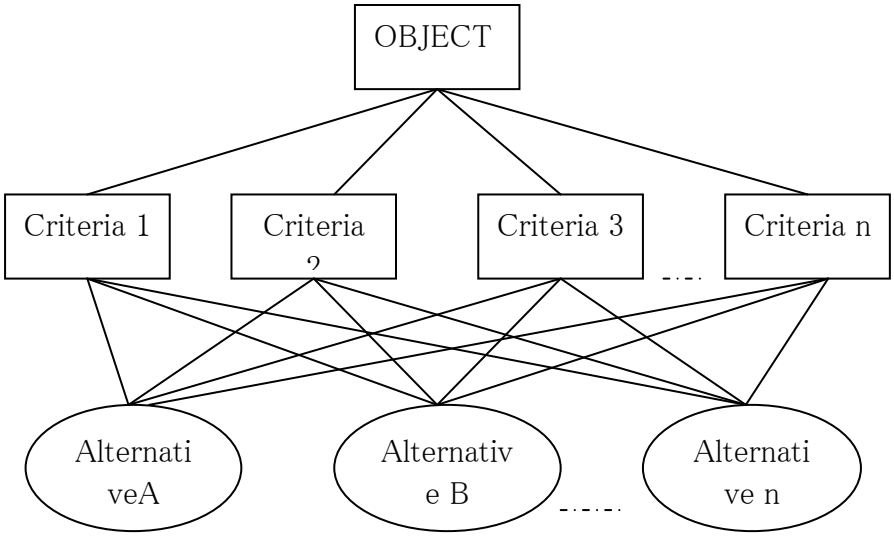


Figure 1. AHP's Hierarchical Structure

Step 5: Paired comparison of the criteria for each level of the hierarchy and the degree of importance of criteria is determined by taking advantage of eigenvectors.

At this stage, inter-criteria comparison matrix is a nxn dimensional square matrix. Matrix components on the diagonal of this matrix takes the value 1. Comparison matrix is shown below:

$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{bmatrix}$$

Comparison of criteria is done one-to-one and mutual according to importance values that they have relative to each other. In comparison of criteria mutually AHP comparison scale in Table 1 is used. In order to determine the weight of these criteria in integrate, in other words their percent importance distributions, it is utilized from column vectors forming the comparisons matrix and B column vector with **n number** and **n component** is generated. This vector is shown below:

$$B_i = \begin{bmatrix} b_{11} \\ b_{21} \\ \cdot \\ \cdot \\ \cdot \\ b_{n1} \end{bmatrix}$$

In the calculation of B column vector, it is utilized from $b_{ij} = \dfrac{a_{ij}}{\sum_{i=1}^{n} a_{ij}}$ formula.

When the steps described above is repeated for the other evaluation criteria, B column vector will be obtained about the number of criteria. When n number B column vector is combined in a matrix format, C matrix will be formed as shown below:

$$C = \begin{bmatrix} c_{11} & c_{12} & \dots & c_{1n} \\ c_{21} & c_{22} & \dots & c_{2n} \\ . & & & . \\ . & & & . \\ . & & & . \\ c_{n1} & c_{n2} & \dots & c_{nn} \end{bmatrix}$$

Benefitting from the C matrix, percent importance distributions which indicate importance values of the criteria relative to each other can be obtained. For this, as shown in the Formula (1), arithmetic average of the line components composing C matrix is taken and W column vector, called **Priority Vector,** is obtained. W vector is shown below:

$$w_i = \frac{\sum_{j=1}^{n} c_{ij}}{n} \qquad (1)$$

$$W = \begin{bmatrix} w_1 \\ w_2 \\ . \\ . \\ . \\ w_n \end{bmatrix}$$

Step 6: The consistency of the comparison matrix obtained in the previous step is determined.

AHP , with **Consistency Rate (CR)** obtained, provides the opportunity to test the priority vector which was obtained and hence the consistency of one-to-one comparisons which were made between the criterias. AHP attributes the essence of CR calculation to the number of criteria and the comparison of a factor (**λ**) which is called **Basic Value**. For calculating **λ**, first, D column vector is obtained from matrix multiplication of A comparison matrix with W priority vector.

$$D = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ . & & & . \\ . & & & . \\ . & & & . \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{bmatrix} x \begin{bmatrix} w_1 \\ w_2 \\ . \\ . \\ . \\ w_n \end{bmatrix}$$

Dividing the corresponding elements of D column vector that was found and W column vector, the value for each evaluation criterion (E) is obtained. The arithmetic average of these values (2) gives the basic value (λ) related to the comparison. After calculating (λ), **Consistency Index (CI)** can be calculated by utilizing the formula (3). At the final stage CR is obtained by dividing CI into standard correction value (4) called **Random Index (RI)** shown at Table 2.

$$\lambda = \frac{\sum_{i=1}^{n} E_i}{n} \qquad (2) \qquad CI = \frac{\lambda - n}{n-1} \qquad (3)$$

$$CR = \frac{CI}{RI} \qquad (4)$$

If the calculated value of CR is smaller than 0.10, this indicates that decision maker made consistent comparison. If CR value is greater than 0.10, this shows there is a calculation error in AHP or inconsistency in decision making's comparisons.

Table 2: Random Index (RI) Values

N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RI	0	0	0,58	0,90	1,12	1,24	1,32	1,41	1,45	1,49	1,51	1,48	1,56	1,57	1,59

Source: Saaty and Özdemir, 2003; 241.

Step 7: Severity of the alternatives and criteria (weights) are determined. Alternative having the highest weight is the best alternative, criteria having the highest weight is the best criteria.

For the assessment of hotel selection, one of the MCDM (Multiple-criteria decision making) methods named TOPSIS has been applied in this research. TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), developed by Hwang and Yoon (1985), is one of the MCDA/MCDM methods for resolving realworld decision problems satisfactorily. TOPSIS attempts to indicate the best alternative that simultaneously has the shortest distance from the positive ideal solution and the farthest distance from the negative ideal solution (2007). The positive ideal solution is a solution that tries to maximize the profit criteria and minimize the cost criteria, whereas the negative ideal solution is just opposite to previous one (Chen, Lin, & Huang, 2006, Wang & Chen, 2007, Wang & Elhag, 2006, Wang, 2007). According to Wang 2007, the positive ideal solution is composed of all the good values attainable of criteria, whereas the negative ideal solution consists of all worst values

attainable of criteria (Karim and Karmaker, 2016:8-10). In the TOPSIS method, precise scores that each alternative receives from all the criteria are used in the formation of a decision matrix and normalized decision matrix. By taking into consideration the rates of all attributes, positive and negative ideal solutions are found. By comparing the distance coefficient of each alternative, the preference order of the alternatives is determined.

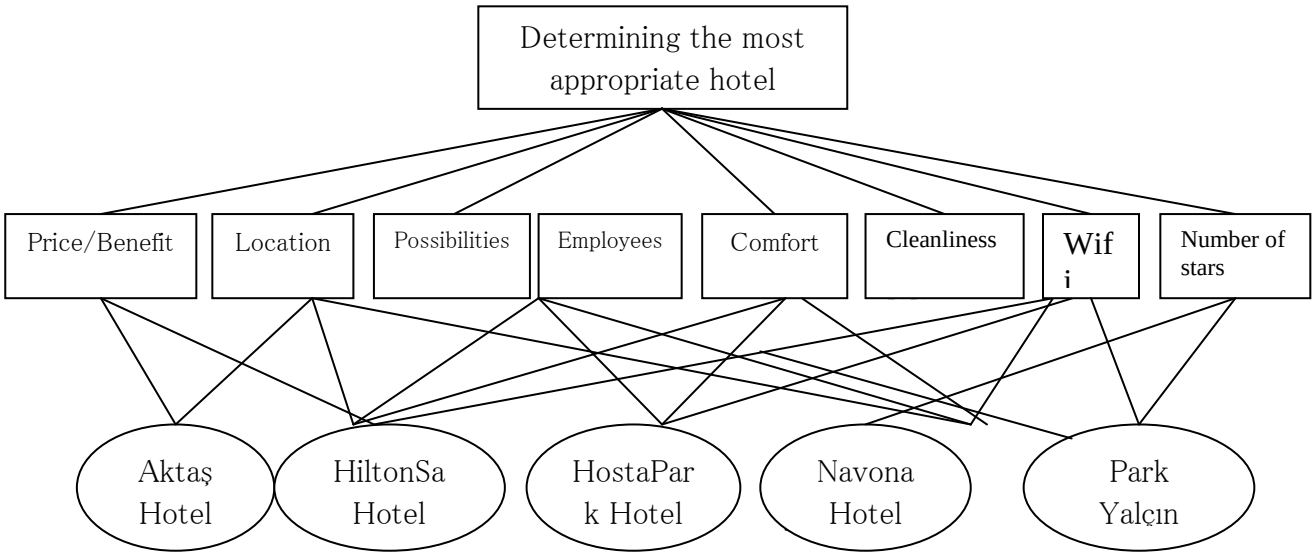
IV. METHODOLOGY

One of the fundamental principles of AHP is separation. The separation means hierarchically configuration of the problem (Saaty, 1986: 841). Objective, criteria and alternatives are three basic level of hierarchical configuration. More complex problems may include the sub-criteria of the main criteria. The number of levels when composing the decision hierarchy, depends on the complexity of the problem and the detailing extent needed by the decision maker while solving the problem (Zahedi, 1986: 98). However, the number of alternatives and criteria to be compared at each level should not go beyond nine (Saaty and Özdemir, 2003: 233). In this context, the first five hotels located in the province of Mersin and received most comments on Booking.com website were evaluated as the alternative of the hierarchical structure. Seven criteria used in the scoring carried out on Booking.com website and additionally the number of stars was used exactly in the study as the criteria. The instructors working at Beysehir Tourism Faculty were asked for their evaluations through the questionnaire form prepared according to Saaty 1-9 scale so as to ascertain the weights of these criteria. Afterwards, the personal judgments of each decision maker were converted to joint group decision by means of geometric mean and their weights were calculated in Super Decision software. The weights of the criteria were used as weighting criteria in TOPSIS technique. In the meantime, the customer scores in Booking.com website were included in the calculations as the values received by the alternatives. Microsoft Office Excel 2003 was employed in TOPSIS calculations.

4.1. Identification of the Decision Problem through AHP method, Creating the Hierarchical Model by Specifying the Target, Criteria and Alternatives

The purpose and decision problem of the application; is "the selection of the best hotel in the province of Mersin" within scope of the scores given by the customers. Hotel customer scoring criteria on Booking.com website, which is a platform about tourism and travel, were chosen as the criteria concerning the selection of the best hotel in the province of Mersin. In this context, there are 8 criteria including number of stars, cleanliness, location, personnel, wifi, comfort, opportunities, price/benefit balance in the decision problem.

Meanwhile, 5 hotels that have received the most hotel customer comments in the province of Mersin on Booking.com website were determined as alternatives. Therefore, there are 5 alternatives in the Decision problem. In the light of this information, a Hierarchical Model of the Decision Problem was generated. The model for the problem was combined with arrows so as to be from top to bottom.



4.2. Determination of Significance Degrees (Weights) of the Criteria through Paired Comparison of the Criteria for Each Level of the Hierarchy with AHP Method

All clusters in the model were compared by taking into consideration the goal node (the selection of the best hotel) of the nodes (number of stars, cleanliness, location, employees, wifi, comfort, possibilities, price/benefit balance) available in the criteria cluster after generating the nodes. The geometric mean of the personal judgments of 5 instructors working at Beysehir campus, was calculated by using Saaty's 1-9 scale (table-1) and the data used in the comparison (Table 3).

AHP method can be applied in individual and group decisions. If any decision is made as a result of participation of a group people not of a single person, this situation is called AHP with group decision making (Giriner and Çevdar, 2007: 104-105). One of the methods commonly used by making a group decision in AHP, is the unification of individual judgments contained in paired comparison matrixes. The geometric mean is the most

appropriate method in the cases where decision makers are equally important with regards to the unification of the judgments of a group (Forman and Peniwati, 1998: 169, Asma and Bahurmoz, 2006: 10, Timor 2011: 38, Ömürbek and Tunca 2013: 56-57, Önder and Önder 2014: 35-37, Çelik, 2007: 74). If the geometric mean calculated is between 1-9, the comparison result has been entered without making any change to the left side of the questionnaire form of Super Decision software. If the geometric mean is a decimal number, the nearest integer value has been taken. If the geometric mean value calculated for the decision makers is between 0-1, the value of "1" is divided by this value (like 1/0,60). If the value obtained as a result of the division becomes a decimal, it is calculated as "1/the value obtained" by considering the nearest integer value. It was determined as such with the fractional figures contained in the common view column of Table 3 and was included in the calculations so as to take part at the right side of the questionnaire form of Super Decision software (Ömürbek and Tunca 2013: 58-59). The matrix was created for the criteria after entering the data (Figure 2).

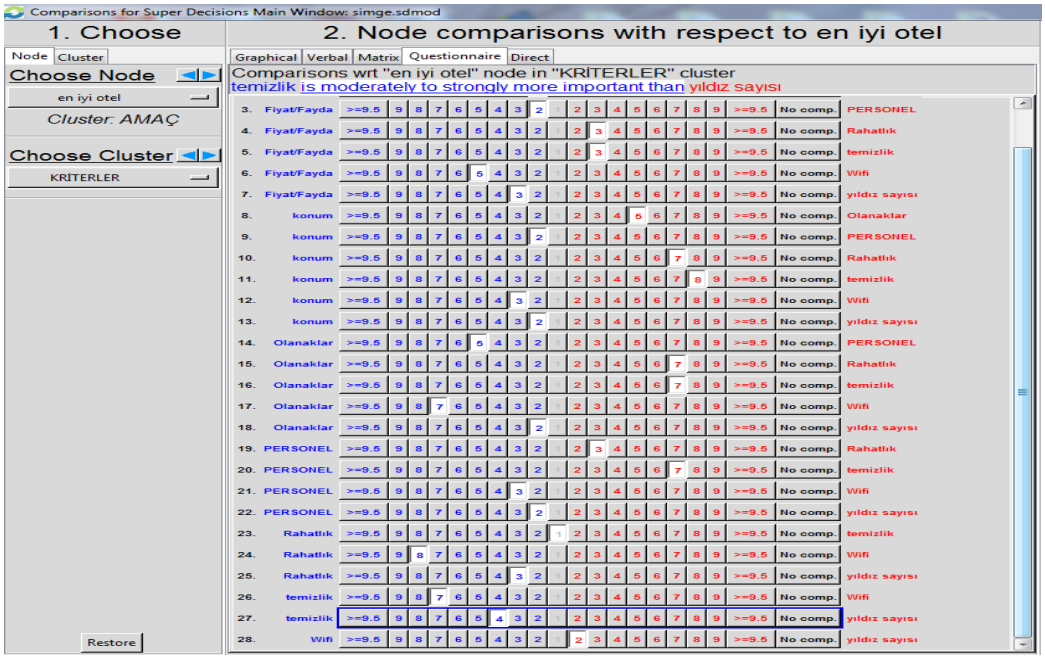


Figure 2. Paired Comparison Matrix Concerning the Criteria

In general, a complex decision problem contains quantitative and qualitative criteria. Therefore, the judgments obtained from paired comparisons are subjective by nature. Furthermore, the comparisons may not be consistent by human nature. Inconsistency in the comparisons may lead to the inconsistency of the priority values of ordering preferences for the alternatives. "0" inconsistency rate shows that all decision maker judgments are consistent. 10% and less value concerning this rate is usually deemed acceptable (Hafeez et al., 2002; 39-5, Forman and Selly, 2001; 49). The values of the priority vector have been accepted as interpretable, because of the inconsistency value (0,09828<0,10) of the paired comparisons of decision makers' individual judgments calculated by taking geometric mean in the study, is between the acceptable boundaries. In this context, the weight value of the criteria as a result of the comparisons are as follows; Price/Benefit (0,11), Location (0,05), Opportunities (0,11), Personnel (0,05), Comfort (0,28), Cleanliness (0,31), Wifi (0,02), Number of stars (0,04). According to these results, the most important criterion is Cleanliness, and the least important criterion is Wifi in the selection of hotels for decision makers (Figure-3).

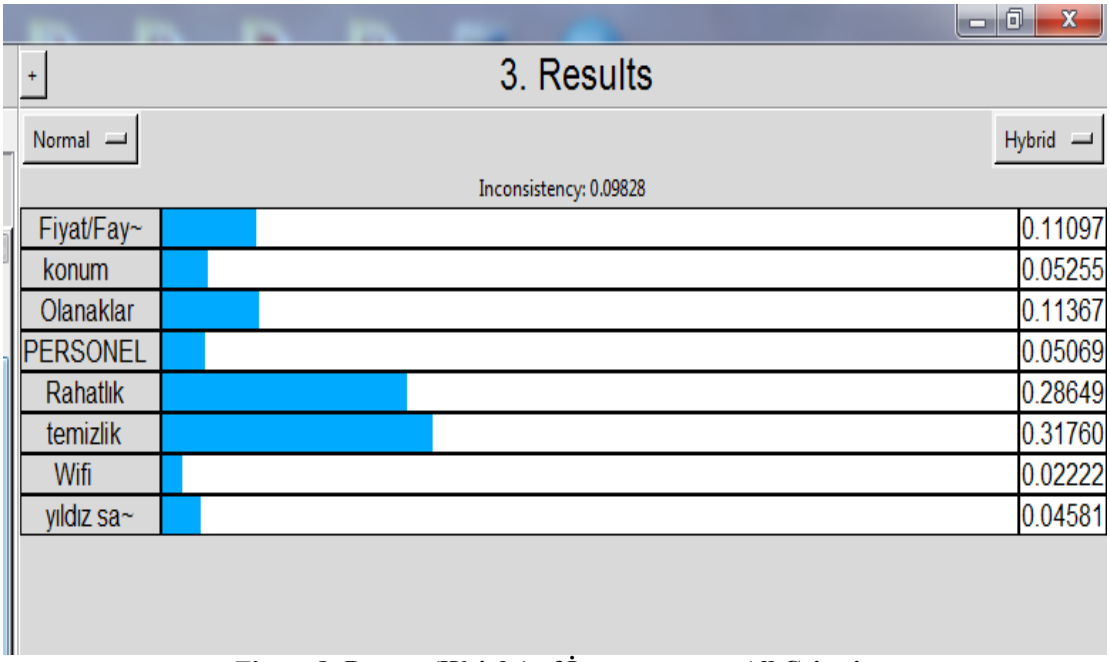


Figure 3. Degree (Weight) of İmportance on All Criteria

Here, the weight values concerning the criteria will be used while making calculations with TOPSIS method.

4.3. Establishment of TOPSIS Decision Matrix

The decision matrix is the first matrix required to be created by the decision maker in TOPSIS technique. While the decision maker indicates the decision points along the lines, contains factors in the columns. The values used in the establishment of the decision matrix were obtained from Booking.com website. These values include the data of 5 hotels which have located in the province of Mersin and have received the most comments. The decision matrix in which there are the weights of the criteria obtained with AHP technique is seen in Table 3. Additionally, these scorings were used instead of the number of stars according to the scoring criteria of Culture and Tourism Ministry. Accordingly, 5-star hotels have 560 scores, 4-star hotels 420, and 3-star hotels 285.

Table 3. TOPSIS Decision Matrix and Weights of the Criteria

Weight	0,04	0,05	0,11	0,05	0,28	0,31	0,02	0,11
Alternatives	**Number of stars**	**Location**	**Possibilities**	**Employees**	**Comfort**	**Cleanliness**	**Wifi**	**Price/benefit**
Aktaş	285	8,3	7,8	8,8	8	8,2	8,6	8,1
HiltonSa	560	8,9	8,1	8,8	8,5	8,5	4,9	7,4
HostaPark	285	8,2	7,5	8,7	8	8,4	8,2	8,2
Navona	420	8,5	8,1	8,9	8,8	9,1	8,5	8
Park Yalçın	285	7,7	8,6	9,1	8,5	9,2	8,2	8,8

4.4. The Acquisition of the Normalized Matrix and Weighted Normalized Matrix

$$\frac{a_{ij}}{\sqrt{\sum_{i=1}^{m} a_{ij}^2}}$$

After squaring the values of the decision criterion corresponding to each alternative in the Acquisition of the normalized matrix, the values of each column were summed and their square root was taken. Then, the process (9) was carried out for each cell (Table 4).

(9)

Table 4. Normalized Matrix

	Number of stars	Location	Possibilities	Employees	Comfort	Cleanliness	Wifi	Price/benefit
Aktaş	0,332	0,445	0,434	0,444	0,427	0,422	0,492	0,446
HiltonSa	0,653	0,477	0,451	0,444	0,454	0,437	0,28	0,408
HostaPark	0,332	0,440	0,417	0,439	0,427	0,432	0,469	0,452
Navona	0,490	0,456	0,451	0,449	0,470	0,468	0,487	0,441
Park Yalçın	0,332	0,413	0,479	0,459	0,454	0,473	0,469	0,485

Afterwards, the Weighted Normalized Matrix values were obtained by multiplying each normalized matrix value by the significance degrees (weights) of the criteria procured with AHP method (Table 5).

Table 5. Weighted Normalized Matrix

	Number of stars	Location	Possibilities	Employees	Comfort	Cleanliness	Wifi	Price/benefit
Aktaş	0,013	0,022	0,047	0,022	0,119	0,130	0,009	0,049
HiltonSa	0,026	0,023	0,049	0,022	0,127	0,135	0,005	0,044
HostaPark	0,013	0,022	0,045	0,021	0,119	0,133	0,009	0,049
Navona	0,019	0,022	0,049	0,022	0,131	0,145	0,009	0,048
Park Yalçın	0,013	0,020	0,052	0,022	0,127	0,145	0,009	0,053

4.5. The Acquisition of Ideal and Negative Ideal Solution Value

Here, the maximum values of each column were taken into account for ideal solution values. Meanwhile, the minimum values of each column were taken into account for negative ideal solution values.

Table 6. İdeal ve Negative İdeal Solution Values

İdeal Solution	0,026	0,023	0,052	0,022	0,131	0,145	0,009	0,053
Negative İdeal	0,013	0,020	0,045	0,021	0,119	0,130	0,005	0,044

4.6. The Acquisition of the Distance Values to Ideal and Non-Ideal Points

The distance values are determined to the positive and negative solution respectively by subtracting positive ideal and negative ideal values from the values on the columns of each criterion.

Tablo 7. Relative Closeness Coefficient to the İdeal Solution

	Number of stars	Location	Possibilities	Employees	Comfort	Cleanliness	Wifi	Price/benefit	Total	S^+
Aktaş	0,00000	0,00000	0,00001	0,00000	0,00002	0,00010	0,00002	0,00008	**0,00059**	**0,024289**
HiltonSa	0,00017	0,00000	0,00005	0,00000	0,00014	0,00014	0,00000	0,00002	**0,00023**	**0,015165**
HostaPark	0,00005	0,00000	0,00001	0,00000	0,00000	0,00000	0,00000	0,00003	**0,00052**	**0,022803**
Navona	0,00017	0,00001	0,00000	0,00000	0,00002	0,00000	0,00000	0,00000	**0,00009**	**0,003000**
Park Yalçın	0,00017	0,00001	0,00000	0,00000	0,00002	0,00000	0,00000	0,00000	**0,0002**	**0,014142**

Tablo 8. Relative Closeness Coefficient to the Negative İdeal Solution

	Number of stars	Location	Possibilities	Employees	Comfort	Cleanliness	Wifi	Price/benefit	Toplam	S^-
Aktaş	0,00017	0,00001	0,00002	0,00000	0,00006	0,00003	0,00000	0,00000	**0,00005**	**0,007071**

HiltonSa	0,00000	0,00000	0,00000	0,00000	0,00000	0,00001	0,00002	0,00003	**0,00029**	**0,017029**
HostaPark	0,00004	0,00000	0,00002	0,00000	0,00014	0,00023	0,00002	0,00002	**0,00006**	**0,007745**
Navona	0,00000	0,00000	0,00005	0,00000	0,00006	0,00023	0,00002	0,00008	**0,00047**	**0,021679**
Park Yalçın	0,00000	0,00000	0,00005	0,00000	0,00006	0,00023	0,00002	0,00008	**0,00044**	**0,020976**

4.7. The Calculation of Relative Proximity to Step Ideal Solution

$C_i^* = \frac{S_i^-}{S_i^- + S_i^*}$ (10) formula is used in calculation of the relative proximity to the ideal solution. The results were given in Table 9 according to this formula.

Tablo 9. İdeal Solution Table

	S^+	S^-	C*	Sıralama
Aktaş	0,024289	0,007071	0,225478	**5**
HiltonSa	0,015165	0,017029	0,528949	**3**
HostaPark	0,022803	0,007745	0,253535	**4**
Navona	0,003000	0,021679	0,878439	**1**
Park Yalçın	0,014142	0,020976	0,597301	**2**

The most convenient is Navona Hotel (0,8784) among the hotels evaluated in the province of Mersin, based on weighting the expert judgments and the evaluation points given by the customers.

V. Conclusion

Customers now reach the comments and some websites in the internet environment before deciding the hotel where they will lodge and for holiday selections as a result of the advanced technology. The use of internet has become indispensable for tourism sector. This sector involves a risk factor because of the prominence of service and presence of abstract products in this sector. Therefore, the hotels constituting one of the most important parts of the sector must provide customer satisfaction. Because scientific studies have also proved that enterprises are able to survive in the competitive environment by providing customer satisfaction. Other potential customers can also form an opinion from the scorings made by hotel customers. Consequently, although there are many websites where customers can comment on the enterprises in the sector, Booking.com is among the most significant ones.

In the study, the top five hotels which are located in the province of Mersin and have the highest scores in Booking.com were evaluated. The criteria used in the scorings made on the website were used exactly as they are, and the criterion of the number of stars was also added to this. The instructors working at Beysehir Tourism Faculty were asked for their evaluations according to Saaty 1-9 scale so as to ascertain the weights of these criteria. Afterwards, their weights were calculated in Super Decision software. The most convenient one was determined among the alternative five hotels by combining the weights of the criteria and the customer scorings on Booking.com website with TOPSIS technique. The most convenient hotel evaluated in the province of Mersin is Navona Hotel, the criterion deemed most important is Cleanliness.

This study evaluates together multi-criteria decision making techniques and customer scorings depending on customer satisfaction. Even though similar studies have been conducted in the past years, this study contributes to the literature due to the absence of such study in the Mediterranean Region that is the most important tourism region in Turkey. In this respect, the execution of the study in Mersin, a province located within the destination of the Mediterranean, is of great importance. Furthermore, the administrations of these five hotels located in the province of Mersin can also obtain information by benefiting from the study results about the hotels' statuses and for providing competitive advantage.

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