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DETERMINATION OF DESTINATION COMPETITIVENESS OF THE SELECTED MEDITERRANEAN DESTINATIONS BY ENTROPY BASED EDAS METHOD

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Abstract

The aim of this study is to determine and evaluate the destination competitiveness of the selected Mediterranean destinations with the entropy-based EDAS method. In this context, Travel & Tourism Competitiveness Index (TTCI) data published in 2019 by the World Economic Forum were used. 14 pillars that belong to the four subindexes in TTCI were determined as criteria and these criteria were weighted by entropy method and prioritized. Afterwards, the competitiveness of 10 Mediterranean destinations (France, Spain, Italy, Turkey, Greece, Croatia, Egypt, Morocco, Portugal, Tunisia), which are among the top 50 countries attracting the highest number of international tourists, were examined by EDAS method and their competitiveness was revealed. According to the results of the research, the three most important criteria for the competitiveness of the Mediterranean destinations are prioritization of travel & tourism, business environment, and human resources and labour market while the top three competitive countries are France, Spain and Italy, respectively.

Keywords: Travel & Tourism Competitiveness Index, Competitiveness, Destination Competitiveness, Entropy, EDAS

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SEÇİLMİŞ AKDENİZ ÜLKELERİNİN DESTİNASYON REKABETÇİLİĞİNİN ENTROPİ TEMELLİ EDAS YÖNTEMİ İLE BELİRLENMESİ

Öz

Bu çalışma, Akdeniz çanağında yer alan ülkelerin destinasyon rekabetçiliğinin entropi temelli EDAS yöntemiyle belirlenmesi ve rekabetçiliklerinin değerlendirilmesi amacıyla yapılmıştır. Bu bağlamda, Dünya Ekonomik Forumu tarafından iki yılda bir yayınlanan Seyahat ve Turizm Rekabetçilik Endeksi verileri kullanılmış; bu endekste yer alan dört ana gruba bağlı olan 14 alt grup kriter olarak belirlenerek entropi yöntemiyle bu kriterler ağırlıklandırılmış ve önem sırasına göre sıralanmıştır. Daha sonra Akdeniz çanağında yer alan ve en fazla turist çeken ilk 50 ülke arasında yer alan 10 Akdeniz ülkesi (Fransa, İspanya, İtalya, Türkiye, Yunanistan, Hırvatistan, Mısır, Fas, Portekiz, Tunus) ağırlıklandırılmış olan bu kriterlere bağlı olarak EDAS yöntemiyle incelenmiş ve bu ülkelerin destinasyon rekabetçilikleri ortaya çıkarılmıştır. Araştırma sonuçlarına göre Akdeniz çanağında yer alan ülkelerin rekabetçilikleri açısından en önemli üç kriter seyahat ve turizmin önceliklendirilmesi, iş ortamı ve insan kaynağı ve iş gücü piyasasıdır. En rekabetçi ilk üç ülke ise sırasıyla Fransa, İspanya ve İtalya olarak belirlenmiştir.

Anahtar Kelimeler: Seyahat ve Turizm Rekabetçilik Endeksi, Rekabetçilik, Destinasyon Rekabetçiliği, Entropi, EDAS

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Introduction

The number of people participating in international tourism movements and the revenue countries generate are constantly increasing. According to the World Tourism Organization (UNWTO, 2019), the number of people participating in international tourism movements in 2018 reached 1.4 billion and the total tourism revenue has reached 1.7 trillion USD. According to the report, the European continent leads to the international tourism movements with 710 million tourists and with a tourism revenue of 570 billion USD. It is a well-known fact that the destinations in the Mediterranean basin have a significant contribution to this success of Europe. However, many tourism destinations that tend to get more shares from the world tourism pie compete with each other. Today, this competition is more difficult than it was in the past. Destinations with the influence of the rapidly increasing technological developments since the 20th century have started to become smart destinations to attract more tourists and increase the quality of life of the incoming tourists during their visit. The destinations that have difficulties in adopting these developments have fallen behind other countries in terms of competitiveness. Destinations that are

ahead of other countries in competitiveness position themselves as a competitive destination, improve the welfare of incoming tourists, and achieve sustainable growth accordingly. In other words, it might be argued that the tourism industry can be seen as one of the most crucial industries for destinations with tourism attractions to achieve sustainable growth (Ulucak et al., 2020, p. 2).

Reviewing the literature on destination competitiveness, there are studies related to using different models to measure competitiveness (Crouch & Ritchie, 1999; Gooroochurn & Sugiyarto, 2005; Heath, 2003; World Economic Forum [WEF], 2019); determining the strengths and weaknesses of the destinations by using the scores of the 14 subindexes comprising the Travel & Tourism Competitiveness Index (TTCI) as criteria (Hassan & Uşaklı, 2013); examining the competitiveness of a single country (Göral, 2017; Tomić & Stoiljković, 2015); a holistic examination of the destinations depending on the subindexes and pillars (Bălan et al., 2009); using TTCI data with another index (Jovanović et al., 2014). In addition to these studies, there is a study in which competitiveness of 141 countries are analyzed by entropy method depending on the subindexes in TTCI (Göral, 2016). After an extensive review of the literature, we failed to encounter any study evaluating the destination competitiveness of countries according to the entropy based EDAS method using TTCI data, and it is considered that this study will be one of the leading studies and contribute to the related literature. Starting from this point of view, the aim of this study is to examine and evaluate the destination competitiveness of Mediterranean destinations using entropy based EDAS method. The entropy method aims to rank the criteria in TTCI in order of importance, and the EDAS method aims to rank the countries' competitiveness performance.

14 subindexes in TTCI (business environment, safety and security, health and hygiene, human resources and labor market, information and communication technologies (ICT) readiness, prioritization of travel & tourism, international openness, price competitiveness, environmental sustainability, air transport infrastructure, ground and port infrastructure, tourist service infrastructure, natural resources, cultural resources and business travel) were used as criteria in this study for evaluating the destination competitiveness performance of countries and the criterion points were weighted by the entropy method and ranked in order of importance. Afterwards, Mediterranean destinations were evaluated as an alternative in the EDAS method and these alternative countries were listed in terms of competitiveness with the EDAS

method by evaluating the criteria weights obtained with the entropy method. In the last part of the study, suggestions were presented for future studies.

A. Conceptual Framework

The conceptual explanations of destination competitiveness, travel & tourism competitiveness index, entropy, and EDAS methods as multi-criteria decision making (MCDM) techniques are included in this part of the study.

1. Destination Competitiveness

Definitions about destination competitiveness are made in different ways in the relevant literature and there are two generally accepted basic definitions (Crouch & Ritchie, 1999; Dwyer et al., 2000). Destination competitiveness is simply defined as "*providing a high standard of living for residents of the destination*" (Crouch & Ritchie, 1999, p. 137). Dwyer et al. (2000, p. 9) argue that destination competitiveness is "*a general concept that encompasses price differentials coupled with exchange rate movements, productivity levels of various components of the tourist industry and qualitative factors affecting the attractiveness or otherwise of a destination*". Hassan (2000, p. 240) defines the destination competitiveness as "*the destination's ability to create and integrate value-added products that sustain its resources while maintaining market position relative to competitors*". Bahar and Kozak (2007, p. 62) state that the most competitive destination in the long term is the one that creates a welfare quality of life for the people living in that destination.

2. Travel & Tourism Competitiveness Index

One of the most widely used models developed for measuring and evaluating the tourism destinations' competitiveness is the Travel & Tourism Competitiveness Index (TTCI) which was developed by the World Economic Forum (WEF) for the first time in 2007, published bi-annually and last updated in 2019 (WEF, 2019). New countries are added to each newly published version of the index. The index report in 2019 contains data from 140 countries worldwide. In TTCI, tourism competitiveness of 140 countries is analyzed based on four subindexes, 14 pillars of these four subindexes and 90 indicators of these 14 pillars. The four subindexes and 14 pillars that form the index are shown in Table 1.

Enabling environment is measured with a total of 40 indicators, including the business environment with 12 indicators, safety and security with five

indicators, health and hygiene with six indicators, human resources and labor market with nine indicators, ICT readiness with eight indicators under the

Table 1. Travel & Tourism Competitiveness Index 2019 Framework

Subindexes	Pillars
Enabling Environment	Business Environment
	Safety and Security
	Health and Hygiene
	Human Resources and Labour Market
	Information and Communication Technologies (ICT) Readiness
Travel & Tourism Policy and Enabling Conditions	Prioritization of Travel & Tourism
	International Openness
	Price Competitiveness
	Environmental Sustainability
Infrastructure	Air Transport Infrastructure
	Ground and Port Infrastructure
	Tourist Service Infrastructure
Natural and Cultural Resources	Natural Resources
	Cultural Resources and Business Travel

subindex of enabling environment. The subindex of travel & tourism policy and enabling conditions is measured by a total of 23 indicators, six of which are prioritization of travel & tourism, three of which are international openness, four of which are price competitiveness and 10 of which are environmental sustainability. In measuring infrastructure subindex; a total of 17 indicators are used, six of which are air transport infrastructure, seven of which are ground and port infrastructure and four of which are tourist service infrastructure. The subindex of natural and cultural resources is measured with a total of 10 indicators, five of which are natural resources and five of which are cultural resources and business travel (WEF, 2019).

Primary and secondary data sources are used in the formation of the index. The results of the survey study obtained from more than 16000 business executives and business leaders were used as primary data sources. In the survey study conducted with the managers, a 7-point ordinal scale was used which ranges in value from 1 = worst to 7 = best. Two-thirds of the index data consist of statistics from international organizations and these statistics constitute the secondary data sources of the index. Secondary data sources consist of the data about the tourism industry provided from international organizations such as The International Air Transport Association (IATA), International Union for Conservation of Nature (IUCN), World Tourism Organization (UNWTO), World Travel & Tourism Council (WTTC), Bloom Consulting and STR Global. These secondary data were normalized with a scale ranging from 1 to 7 to be compatible with the survey data collected from managers (WEF, 2019).

3. Multi-Criteria Decision Making Methods

MCDM methods are one of the methods used in performance measurements. There are many methods for calculating and sorting the weights of criteria as MCDM methods. These methods can be sorted as Analytic Hierarchy Process (AHP) (Saaty, 1980), entropy method (Hwang & Yoon, 1981), criteria importance though intercriteria correlation (CRITIC) (Diakoulaki et al., 1995) and Linear Programming Techniques for Multidimensional Analysis of Preference (LINMAP) (Srinivasan and Shocker, 1973). Evaluation based on Distance from Average Solution (EDAS) (Ghorabaee et al., 2015), Vise Kriterijumska Optimizacija I Kompromisno Resenje (VIKOR) (Opricovic & Tzeng, 2002), (Technique for Order Preference by Similarity to the Ideal Solution (TOPSIS) (Hwang & Yoon, 1981) methods can be used for measuring and ranking the performance of alternatives. In this study, entropy and EDAS are used as MCDM methods and are explained in detail in the following section.

a. Entropy Method

Determination of the criterion weights is seen as an important step in MCDM methods (Çatı et al., 2017, p. 204). In cases where decision matrix data are known, entropy and LINMAP methods are used in determining the weights of criteria (Hwang & Yoon, 1981: 52). Entropy method is an objective method that is frequently used in the use of MCDM problems (Ulutaş, 2019) and to determine the weights of the criteria based on the distribution of the criteria data (Huang et al., 2019; Wang et al., 2019). Qian (2019, p. 2) argue that "*The basic idea*

of standard deviation and entropy method is that when the data sequence variation and the amount of available information of a property are bigger, the bigger the corresponding weight coefficient".

b. EDAS Method

The EDAS method was mentioned firstly and put forward by Ghorabaee et al. (2015) as one of the MCDM methods and developed mainly for the classification of inventories. The EDAS method is a method that uses the average solution when evaluating alternatives (Ghorabaee et al., 2015, p. 438). It is mentioned that EDAS method is the most effective method when contradictory criteria are found in the MCDM problems (Zhang et al., 2019: 1123). The EDAS method is based on the values of positive distance from average (PDA) and negative distance from average (NDA) instead of positive and negative ideal solutions. It is stated that the best alternative is the one that has the largest value of PDA and the smallest value of NDA (Ghorabaee et al., 2015, p. 439).

B. Literature Review

When the studies conducted with the entropy based EDAS method are examined, there are numerous studies in the field of logistics. Entropy based EDAS method was used in personnel selection (Tağraf & Ölmez, 2019), performance measurements of logistics companies (Ulutaş, 2019), measurement of the performance of insurance companies in Borsa Istanbul (BIST) (Ünal, 2019) and evaluation of renewable energy technologies (Ali et al., 2019).

Destination competitiveness performance was tried to be measured with different models. To form the model; Crouch and Ritchie (1999) combined the competitive advantage and the comparative advantage; Heath (2003) was influenced by tourism planning, marketing and practices; Gooroochurn and Sugiyarto (2005) used the secondary data obtained from the WTTC database. In addition to these; The WEF (2019) published the TTCI and evaluated the competitiveness of the countries/destinations according to this index. In this study, TTCI data published by WEF in 2019 was selected as the baseline.

Crouch and Ritchie (1999) developed a conceptual model for tourism competitiveness of destinations based on Porter's (1990) diamond model in their study (Enright & Newton, 2004, p. 778) and stated that the decision about the destination competitiveness could be made by looking at four main groups which consist of supporting factors and resources, core resources and attractors, destination management, and the qualifying determinants. This model was

expanded by adding destination policy, planning and development factor (Crouch, 2011). In another study which adopted meta-analysis, it was stated that 16 different models were formed for the measurement of destination competitiveness (Tsai et al., 2009).

Social, cultural, political, technological, and environmental opportunities of a destination are as important as economic opportunities in order to be competitive. Ritchie and Crouch (2003, p. 2) emphasize that to be a competitive destination, it is necessary to increase the number of tourists visiting that destination as well as increasing tourism expenditures. They state that while increasing the number of tourists, it is important to ensure that tourists visiting the destination spend more money in that destination. To manage this, destination authorities should make an effort to provide satisfying and memorable experiences to tourists. Destinations can become sustainable by enhancing the quality of life of living people and by protecting the natural resources for future generations.

It can be stated that paucity exists regarding the studies carried out with MCDM methods in the tourism sector. It is seen that MCDM methods are used in tourism studies for the purposes of examining the tourism potential of the destinations with the AHP method (Baldemir & Kurnaz, 2013), using AHP method in choosing the most suitable five-star hotel in Cappadocia region (Doğan & Gencan, 2013) and determining the supplier selection in thermal tourism businesses using AHP and TOPSIS methods (Gündüz & Güler, 2015).

Baldemir and Kurnaz (2013), used AHP method to examine the tourism potential of districts located in Muğla which is one of the most tourist attractive destinations of Turkey. In this study, the districts with a coastline were handled. These districts are Bodrum, Fethiye, Marmaris, Datça, Dalaman, Center of Muğla, Ortaca, Ula, Milas and Köyceğiz. Based on the determined criteria, these districts' order of priority was made with AHP method. Criteria were determined as number of beaches with blue flag, travel agency number, congress center density, tourism diversity, ruins, cultural heritage, recognizability level and number of tourism businesses. The most suitable districts for each criterion were determined as a result of the analyses.

Doğan and Gencan (2013) used the AHP method to choose the most suitable five-star hotel in the Cappadocia region. Four five-star hotels operating in the Cappadocia region were determined for the study and the criteria were handled according to the perspectives of the travel agency managers. These

criteria are price, service quality, rate of recommendation, location of the hotel, and customer safety. According to these criteria, four five-star hotels in the region were evaluated and the hotel with the highest priority was determined.

Gündüz and Güler (2015) tried to determine the supplier selection in thermal tourism businesses by using AHP and TOPSIS methods. Seven alternative suppliers and seven criteria were determined for the study. Criteria are product quality and performance, product information, product arrival time, price, quality practices, flexibility and collaboration level. As a result of the analyses, suppliers were put in an order according to their scores.

In studies that examine destination competitiveness using TTCI data, it is seen that criteria scores are taken into consideration instead of criteria weights for ranking. Hassan and Uşaklı (2013) examined the destination competitiveness levels of eight Mediterranean destinations according to TTCI data between the years 2008 and 2011. They aimed to discover the strengths and weaknesses of these destinations in their study. They have come to the conclusion that European destinations have a higher competitiveness compared to African destinations and Turkey.

Göral (2017) analyzed the tourism competitiveness of Turkey based on the TTCI data published in 2015. In this study, 141 countries listed in the index were divided into five groups as very good, good, fair, bad and very bad and evaluated based on four subindexes and 14 pillars. It was concluded that the subindex of enabling environment cannot be achieved adequately in Turkey, the subindex of travel & tourism policy and enabling conditions is not in a level of promoting the tourism investments, and Turkey is in a good position in terms of infrastructure and cultural resources.

Nazmfar et al. (2019) compared the destination competitiveness of the Middle East countries with the PROMETHEE (preference ranking organization method for enrichment evaluations) model using TTCI data published in 2015 and 2017. As a result of the study, they have reached the conclusion that Egypt, Iran, Kuwait, Lebanon and Yemen have improved their competitiveness in the year 2017 compared to 2015, but they could not develop their competitiveness compared to other Middle East countries and they are among the countries with low tourism competitiveness.

Studies evaluating the destinations as a whole are found in the related literature as well as the comparative competitiveness of the destinations. For

example; Bălan et al. (2009) examined the top 25 tourism destinations in the world as a whole based on the subindexes and pillars in TTCI and concluded that there is a strong relationship between general competitiveness and business environment, infrastructure, regulatory framework, people, culture, and natural resources.

Studies using the Global Competitiveness Index (GCI) data as well as TTCI data in the measurement of destination competitiveness are also included in the literature. For example, Jovanović et al. (2014) evaluated the competitiveness of South-eastern European countries using TTCI and GCI data and showed that there is a high correlation between TTCI and GCI data and South-eastern European countries that examined in the study are not homogeneous in competition based on the data of these indices. They also provided a premise framework for comparing the tourism performances of different countries and setting goals and strategies for increasing tourism competitiveness.

Studies examining the competitiveness of a single country using TTCI data are also included in the literature. Tomić and Stoiljković (2015) aimed to reveal Serbia's weaknesses in competition with other countries in international tourism based on TTCI data and reached to conclusion that Serbia got lowest score in 2013 in terms of air transport, ground and port infrastructure (although the Danube River passes through Serbia). They have suggested that Serbia should develop its infrastructure, improve price competition, promote environmental sustainability and make appropriate legal arrangements in order to compete with other countries.

C. Research Method

This study aimed to determine the destination competitiveness of the countries in the Mediterranean basin using the entropy based EDAS method and to evaluate their competitiveness. Entropy method is based on determining the importance of criteria. EDAS method comes to the fore as a method used to evaluate the performance of alternatives and to rank these alternatives.

1. Entropy Method

In MCDM methods, many methods have been developed in order to maintain objectivity in the decision-making process and to determine the importance of the criteria. These methods have been used in the studies conducted. Entropy is one of these methods (Çatı et al., 2017, p. 204). In this

study, entropy method was used to measure the weights of criteria. The steps to be applied in the entropy method are as follows (Hwang & Yoon, 1981, p. 53-54):

Step 1: *Forming the decision matrix*

$$D=\begin{array}{c} \begin{matrix} X_1 & X_2 & X_n \end{matrix} \\ \begin{bmatrix} X_{11} & X_{12} & X_{1n} \\ X_{21} & X_{22} & X_{2n} \\ \vdots & \vdots & \vdots \\ X_{m1} & X_{m2} & X_{mn} \end{bmatrix} \end{array} \begin{matrix} A_1 \\ A_2 \\ \dots \\ A_m \end{matrix} \quad (1)$$

In this formula, A is alternative, X is criterion and X_{mn} is the value of alternative m according to criterion n. m times alternatives and n times criterion are determined and a matrix is formed.

Step 2: *Normalization of criteria values*

The values of the criteria with different measurement units are normalized by calculating the P_{ij} values:

$$P_{ij} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}}; \forall i, j \quad (2)$$

Step 3: *Calculation of E_j value (entropy of j value)*

$$E_j = -k \sum_{i=1}^{m} [P_{ij} \ln P_{ij}]; \forall j \quad (3)$$

In this formula, k represents the constant and is calculated by the formula $k = 1 / \ln (m)$. k value guarantees that $0 < E_j < 1$.

Step 4: *Calculation of the d_j value as the degree of diversity of the information obtained from the results of the j criterion*

$$d_j = 1 - E_j; \forall j \quad (4)$$

Step 5: *Calculation of w_j weights as the importance of the j criterion*

$$w_j = \frac{d_j}{\sum_{j=1}^{n} d_j}; \forall j \quad (5)$$

2. *EDAS Method*

In this study, the competitiveness of the alternatives was measured with the EDAS method and ranked according to the weight values resulting from the measurement. The EDAS method consists of the following steps (Ghorabaee et al., 2015, p. 438-440):

Step 1: *Selecting the most important criteria that define alternatives*

Step 2: *Forming the decision making matrix (X)*

$$X=[X_{ij}]_{n\,x\,m}=\begin{bmatrix} X_{11} & X_{12} & X_{1m} \\ X_{21} & X_{22} & X_{2m} \\ \vdots & \vdots & \vdots \\ X_{n1} & X_{n2} & X_{nm} \end{bmatrix} \quad (6)$$

In this formula, x_{ij} represents the performance value of i^{th} alternative according to j^{th} criterion.

Step 3: *Determination of the average solution for all criteria*

$$AV = [AV_j]_{1\,x\,m} \quad (7)$$

AV_j in the formula is calculated as follows:

$$AV_j = \frac{\sum_{i=1}^{n} X_{ij}}{n} \quad (8)$$

Step 4: *Calculation of negative distance from average (NDA) and positive distance from average (PDA) according to the type of criteria (benefit and cost)*

$$PDA = [PDA_{ij}]_{nxm} \quad (9)$$

$$NDA = [NDA_{ij}]_{nxm} \quad (10)$$

If j^{th} criterion is a benefit-based criterion;

$$PDA_{ij}=\frac{\max\left(0,(X_{ij}-AV_j)\right)}{AV_j} \quad (11)$$

$$NDA_{ij}=\frac{\max\left(0,(AV_j-X_{ij})\right)}{AV_j} \quad (12)$$

If j^{th} criterion is cost-based criterion;

$$PDA_{ij}=\frac{\max\left(0,(AV_j-X_{ij})\right)}{AV_j} \quad (13)$$

$$NDA_{ij}=\frac{\max\left(0,(X_{ij}-AV_j)\right)}{AV_j} \quad (14)$$

PDA_{ij}: is positive distance of i[th] alternative from the average solution in terms of j[th] criterion;

NDA_{ij}: is negative distance of i[th] alternative from the average solution in terms of j[th] criterion;

Step 5: *Determination of the weighted sum of PDA and NDA for all alternatives*

$$SP_i = \sum_{j=1}^{m} w_j \, PDA_{ij} \quad (15)$$

$$SP_j = \sum_{j=1}^{m} w_j \, NDA_{ij} \quad (16)$$

w_j : is the weight of j[th] criterion.

Step 6: *Normalization of SP_i and SN_i values for all criteria*

$$NSP_i = \frac{SP_i}{max_i(SP_i)} \quad (17)$$

$$NSN_i = 1 - \frac{SN_i}{max_i(SN_i)} \quad (18)$$

Step 7: *Calculation of appraisal score (AS) for each alternative*

$$AS_i = \frac{1}{2}(NSP_i + NSN_i), \quad (19)$$

$0 \leq AS_i \leq 1$ the value of AS_i , should be between 0 and 1.

Step 8: Alternatives are ranked according to the decreasing values of appraisal score (AS). The alternative with the highest appraisal score (AS) is determined as the best choice among the candidate alternatives. Alternatives are also classified according to this ranking.

3. Practice

In this study; the competitiveness of Mediterranean destinations was evaluated according to the TTCI data published by the WEF using the entropy-based EDAS method. To evaluate the competitiveness of destinations, the 14 pillars comprising TTCI were determined as criteria that constitute the basis for the entropy method, and the competitiveness of the destinations was evaluated based on these pillars' scores. Destinations located in the Mediterranean basin are included in the evaluation as alternatives. Table 2 contains these alternative destinations, and Table 3 contains 14 criteria to be used for the evaluation of alternatives. Alternative destinations are among the top 50 destinations hosting the highest number of international tourists (World Bank, 2019; World Tourism Organization, 2019) that are located in the Mediterranean basin. Portugal does

not have a coast to the Mediterranean among alternative destinations; however, there are some studies evaluating Portugal as a Mediterranean destination (Aslan, 2014; Falzon, 2012; Syriopoulos & Sinclair, 1993). For this reason, Portugal is also included in the study. The entropy method was used to reveal the importance of criteria and evaluate their weights, and the EDAS method was used to rank the alternatives.

Table 2. Mediterranean Destinations Involved in the Research

MEDITERRANEAN DESTINATIONS
France
Spain
Italy
Turkey
Greece
Croatia
Egypt
Morocco
Portugal
Tunisia

Table 3. Destination Competitiveness Criteria

CRITERIA
C1: Business Environment
C2: Safety and Security
C3: Health and Hygiene
C4: Human Resources and Labour Market
C5: Information and Communication Technologies (ICT) Readiness
C6: Prioritization of Travel & Tourism
C7: International Openness
C8: Price Competitiveness
C9: Environmental Sustainability
C10: Air Transport Infrastructure
C11: Ground and Port Infrastructure
C12: Tourist Service Infrastructure
C13: Natural Resources
C14: Cultural Resources and Business Travel

D. Research Findings

Table 4 shows the decision matrix on destination competitiveness. While the columns in the matrix show the criteria, the rows show the alternatives determined for these criteria. The decision matrix was formed by taking the score of each criteria determined for each alternative in the matrix from the TTCI.

Table 4. Destination Competitiveness Decision Matrix

Alternatives / Criteria	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritization of Travel & Tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
France	4.8	5.7	6.5	5.1	5.9	5.1	4.2	4.5	5.3	4.8	5.6	5.7	4.9	6.8
Spain	4.5	6.1	6.2	4.9	5.8	5.9	3.9	5.0	4.7	5.0	5.2	6.6	4.8	6.7
Italy	4.0	5.5	6.3	4.6	5.5	4.8	4.1	4.4	4.3	4.4	4.7	6.0	4.9	6.5
Turkey	4.4	4.3	5.5	4.2	4.6	5.1	3.8	5.6	3.7	4.7	3.6	5.0	2.8	3.8
Greece	3.9	5.6	6.5	4.7	5.2	5.6	4.1	4.9	4.5	4.8	3.8	5.8	3.5	3.3
Croatia	3.8	5.9	6.3	4.1	5.2	4.9	4.2	5.0	5.1	3.6	3.9	6.5	4.4	2.8
Egypt	4.4	4.8	5.0	4.3	4.3	5.2	2.2	6.5	4.7	3.3	3.4	3.2	3.0	3.3
Morocco	4.9	6.0	4.6	4.1	4.6	5.2	3.1	5.6	4.5	3.2	3.5	3.9	3.1	2.2
Portugal	4.7	6.3	6.0	5.1	5.5	5.7	4.2	5.1	4.2	4.7	4.2	6.7	4.0	4.1
Tunisia	4.4	5.2	5.2	4.1	4.4	5.0	2.6	6.1	4.4	2.5	2.8	4.1	2.6	1.4
Total	**43.8**	**55.4**	**58.1**	**45.2**	**51.0**	**52.5**	**36.4**	**52.7**	**45.4**	**41.0**	**40.7**	**53.5**	**38.0**	**40.9**

Table 5 presents the weighted values of the criteria related to destination competitiveness calculated by the entropy method.

Table 5. Weighted Values of Destination Competitiveness Criteria

Criterion	Weighted Value	Criterion	Weighted Value
C1	0.071665	**C8**	0.071603
C2	0.071625	**C9**	0.071646
C3	0.071616	**C10**	0.071374
C4	0.071659	**C11**	0.071399
C5	0.071623	**C12**	0.071310

C6	0.071684	**C13**	0.071302
C7	0.071398	**C14**	0.070096

According to the ranking of the weight values given in Table 6, it is seen that the top three criteria for the competitiveness of Mediterranean destinations are prioritization of travel & tourism, business environment, and human resources and labour market, respectively.

Table 6. Ranking of Destination Competitiveness Criteria Based on Weighted Values

Criterion	Weighted Value	Name of Criterion
C6	0.071684	Prioritization of Travel & Tourism
C1	0.071665	Business Environment
C4	0.071659	Human Resources and Labour Market
C9	0.071646	Environmental Sustainability
C2	0.071625	Safety and Security
C5	0.071623	Information and Communication Technologies (ICT) Readiness
C3	0.071616	Health and Hygiene
C8	0.071603	Price Competitiveness
C11	0.071399	Ground and Port Infrastructure
C7	0.071398	International Openness
C10	0.071374	Air Transport Infrastructure
C12	0.071310	Tourist Service Infrastructure
C13	0.071302	Natural Resources
C14	0.070096	Cultural Resources and Business Travel

The competitiveness of the Mediterranean destinations has been compared with the EDAS method based on the weighted values of the criteria. In Table 7, the alternatives are ranked according to these values. According to the Table 7; the top three competitive Mediterranean destinations are Spain, France and Italy followed by Portugal, Greece, Croatia, Tunisia, Turkey, Morocco and Egypt, respectively.

Table 7. Ranking of Mediterranean Destinations Based on Weighted Values of Destination Competitiveness Criteria

Countries	Weighted Value	Ranking
France	0.967050944	1
Spain	0.962319566	2
Italy	0.742018911	3
Portugal	0.724463656	4
Greece	0.534074465	5
Croatia	0.516654252	6
Tunisia	0.033806214	7
Turkey	0.332619956	8
Morocco	0.210088396	9
Egypt	0.172220060	10

Conclusion and Recommendations

In this study, 10 Mediterranean destinations among the top 50 countries of the world tourism in terms of number of international tourist arrivals were evaluated using the entropy-based EDAS method based on the TTCI report published by WEF in 2019. The 14 pillars in TTCI were used as criteria in this study. These criteria were weighted by the entropy method in terms of competitiveness of the selected Mediterranean destinations and ranked according to their importance. The destinations in the Mediterranean basin, which are given as alternatives in this study, are ranked in terms of destination competitiveness as a result of applying these weighted criteria to the EDAS method.

The most important output of this study are that the three most important criteria for competitiveness of Mediterranean destinations are "prioritization of travel & tourism", "business environment" and "human resources and labor market" and the top 3 countries in terms of destination competitiveness were France, Spain and Italy, respectively. France, Spain and Italy are the top three

competitive Mediterranean destinations. They are the first, second and fifth destinations in terms of the number of international tourist arrivals and third, second and sixth destinations in terms of tourism revenue in 2018, respectively (World Tourism Organization, 2019). These data show that these countries have more shares in the world tourism pie and are more competitive compared to other Mediterranean destinations. These data also support the results of this study.

Tourism destinations wishing to compete in international markets can boost their travel and tourism industry by giving weight to marketing, promotion and branding strategies. In addition, the establishment of a suitable business environment and legal arrangements that have been realized for the tourism investments are important for tourism businesses that will invest in tourism. Tourism destinations that attract more investments gain competitive advantage over their competitors. The criterion of human resource and labour market is important for the tourism sector which has a service-oriented characteristics. Destinations that have a qualified and well-equipped workforce whether it is local or foreign, that protect the rights of the workforce, and that pay regard to, gain competitive advantage and can survive even in fierce competition environments. Paying attention to these criteria and making policies to meet these criteria are seen important for the sustainability of tourism activities in Mediterranean destinations.

Another remarkable finding is that the criterion of ICT readiness ranks sixth in terms of importance in the competitiveness of the Mediterranean destinations. The usage of technologies have increased in many industries since the 2000s and these technologies have also been used extensively in the tourism industry. In the future, the technology is expected to be used more intensively in the tourism sector. For this reason, policy makers are recommended to take decisions that make their countries ready for ICT with regard to the tourism industry and to gain competitive advantage in destination competitiveness.

The fact that the criterion of natural resources ranks thirteenth according to the degree of importance does not mean that there is no natural resources in these destinations. This finding shows that this criterion is at the end according to the degree of importance. It is suggested that policy makers should set policies, (a) to increase the number of places they have in the World Cultural Heritage list in order to become a competitive destination for this criterion, (b) to increase the number of natural protected areas by increasing total square

kilometers covered by these areas, and (c) to increase the number of total known species of mammals, birds and amphibians in the country. By setting such policies, destinations can become more competitive in terms of the criterion of natural resources.

In this study, destination competitiveness of the countries was evaluated with entropy-based EDAS method depending on the pillars in TTCI as criteria and the Mediterranean destinations as alternatives. Future studies may evaluate different tourism destinations or economic groups according to the pillars in TTCI. Second, the results of this study can be validated by using other MCDM methods such as AHP, CRITIC, LINMAP instead of entropy. Third, apart from EDAS, competitiveness of destinations can be measured with different evaluation techniques such as VIKOR and TOPSIS. Finally, this study can be repeated with the criteria in different competitiveness models.

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