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Interpreting EWOM Evaluations Using AHP and TOPSIS Methods and Determining the Most Suitable Cyprus Hotel[1]

Assist. Prof. Dr., Erkan AKGÖZ
Selçuk University, Faculty of Tourism, Konya, Türkiye.
eakgoz@selcuk.edu.tr, https://orcid.org/0000-0001-6723-0271

PhD Student, Bengü Su KARAGÖZ
Selçuk University, Institute of Social Sciences, Konya, Türkiye.
karagozbengusu@gmail.com, https://orcid.org/0000-0003-3259-8070

Master's Degree Student, Mukaddes Nur EL
Selçuk University, Institute of Social Sciences, Konya, Türkiye.
mukaddes.nur.1999@gmail.com, https://orcid.org/0000-0001-9253-5560

Master's Degree Student, Beyza AKIN
Selçuk University, Institute of Social Sciences, Konya, Türkiye.
akin.beyza01@gmail.com, https://orcid.org/0000-0002-1681-3140

Abstract

WOM, which is effective in consumers' decision-making, has started to be replaced by eWOM today. Due to reasons such as widespread use of the internet, easier and faster access to information, visuality and diversity, eWOM provides an important communication in consumers' preferences. Consumers who have experienced a product or service through eWOM can influence this process by transferring their experiences to other potential consumers in the decision process. eWOM, which has become important for many sectors, has also become very important for the tourism sector. Visitors who experience the various facilities offered by hotels share their experiences with other individuals through various websites and can influence decision processes. This study aims to determine the most suitable hotel among nine five-star hotels in Cyprus with 1000 or more reviews on the Booking.com website. The 8 criteria that make up the visitor evaluation scale on the Booking.com website was weighted by tourism experts using the AHP method. According to the results of this research, in which the obtained criterion weights and visitors' ratings obtained from the Booking.com website was evaluated using the TOPSIS method, it was concluded that the most suitable hotel was H3 hotel.

Keywords: eWOM, AHP, TOPSIS, Booking.com, Cyprus

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AHP ve TOPSIS Yöntemlerini Kullanarak EWOM Değerlendirmelerinin Yorumlanması ve En Uygun Kıbrıs Otelinin Belirlenmesi

Doç. Dr., Erkan AKGÖZ
Selçuk Üniversitesi, Turizm Fakültesi, Konya, Türkiye.
eakgoz@selcuk.edu.tr, https://orcid.org/0000-0001-6723-0271

Doktora Öğrencisi, Bengü Su KARAGÖZ
Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Konya, Türkiye.
karagozbengusu@gmail.com, https://orcid.org/0000-0003-3259-8070

Yüksek Lisans Öğrencisi, Mukaddes Nur EL
Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Konya, Türkiye.
mukaddes.nur.1999@gmail.com, https://orcid.org/0000-0001-9253-5560

Yüksek Lisans Öğrencisi, Beyza AKIN
Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Konya, Türkiye.
akin.beyza01@gmail.com, https://orcid.org/0000-0002-1681-3140

Özet

Tüketicilerin karar verme süreçlerinde etkili olan ağızdan ağıza iletişim (WOM), günümüzde internetin yaygın kullanımı, bilgiye daha kolay ve hızlı erişim, görsellik ve çeşitlilik gibi nedenlerle elektronik ağızdan ağıza iletişim (eWOM) ile yer değiştirmeye başlamıştır. eWOM, tüketicilerin tercihlerinde önemli bir iletişim aracı sağlayarak, birçok sektör için önemli hale gelmiştir. Özellikle turizm sektörü için büyük bir öneme sahip olan eWOM, otellerin sunduğu çeşitli olanakları deneyimleyen ziyaretçilerin, bu deneyimlerini çeşitli internet siteleri aracılığıyla diğer bireylere aktararak karar verme süreçlerini etkilemelerine olanak tanır. Bu araştırmada, Booking.com web sitesinde 1000 veya daha fazla yoruma sahip Kıbrıs'taki dokuz adet 5 yıldızlı otel arasından en uygun otelin belirlenmesi amaçlanmıştır. Booking.com web sitesinde ziyaretçi değerlendirme ölçeğini oluşturan 8 kriter, turizm uzmanları tarafından AHP yöntemi kullanılarak ağırlıklandırılmıştır. Araştırma sonuçlarına göre, elde edilen kriter ağırlıkları ve Booking.com web sitesinden alınan ziyaretçi değerlendirmeleri TOPSIS yöntemi ile değerlendirilmiş ve en uygun otelin H3 oteli olduğu sonucuna varılmıştır.

Anahtar Kelimeler: eWOM, AHP, TOPSIS, Booking.com, Kıbrıs

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1. INTRODUCTION

With the development of the Internet, the influence of consumer opinions on individuals has increased significantly. The Internet is changing the way consumers communicate by creating a common space where comments and evaluations can be shared. Through the internet, consumers' opinions can be examined by other individuals worldwide, so it has the power to reach a large audience. When the relevant literature is examined, it is understood that eWOM, known as electronic word of mouth communication, greatly affects consumer behavior. 90% of individuals consult the opinions of consumers who have experienced that product or service before purchasing it. It appears that 70% of these individuals trust eWOM. Information and evaluations about a product or service offered to consumers through eWOM have more impact than WOM, which is traditional word of mouth communication. For this reason, marketers are trying to use eWOM as a new communication tool (Lopez and Sicillia, 2013).

The Internet has changed WOM, a form of personal communication, into a more comprehensive form called eWOM. Since eWOM, a new form of communication, is scored based on independent evaluations, its impact is assumed to be much greater. Thanks to communication and technological developments, it facilitates access to information about products and services by individuals and institutions since all information about the product or service offered in any region of the world can be easily obtained from anywhere with internet connection. Consumers tend to believe in products or services and form their own perceptions based on the information they obtain from eWOM. Therefore, eWOM affects consumer purchase intentions positively or negatively. Since evaluations about products or services are quite difficult, consumers can access any suggestions or feedback about the product or service they want through eWOM, where technological developments have added a new dimension to WOM. Since this information is generally experienced and shared by previous consumers, it is more useful for individuals in the purchasing decision process. In addition, manufacturers make it easier to develop products and services by using the information they obtain through eWOM (Sa'ait et al., 2016).

Since tourism has intangible features, it is not possible to experience touristic products and services in advance. For this reason, evaluations of consumers who have experienced the product or service are an important reference for potential visitors. These evaluations, which are easily accessible to the target audience, facilitate the decision-making process. For this reason, evaluations made online are very important for all stakeholders. The most important thing to consider in this regard is to check whether the evaluations are made correctly and objectively. Applications that allow people who have experienced the relevant product or service to make evaluations increase the security of the evaluations. To resolve this issue, the Booking.com website has restricted public commenting.

A visitor who makes a reservation through the Booking.com website and stays at the facility receives a notification via e-mail after checking out of the facility so that he can evaluate his experience. Therefore, only the visitor staying at the facility has the opportunity to evaluate and comment (Balague et al., 2016: 68). For this reason, only the data obtained through the Booking.com website will be evaluated within the scope of the research.

2. ELECTRONIC WORD of MOUTH (EWOM)

Word of mouth (WOM) is a communication about the features and experiences of a brand, product or service, used to measure customer loyalty. WOM enables consumers to share their experiences and obtain informative and persuasive clues to help other individuals in their decisions (Jun et al., 2017: 6). eWOM is expressed as the version of WOM on the internet.

The fact that individuals can access real information about brands, products or services without being affiliated with any brand or institution through eWOM increases reliability in eWOM. With the information accessed from eWOM, individuals can trust the brand, product or service and decide to purchase (Sa'ait et al., 2016: 74).

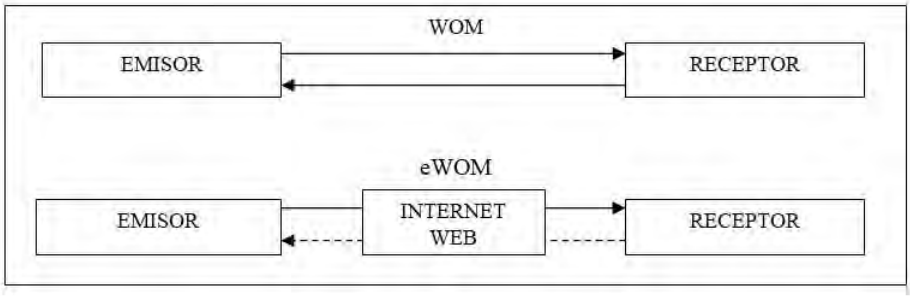

Figure 1. Communication Channels in WOM and eWOM

Source: (Lopez and Sicilia, 2013: 11).

Figure 1 shows the communication channels of WOM and eWOM. Although WOM and eWOM are the same in presenting individuals' opinions about a brand, product or service, the channels used to convey the information are different. When Figure 1 is examined, it is seen that WOM provides face-to-face, simultaneous and two-way communication between the source and receiver. However, communication does not need to be face-to-face, simultaneous and two-way in eWOM. In eWOM, the source can write an opinion that can remain on the Internet for a long time. Thus, many individuals can access and respond to this view. Since the view is permanent in eWOM, the information exchange is greater than the information exchange in WOM. While individuals know each other in WOM, the source name is generally unknown in eWOM, and individuals do not know each other (Lopez and Sicilia, 2014: 29). Today, with the rapid development of technology, the internet has integrated into our lives as it provides easy and fast access to information, and eWOM has begun to be used frequently to get opinions and information about a brand, product or service.

Blogs, online sites and websites enable individuals to interact in a virtual environment and share information, opinions and ideas about brands, products and services. Thus, WOM turns into eWOM through some internet applications. eWOM provides individuals who have an opinion about a brand, product or service, access to positive or negative statements made available to many individuals and institutions via the internet (Filieri and McLeay, 2013: 44). When the literature is examined, it is seen that there are research on eWOM in different fields. Some of these studies are as follows;

Ye et al., (2009) aimed to determine the effect of online comments on hotel room sales and concluded that online comments have a significant effect on online hotel reservations. Kitapcı et al., (2012) aimed to determine the effect of online comments on consumers' hotel choice and concluded that consumers take into account the positive and negative comments of previous visitors before choosing a hotel. Zhao et al., (2015) aimed to determine the effect of consumers' online comments and information source qualities on booking and identified six effects as usefulness, evaluation expertise, timeliness, scope, positive-negative value and comprehensiveness, and concluded that these effects have a positive effect on online reservation intention. Bayer and Aksöz (2015) aimed to determine which criteria in online comments are more important for consumers when choosing a hotel and concluded that they care about staff, food and beverage, rooms, respectively. Dogan et al., (2016) aimed to determine the effect of online comments on consumers' choice of accommodation establishments and concluded that

consumers are affected by comments on websites, complaints affect their preferences, and comments provide an important source of information.

3. BOOKING.COM

Booking.com started its operations as a small startup in Amsterdam in 1996 and later became a leading digital travel company in the world. Booking.com, a subsidiary of Booking Holdings, operates as an online travel agency service with a mission to make it easier for everyone to discover the world. Offering services in 43 different languages, this leading digital travel company offers a total of more than 28 million accommodation units consisting of a variety of accommodations and provides 24/7 service support (www.booking.com).

Booking.com sends guests a link via email so they can review their stay within 90 days after they leave the facility. Guests can give an overall evaluation of their experience between 1 and 10. The only mandatory question that they must answer before they can submit their reviews is the overall rating. The average of overall evaluations constitutes the visitor evaluation score. Apart from this evaluation, there are 6 more criteria that visitors can optionally evaluate and are not included in the visitor evaluation score. These criteria are cleanliness, comfort, price/benefit balance, facilities, location and employees. Visitors can optionally evaluate different criteria, and these evaluations are not included in the visitor evaluation score. Apart from these evaluations, visitors can also give open-ended feedback (partner.booking.com).

4. METHODOLOGY of the RESEARCH

4.1. AHP Method

Considering the changing life conditions, important decisions are made in business and private life. These decisions are generally determined by subjective methods. To increase the effectiveness of decisions, many alternatives should be evaluated according to different criteria and this process should be concluded objectively because making the right decision makes it easier to gain competitive advantage. New technologies and applications are increasing to make the most appropriate decision according to different criteria. One of these is the AHP method, which is the Analytic Hierarchy Process. AHP is preferred in cases where there are many qualitative and quantitative criteria in the decision-making process (Akgöz and Temizel, 2022: 89).

Developed by Saaty in 1980, AHP is one of the multi-criteria decision-making methods applied to the decision-making process of individuals. This method is used to create an evaluation model with criteria weights. It converts different criteria into an overall score to rank decision alternatives. For this purpose, a hierarchical structure is created, and it is concluded in a simple way. Thus, AHP enables decision makers to solve problems (Chen, 2013: 168).

Table 1. Importance Scale

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgment slightly favour one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgment strongly favour one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is strongly favored, and its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
Reciprocals of above	If activity *i* has one of the above non-zero numbers assigned to it when compared with activity *j*, then *j* has the reciprocal value when compared with *i*	

Source: (Saaty, 2008: 86).

Table 1 shows the importance scale used by decision makers when making comparisons according to the degree of importance. Pairwise comparisons are made considering the importance scale.

After the hierarchical structure of the decision problem is created, pairwise comparisons of the elements at the relevant level should be made to calculate the priority values of the criteria at each level. The following steps should be followed to solve the decision problem using the AHP technique, which is one of the multi-criteria decision-making methods (Önder and Önder, 2015: 23-24);

- The problem is defined, and the goal is determined.
- Decision criteria are listed in line with the purpose.
- Possible decision alternatives are determined.
- A hierarchical structure is created.
- Pairwise comparisons are made for each level of the hierarchy and determined according to their degree of importance.
- Alternatives are compared according to criteria and their priorities are calculated.
- The compliance rate is calculated.
- Alternatives are ranked according to their relative priority values and the alternative with the highest priority value is selected.
- Sensitivity analysis is performed.

4.2. TOPSIS Method

Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS), one of the multi-criteria decision-making methods, was developed by Hwang and Yoon in 1981 and has been successfully applied to solve many multi-criteria decision-making problems (Kocaoğlu and Küçük, 2019: 19). TOPSIS is a method based on ideal solution and negative ideal solution. The

solution with the lowest cost criterion and the highest benefit criterion is determined as the ideal solution, and the solution with the highest cost criterion and lowest benefit criterion is determined as the negative ideal solution. The most appropriate alternative for solving the problem is determined as the closest to the ideal solution and the farthest from the negative ideal solution (Wu et al., 2008: 256). The stages of the TOPSIS method are as follows (Tsaur et al., 2002: 111-112, Özdemir, 2015: 135-139);

- The decision matrix is created.
- A normalized decision matrix is created.
- A weighted normalized decision matrix is created.
- Ideal and negative ideal solutions are created.
- The distance to ideal and negative ideal points is calculated.
- The relative closeness to the ideal solution is calculated.
- A relative ranking of each alternative is made.

When the literature is examined, it is seen that there are studies in which AHP and TOPSIS methods are used both together and separately in different fields. Some of these studies are as follows;

Akgöz et al., (2021) aimed to determine the factors affecting the selection of smart museums by considering the technological applications in museums in Turkey with the AHP method and concluded that the most important criterion is virtual reality applications. Akyurt (2021) aimed to determine the personnel selection criteria of 7 hotels in Ordu with the AHP method and concluded that the most important criterion is experience. Tamer and Yangil (2021) aimed to determine the sustainability perceptions of five-star hotel managers operating in Bodrum and concluded that the most important criterion is environmental sustainability. Turan and Akyurt (2021) aimed to determine the ecotourism perception of tourism managers in Giresun with the AHP method and concluded that the most important criterion is security. Akgöz and Temizel (2022) aimed to determine the most suitable tourism business investment to be made in Konya-Sille with the AHP method and concluded that the most suitable investment is a business selling souvenirs and the most important criterion is the investment cost.

Ermağan et al., (2017) aimed to determine the most suitable establishment location among the provinces of Çeşme, Bodrum and Alanya in 5-star accommodation business with the TOPSIS method and concluded that the most suitable province was Alanya, and the most important criterion was tourist attraction. Çaylak (2019) determined the most suitable hotel (A10) in Antalya using Booking.com website data with the TOPSIS method. Çelik and Aydoğan (2021) determined the most suitable hotel (A7) in Istanbul-Taksim using Trivago website data with the TOPSIS method and concluded that the most important criterion is cleanliness. Güleryüz et al., (2021) determined the most reliable hotel (O4) among the 7 large hotels in Turkey during the pandemic period with the TOPSIS method and concluded that the most important criterion is hygiene.

Tyagi et al., (2014) aimed to improve electronic supply chain management performance with the AHP and TOPSIS method and concluded that the most suitable alternative is to invest in web-based technologies. Göral (2015) aimed to evaluate 9 hotels operating in Konya in terms of customer satisfaction using the AHP and TOPSIS method and concluded that the most suitable hotel was hotel C, and the most important criterion was price/benefit. Gündüz and Güler (2015) aimed to select the most suitable supplier for thermal tourism businesses with the AHP and TOPSIS method and concluded that the most suitable supplier is supplier D and the most

important criterion is product quality and performance. Davras and Çetintürk (2016) aimed to determine the most important ability that provides competitive advantage and the hotel that provides sustainable competitive advantage for 4 hotels operating in Antalya using the AHP and TOPSIS method and found that the most suitable hotel is hotel D, and they concluded that the ability that provides the most important competitive advantage is the innovative structure criterion. İçigen and Çetin (2017) aimed to determine the most suitable personnel for the position of front office manager for a hotel operating in Antalya using the AHP and TOPSIS method, and they concluded that the most suitable candidate is the candidate number 10, and the most important criterion is the candidate's impression in the interview.

4.3. Objective of the Reasearch

The purpose of the research is to determine the best 5-star hotel in Cyprus through the ratings obtained from the Booking.com website.

4.4. Limitations of the Research

Cyprus hotels were preferred in the research because customers of the Booking.com website in Turkey could only make international reservations on 16.06.2023, when the research was conducted. The limitation of the research is the nine 5-star hotels with 1000 or more reviews in Cyprus on the Booking.com website.

The following steps were followed in the analysis of the research:

1. Defining the decision problem using the AHP method and creating a hierarchical model by determining the purpose, criteria and alternatives.
2. Determining the weights of the criteria by making pairwise comparisons of the selection criteria with AHP method.
3. Creating the TOPSIS decision matrix.
4. Creation of normalized matrix and weighted normalized decision matrix.
5. Creation of ideal and negative ideal solution values.
6. Creating ideal and negative ideal distance values and calculation of relative closeness to the ideal solution.

5. ANALYSIS of the RESEARCH and FINDINGS

The steps used in the research are detailed below.

5.1. Defining the Decision Problem Using the AHP Method, Creating a Hierarchical Model by Determining the Purpose, Criteria and Alternatives

The decision problem and purpose of the research is to determine the best 5-star hotel in Cyprus according to the ratings given by the visitors. The evaluation scale of hotel guests on the Booking.com website was used for the criteria determined to choose the best 5-star hotel in Cyprus.

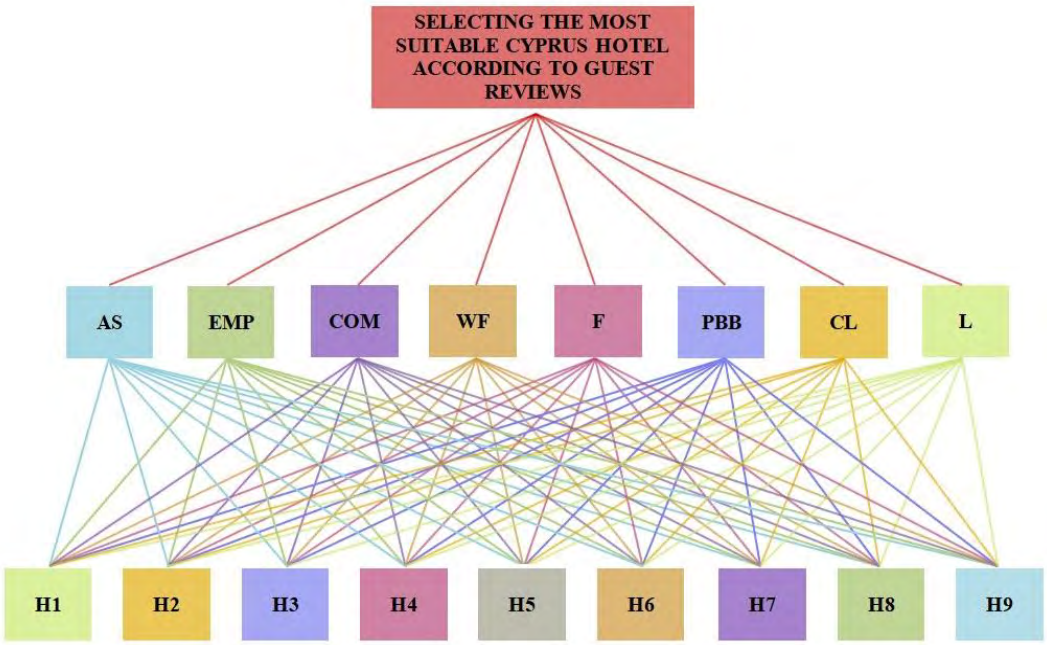

Figure 2. Hierarchical Model of the Decision Problem

Figure 2 shows the hierarchical structure of the decision problem. In the visitor evaluation scale on the Booking.com website, a total of 8 criteria including Overall Score (AS), Employees (EMP), Comfort (COM), WiFi (WF), Facilities (F), Price/Benefit Balance (PBB), Cleanliness (CL) and Location (L) were used in the hierarchical structure of the decision problem. The values used in the research were obtained on 16.06.2023. These values consist of data from nine 5-star hotels in Cyprus with 1000 or more evaluation reviews on the Booking.com website. Due to the commercial identities of the hotel names, each of them was coded (H1, H2, H3, H4, H5, H6, H7, H8 and H9) to create a hierarchical structure of the decision problem.

5.2. Determining the Weights of the Criteria by Making Pairwise Comparisons of Selection Criteria with the AHP Method

Overall Score (AS), Employees (EMP), Comfort (COM), WiFi (WF), Facilities (F), Price/Benefit Balance (PBB), Cleanliness (CL) and Location (L) criteria in the hierarchical model of the decision problem were compared according to the purpose of choosing the most suitable hotel. Saaty's 1-9 Importance Scale (Table 1) was used for comparison.

Table 2. Pairwise Comparison Examples in Determining Hotel Preference

PBB	**9**	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	**AS**
L	9	8	7	6	5	4	3	2	1	2	3	4	5	6	**7**	8	9	**F**
WF	9	8	7	6	5	4	3	2	**1**	2	3	4	5	6	7	8	9	**EMP**

Table 2 shows a pairwise comparison example of the survey applied to obtain expert opinion. If the expert opinion is on the left side of the equation (1) in the table, the selected value is directly evaluated. According to Table 2, since Price/Benefit Balance is extremely important in hotel choice compared to the General Score criterion, the value 9 is selected on the left side of the equation and evaluated as 9. If the expert opinion is on the right side of the equation (of 1), it is evaluated as 1/. According to Table 2, since 7 is important according to the facilities and Location criteria in hotel selection, the value 7 is selected on the right side of the equation and evaluated as 1/7. If the criteria are of equal importance according to expert opinion, the value 1 is selected and

evaluated as 1. According to Table 2, 1 is selected and evaluated as 1 since WiFi and Employees criteria are of equal importance in hotel selection.

Table 3. Decisions of Common Opinion Regarding Pairwise Comparisons of Criteria

Criteria	DM1	DM2	DM3	DM4	DM5	Geometric Average	Common Opinion	Criteria
PBB	1 / 4	1	7	5	7	2,28	2	AS
PBB	1	1 / 4	1 / 5	1 / 4	1 / 5	0,30	1 / 3	L
PBB	1 / 3	3	7	5	5	2,81	3	F
PBB	1 / 3	4	3	6	6	2,70	3	COM
PBB	1 / 7	1 / 4	1 / 6	1 / 3	2	0,33	1 / 3	CL
PBB	1	1 / 5	1 / 3	4	3	0,96	1	WF
PBB	1 / 5	4	6	7	9	3,13	3	EMP
AS	1 / 3	1 / 6	1 / 7	1 / 5	1 / 9	0,18	1 / 6	L
AS	1 / 3	1	1	1	1 / 2	0,70	1	F
AS	1 / 3	1	1 / 2	1	1	0,70	1	COM
AS	1 / 3	1 / 5	1 / 8	1 / 5	1 / 6	0,19	1 / 5	CL
AS	1	1 / 5	1 / 4	1 / 3	1 / 3	0,35	1 / 3	WF
AS	1 / 4	1 / 2	1	5	2	1,05	1	EMP
L	1	4	8	9	9	4,82	5	F
L	1 / 4	5	7	6	8	3,35	3	COM
L	1 / 5	1 / 2	1	5	2	1,00	1	CL
L	1	1	4	7	5	2,69	3	WF
L	1 / 3	6	8	9	8	4,10	4	EMP
F	1 / 3	1	1 / 4	1	1 / 3	0,49	1 / 2	COM
F	1 / 5	1 / 4	1 / 9	1 / 5	1 / 5	0,19	1 / 5	CL
F	1	1 / 5	1 / 5	1	1 / 5	0,38	1 / 3	WF
F	1 / 3	1	1	3	3	1,25	1	EMP
COM	1 / 4	1 / 6	1 / 5	1 / 6	1 / 8	0,18	1 / 6	CL
COM	3	1 / 5	1 / 3	1 / 2	1 / 2	0,55	1 / 2	WF
COM	1 / 3	1	5	5	5	2,11	2	EMP
CL	5	2	7	5	4	2,24	2	WF
CL	1	5	9	9	8	5,04	5	EMP
WF	1 / 5	4	8	5	6	2,86	3	EMP
Inconsistency	**0.07221**	**0.04910**	**0.08118**	**0.08287**	**0.07952**	**-**	**0.01856**	

In the AHP method, which can be applied to both individual and group decisions, if the decision is made by a group of decision makers, this technique is referred to as "AHP with Group Decision Making". In this case, the "Geometric Average" approach is the most appropriate technique for combining the individual judgments of decision makers. The reason why the geometric average, also suggested by Saaty, is preferred over the arithmetic average is that the symmetric elements in the comparison matrices must be inverse of each other (Sezgin and Yurtlu, 2021: 1771). The pairwise comparisons in Table 3 shows the decisions and geometric averages of the decision makers (coded as DM1, DM2, DM3, DM4 and DM5) consisting of a total of 5 faculty members working at the Faculty of Tourism. If the values in Table 3 are between 1-9, they were entered on the left side of the survey form in the Super Decision program without any changes. If it was a decimal number, the closest integer number value was entered. If the geometric average value obtained was between 0 and 1, it was entered on the right side of the survey form by dividing it by the value "1" (such as 1 / 0.62). When the value turns out to be a decimal in the division, the integer value to which it is closest is calculated as "1 / the obtained value" (Göral, 2015: 11, Ömürbek and Tunca, 2013: 58-59).

In the AHP method, the judgment of a group of experts on the subject is generally consulted. The judgments of each decision maker are combined mathematically. Geometric average is used to

combine these judgments mathematically. What is important here is that the inconsistency rate of the geometric average in the group decision is below 0.1, and that each expert's decision is consistent before the geometric average is taken. Surveys that are inconsistent should be made again or removed from the analysis, and corrections should be made to ensure that the inconsistency rate is below 0.1 (Önder and Önder, 2015: 35-36). It was determined that the inconsistency rate in the survey data of DM3, DM4 and DM5, among the decision makers in Table 3, was above 0.1. For this reason, decision makers were interviewed again and asked to review their decisions. After ensuring the consistency of all decision makers, a common opinion column was created by taking their geometric averages.

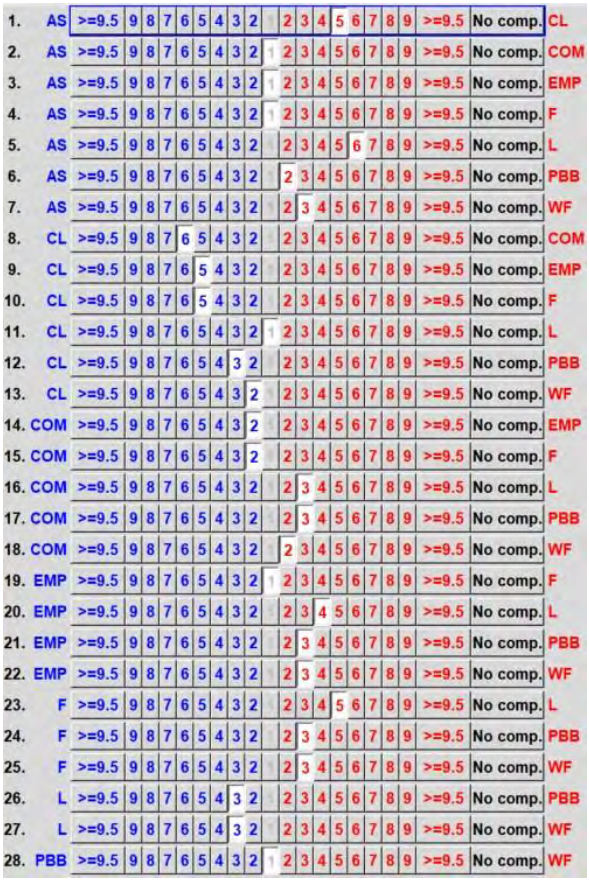

Figure 3. Pairwise Comparisons According to Experts' Judgment

Figure 3 shows the application of the geometric average values calculated according to the values determined by the decision makers to the Super Decisions program used in the AHP method.

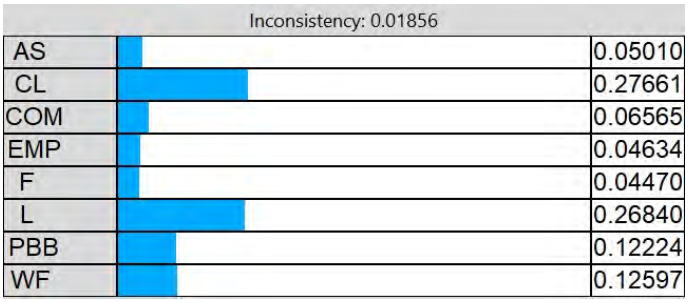

Figure 4. Weight Values of Criteria

Figure 4 shows that the inconsistency rate in the pairwise comparison in the common opinion column is calculated as 0.01856 < 0.1. According to the weights of the criteria in Figure 4, the criterion with the highest eigenvector value was determined as the Cleanliness (0.27661) criterion. This criterion was followed by Location (0.26840), WiFi (0.12597), Benefit/Price Balance (0.12224), Comfort (0.06565), Overall Score (0.05010), Employees (0.04634) and Facilities (0.04470). The weight values of the criteria will be used when making calculations in the TOPSIS method.

5.3. Creating the TOPSIS Decision Matrix

The values used in creating the decision matrix were obtained from the Booking.com website on 16.06.2023. These values consist of data from nine 5-star hotels in Cyprus with 1000 or more reviews. Table 4 was created, which also includes visitor evaluations of these hotels, and the criterion weights obtained by the AHP method.

Table 4. TOPSIS Decision Matrix and Weights of Criteria

Weights of Criteria	**0,05**	**0,04**	**0,07**	**0,13**	**0,04**	**0,12**	**0,28**	**0,27**
	AS	**EMP**	**COM**	**WF**	**F**	**PBB**	**CL**	**L**
H1	9,4	9,4	9,7	9,3	9,7	8,8	9,7	9,2
H2	9,1	9,3	9,5	8,9	9,3	8,8	9,5	9,1
H3	9,6	9,7	9,8	9,6	9,6	9,3	9,8	9,7
H4	8,5	8,6	9,1	9	8,6	8,4	9,1	8,7
H5	8,7	8,8	9	9,3	9	8,9	9	9,3
H6	9,5	9,7	9,7	9,3	9,6	8,9	9,7	9,3
H7	9,1	9,3	9,4	9,1	9,3	8,8	9,4	9,4
H8	8,9	9,3	9,2	8,8	9	8,5	9,2	9
H9	7,7	8,5	8,1	7,3	7,7	7,6	8	8,5

5.4. Creation of Normalized Matrix and Weighted Normalized Decision Matrix

After squaring the corresponding criteria for each alternative, the values of each column were summed, square roots were taken and normalization operations were performed, and Table 5 was created.

Table 5. Normalized Matrix

	AS	**EMP**	**COM**	**WF**	**F**	**PBB**	**CL**	**L**
H1	0,350	0,341	0,348	0,345	0,355	0,338	0,348	0,336
H2	0,338	0,337	0,341	0,330	0,340	0,338	0,341	0,332
H3	0,357	0,352	0,352	0,356	0,351	0,357	0,352	0,354
H4	0,316	0,312	0,326	0,334	0,315	0,323	0,327	0,317
H5	0,324	0,319	0,323	0,345	0,329	0,342	0,323	0,339
H6	0,353	0,352	0,348	0,345	0,351	0,342	0,348	0,339
H7	0,338	0,337	0,337	0,338	0,340	0,338	0,338	0,343
H8	0,331	0,337	0,330	0,327	0,329	0,326	0,330	0,328
H9	0,286	0,308	0,291	0,271	0,282	0,292	0,287	0,310

Table 6 was created by multiplying the values obtained in the normalized matrix with the weights of the criteria obtained by the AHP method.

Table 6. Weighted Normalized Decision Matrix

Weights of Criteria	0,05	0,04	0,07	0,13	0,04	0,12	0,28	0,27
	AS	**EMP**	**COM**	**WF**	**F**	**PBB**	**CL**	**L**
H1	0,017	0,014	0,024	0,045	0,014	0,041	0,098	0,091
H2	0,017	0,013	0,024	0,043	0,014	0,041	0,096	0,090
H3	0,018	0,014	0,025	0,046	0,014	0,043	0,099	0,096
H4	0,016	0,012	0,023	0,043	0,013	0,039	0,092	0,086
H5	0,016	0,013	0,023	0,045	0,013	0,041	0,091	0,092
H6	0,018	0,014	0,024	0,045	0,014	0,041	0,098	0,092
H7	0,017	0,013	0,024	0,044	0,014	0,041	0,095	0,093
H8	0,017	0,013	0,023	0,042	0,013	0,039	0,093	0,089
H9	0,014	0,012	0,020	0,035	0,000	0,035	0,080	0,084

5.5. Creating Ideal and Negative Ideal Solution Values

Table 7 was created by obtaining ideal solution values considering the maximum values of each column, and by obtaining negative ideal solution values taking into account the minimum values of each column.

Table 7. Ideal and Negative Ideal Solution Values

Ideal Solution Value (A*)	0,018	0,014	0,025	0,046	0,014	0,043	0,099	0,096
Negative Ideal Solution Value (A-)	0,014	0,012	0,020	0,035	0,011	0,035	0,080	0,084

5.6. Creating Distance Values to Ideal and Negative Ideal Points and Calculation of Relative Closeness to the Ideal Solution

Table 8 created by subtracting ideal values from the values in the column of each criterion and obtaining negative ideal values by subtracting negative ideal values from the values in the column of each criterion. The S*I and S-I values in each row obtained in Table 7 was summed, divided into the C*1 row, and Table 8 was created by sorting according to the C*1 column.

Table 8. Ideal Solution Table

Alternatives	S*I	S-I	C*1	Sorting
H1	0,00575	0,02236	0,79547	3
H2	0,00793	0,01946	0,71053	5
H3	0,00015	0,02633	0,99447	**1**
H4	0,01358	0,01475	0,52051	8
H5	0,00976	0,01745	0,64129	6
H6	0,00471	0,02284	0,82916	2
H7	0,00621	0,02018	0,76458	4
H8	0,01085	0,01603	0,59635	7
H9	0,02635	0,00000	0,00000	9

According to the results in Table 8 where nine 5-star hotels with 1000 or more reviews in Cyprus are listed, the most suitable hotel was determined as H3 hotel (C*1 = 0,99447).

6. CONCLUSION and RECOMMENDATIONS

With the widespread use of the Internet, individuals have begun to share their experiences with other individuals easily and quickly. Individuals who do not have experience with a product or service are curious about the comments of individuals who have experienced this product or service and may be affected by eWOM in their decision processes.

In this context, visitor experiences, which have become very important for the tourism industry, can be effective in the decisions of potential visitors of hotels. In this case, transfer of correct and real information is also important. Booking.com website, a digital travel company, offers a link where only visitors who have experienced their accommodation can access their e-mails and make evaluations to prevent false and fake experiences from being shared. Therefore, the Booking.com website contains reviews of individuals who have real experience.

In this research, nine 5-star hotels with 1000 or more reviews, located in Cyprus and on the Booking.com website, were evaluated. Overall Score (AS), Employees (EMP), Comfort (COM), WiFi (WF), Facilities (F), Price/Benefit Balance (PBB), Cleanliness (CL) and Location (L) criteria which form visitor evaluation scale on the Booking.com website were weighted by expert tourism experts using the AHP method. The weights of the criteria and the data obtained from the Booking.com website was used in the TOPSIS method to determine the most suitable hotel and the most important criterion in Cyprus. It was concluded that the most suitable of the nine 5-star hotels with 1000 or more reviews in Cyprus is H3, the most important criterion is Cleanliness, and the least important criterion is Facilities.

In his research using the TOPSIS method with Booking.com website data, Çaylak (2019) found that the most important criterion in determining the most suitable hotel in Antalya is Overall Score (0.25), while the least important criteria are Location (0.05), Comfort (0.05), Cleanliness (0.05), WiFi (0.05) and Employees (0.05), and determined that the most suitable hotel is A10. In their research using the TOPSIS method with Trivago website data, Çelik and Aydoğan (2021) concluded that the most important criterion in determining the most suitable hotel in Istanbul-Taksim is Cleanliness (0.22), and the least important criterion is Building (0.03), and they determined that the most suitable hotel was A7. Güleryüz et al., (2021), in their research using the TOPSIS method with Trivago and Etstur website data, found that the most important criterion in determining the most reliable hotel among the 7 largest hotels in Turkey during the pandemic period was Hygiene (0.20) and the least important criterion was Customer Relations (0.10), and he determined that the most suitable hotel was O4. Göral (2015), in his research using the AHP and TOPSIS method with the decisions of tourism experts and Tripadvisor website data, found that the most important criterion in determining the most suitable hotel in Konya is Price/Benefit (0.25), while the least important criterion is Rooms (0.07), and determined that the most suitable hotel is C. When similar studies are examined, it is seen that the most suitable hotel is determined by different methods, and the number of studies conducted with the integrated AHP and TOPSIS methods is limited. In addition, because of the research of Çelik and Aydoğan (2021) and Güleryüz et al., (2021) on hotel determination, it is seen that this research has in common with it in terms of the most important criterion being the Cleanliness criterion. In this case, it can be said that individuals attach importance to the cleanliness criterion when choosing a hotel, and in this context, giving importance to cleanliness in hotel establishments will provide satisfaction for the guests.

In this research, it is thought that reaching results through eWOM-based evaluations and AHP and TOPSIS methods, which are multi-criteria decision-making methods, will contribute to the literature. In addition, it is thought that this research and similar researcher to be conducted will be important for the current situation of hotels, other hotels they compete with and visitor evaluations, and therefore for the tourism sector.

REFERENCES

Akgöz, E. & Temizel, G. (2022). Making İnvestment Type Decision Based on Multiple Criteria: Example of Sille. *Journal Of Recreatıon And Tourısm Research*, 9(2),82-98. https://doi.org/10.5281/zenodo.6782323

Akgöz, E., Şalvarcı, S., Aylan, F. K., & Gök H. S. (2021). Selection of Smart Museums According to Multi-Criteria Decision-Making Technique: AHP Method. *Manas Sosyal Araştırmalar Dergisi*, 10(3), 2008-2025. https://doi.org/10.33206/mjss.875547

Akyurt, H. (2021). Ordu İlindeki Otel İşletmelerinde Personel Seçim Kriterlerinin AHP Yöntemi ile Belirlenmesi. *Journal of Global Tourism And Technology Research*, 2 (2). 59-71. https://dergipark.org.tr/en/pub/jgttr/issue/65288/929224

Balague, C., Martin-Fuantes, E. & Gomez M. J. (2016). Fiabilidad De Las Críticas Hoteleras Autentıcadas Y No Autentıcadas: El Caso De Tripadvısor Y Booking.Com. *Cuadernos de Turismo*, 38, 63-82. http://dx.doi.org/10.6018/turismo.38.271351

Bayer, R. U. & Aksöz, E. O. (2015). Otel Tercihinde Çevrimiçi Otel Değerlendirme Yorumlarına Ait İçeriklerin Önemi. *Seyahat ve Otel İşletmeciliği Dergisi*,12(3), 6-20. https://dergipark.org.tr/en/pub/soid/issue/11393/136070

Chen, C. F. (2006). Applying the Analytical Hierarchy Process (Ahp) Approach to Convention Site Selection. *Journal of Travel Research*, 45, 167-174. https://doi.org/10.1177/0047287506291593

Çaylak, M. (2019). TOPSİS Yöntemi ile En Uygun Otel Seçimi. *Oğuzhan Sosyal Bilimler Dergisi*, 1(2), 65-76. https://dergipark.org.tr/en/pub/oguzhan/issue/51155/657321

Çelik, K. & Aydoğan H., (2021). TOPSİS Tabanlı Karar Verme Yaklaşımı: İstanbul'da Bir Uygulama. *Bilgi ve İletişim Teknolojileri Dergisi*, 3(2), 158-174. https://doi.org/10.53694/bited.1021806

Davras, G. M. & Çetintürk, İ. (2016). Konaklama İşletmelerinin Temel Yeteneklerinin AHP Temelli TOPSİS Yöntemi ile Analizi. *Akdeniz İ.İ.B.F. Dergisi*, 33, 79-98. https://dergipark.org.tr/en/pub/auiibfd/issue/32338/359344

Doğan, S., Sert, S. & Tutan, E. (2016). Konaklama İşletmeleriyle İlgili İnternetsitelerinde Yer Alan Yorumların Tüketici Karar Sürecine Etkisi: Ankara'da Çalışan Öğretimelemanları Üzerine Bir Araştırma. *Uluslararası Yönetim İktisat ve İşletme Dergisi*, 12(30), 175-191. https://doi.org/10.17130/ijmeb.20163024231

Ermağan, U., Kızılırmak, İ. & Yazırdağ M. (2017). Konaklama İşletmeciliğinde Kuruluş Yeri Seçiminin TOPSIS Yöntemiyle Uygulanması, Kozak N., Kızılırmak İ., *IV. Disiplinlerarası Turizm Araştırmaları Kongresi*, (90-106), İstanbul üniversitesi.

Filieri, R. & McLeay, F. (2013). E-WOM And Accommodation: An Analysis of the Factors that Influence Travelers' Adoption of Information from Online Reviews. *Journal of Travel Research*, 53(1), 44-57. https://doi.org/10.1177/00472875134812

Göral, R. (2015). E-WOM'a Dayalı Çok Kriterli Karar Verme Teknikleri ile En Uygun Otelin Belirlenmesi Ve Bir Uygulama. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 33, 1-17. https://dergipark.org.tr/en/pub/susbed/issue/61813/924679

Güleryüz, S., Uluçay, A. & Yavuz, İ. M. (2021). Pandemi Koşullarında Otel Seçimiyle İlgili TOPSIS Tabanlı Bir Karar Verme Yaklaşımı. *Avrupa Bilim ve Teknoloji Dergisi*, 31 (1), 951-956. https://doi.org/10.31590/ejosat.1010387

Gündüz, H. & Güler, M. E. (2015). Termal Turizm İşletmelerinde Çok Ölçütlü Karar Verme Teknikleri Kullanılarak Uygun Tedarikçinin Seçilmesi. *Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 30(1), 203-222. https://dergipark.org.tr/en/pub/deuiibfd/issue/22716/242457

https://www.booking.com/content/about.tr.html (Accessed 28.12.2022).

https://partner.booking.com/en-us/help/guest-reviews/general/everything-you-need-know-about-guest-review-scores (Accessed 28.12.2022).

İçigen, E. T. & Çetin E. İ. (2018). AHP Temelli TOPSİS Yöntemi ile Konaklama İşletmelerinde Personel Seçimi. *Balkan Journal of Social Sciences/Balkan Sosyal Bilimler Dergisi,* 7(13), 179-187. https://dergipark.org.tr/en/pub/bsbd/issue/34559/337848

Jun, J., Kim, J. & Tang, (Rebecca) L. (2017). Does Social Capital Matter on Social Media? An Examination into Negative E-Wom Toward Competing Brands. *Journal of Hospitality Marketing & Management,* 26(4), 1-17. https://doi.org/10.1080/19368623.2017.1251869

Kitapcı, O., Taştan, S., Dörtyol, İ. T. & Akdoğan, C. (2012). Ağızdan Ağıza Çevrimiçi İletişimin Otellerdeki Oda Satışlarına Etkisi Üzerine Bir Araştırma. *Doğuş Üniversitesi Dergisi,* 13(2), 266-274. https://dergipark.org.tr/tr/download/article-file/2152043

Kocaoğlu, B. & Küçük, A. (2019). Evaluation of the Performance of Companies Operating in the Pharmaceutical Sector for Reverse Logistics Applications with TOPSIS and MOORA Methods. *Journal of Transportation and Logistics,* 4(1), 11-30. http://dx.doi.org/10.26650/JTL.2018.04.01.02

Lopez, M & Sicilia, M. (2013). Boca A Boca Tradıcıonal Vs. Electrónıco. La Partıcıpacıón Como Factor Explıcatıvo De La Influencıa Del Boca A Bocaelectrónıco*Wom Vs. E-Wom. Partıcıpatıon As Thedeterminant Of E-Wom Influence. *Revista Española de Investigación de Marketing ESIC,*17, 7-38. https://doi.org/10.1016/S1138-1442(14)60017-6

Lopez, M. & Sicilia, M. (2014). Determinants of E-WOM Influence: The Role of Consumers'ınternet Experience. *Journal of Theoretical and Applied Electronic Commerce Research,* 9(1), 28-43. https://doi.org/10.4067/S0718-18762014000100004

Ömürbek, N. & Tunca, M. Z. (2013). Analitik Hiyerarşi Süreci ve Analitik Ağ Süreci Yöntemlerinde Grup Kararı Verilmesi Aşamasına İlişkin Bir Örnek Uygulama. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 18(3) 47-70. https://dergipark.org.tr/en/pub/sduiibfd/issue/20817/222729

Önder, G. & Önder, E. (2015). *Analitik Hiyerarşi Süreci.* B. F. Yıldırım & E. Önder (Ed.), Çok Kriterli Karar Verme Yöntemleri (2. Baskı) içinde (p.21-74). Bursa: Dora Yayıncılık.

Sa'ait, N., Kanyan, A. & Nazrin, F. M. (2016). The Effect of E-WOM on Customer Purchase Intention. *Internatıonal Academıc Research Journal,* 2(1), 73-80. http://www.iarjournal.com/wp-content/uploads/IARJ-SS-20161-73-80.pdf

Saaty, T. L. (2008). Decision Making With The Analytic Hierarchy Process. *International Journal of Services Sciences,* 1(1), 83-98. http://dx.doi.org/10.1504/IJSSCI.2008.017590

Sezgin, M. & Yurtlu, M. (2021). Dijital Pazarlama Yöneticilerinin Bakış Açısıyla En Uygun Otel Seçimi: Analitik Hiyerarşi Prosesi (AHP) ve PROMETHEE Yaklaşımı. *Türk Turizm Araştırmaları Dergisi,* 5(3), 1756 - 1784. https://doi.org/10.26677/TR1010.2021.818

Tamer, E. T. & Yangil, F. M. (2021). Turizmde Sürdürülebilirlik Göstergeleri: Otel İşletmeleri Yöneticileri Üzerine Bir Uygulama. *Business & Management Studies: An International Journal*, 9(3), 943-955. https://doi.org/10.15295/bmij.v9i3.1849

Tsaur, S. H., Chang, T. Y., & Yen C. H. (2002). The Evaluation of Airline Service Quality By Fuzzy MCDM. *Tourism Management*, 23, 107-115. https://doi.org/10.1016/S0261-5177(01)00050-4

Turan, M. & Akyurt, H. (2021). Turizm Yöneticilerinin Ekoturizm Algısının AHP Yöntemi ile Belirlenmesi: Giresun İli Örneği. *Karadeniz Sosyal Bilimler Dergisi*, 13(25), 660- 678. https://doi.org/10.38155/ksbd.993277

Tyagi, M., Kumar, P. & Kumar, D. (2014). A Hybrid Approach Using AHP-TOPSIS for Analyzing E- SCM Performance, Xavior A. M., Yarlagadda K. P., *12th Global Congress On Manufacturing And Management* (1-2332). Department Of Mechanical And Industrial Engineering, Indian Institute of Technology Roorkee, Roorkee, U.K., India. https://doi.org/10.1016/j.proeng.2014.12.463

Wu, C. R., Lin, C. T. & Tsai, P. H. (2008). Financial Service of Wealth Management Banking: Balanced Scorecard Approach. *Journal of Social Sciences*, 4(4), 255-263. http://ir.lib.ypu.edu.tw/ir/handle/310904600Q/1040

Ye, Q., Law, R. & Gu, B. (2009). The Impact of Online User Reviews on Hotel Room Sales. *International Journal of Hospitality Management*, 28, 180-182. https://doi.org/10.1016/j.ijhm.2008.06.011

Zhao, (Roy) X., Wang, L., Guo, X. & Law, R. (2015). The Influence of Online Reviews to Online Hotel Booking İntentions. *International Journal of Contemporary Hospitality Management*, 27(6), 1343-1364. https://doi.org/10.1108/IMDS-06-2021-0355