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MEASURING EFFICIENCY OF SUN & BEACH TOURISM DESTINATIONS

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The competitiveness analysis of highly substitutable tourism destinations has increased in importance in recent years because of the growing levels of competition, and the requirement of those economies strongly dependent on tourism to know the strength and weakness of their main competitors to adopt suitable future policies. In this paper, it is analyzed the efficiency of the destination in using some of the available resources in the long-term, i.e. the technical efficiency of the destination, instead of directly analyzing competitiveness. This is the first step to determine competitiveness.

In measuring the efficiency of each tourism destination, we use the Data Envelopment Analysis (DEA) methodology, which is a well-known method in tourism research and other academic areas. DEA is a nonparametric, multifactor analysis tool that considers multiple inputs and outputs to evaluate relative efficiencies, which are calculated by comparing the performance of each decision-making unit against the best units. DEA highlights the best performing units and sets the stage for improvement practices. [1]

The DEA results provide destination managers with information about the technical efficiency level of the destination, the variables that have contributed more,

[1] See Barros (2005) for a literature survey of DEA on tourism and an introduction to the basics on this methodology.

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the inputs which should be improved to gain it and the efficient destinations which are benchmarks for the inefficient destinations.

It is tested the long-term technical efficiency of 22 sun and beach destinations in Spain and Portugal for the period 2003-2008, selecting the relevant variables from the foundation of the previous researches subject to the availability of the data. Therefore, it is proposed as inputs: the total average number of bed-places offered by the destination during the period under analysis as a measure of supply; the average maximum number of employees in tourism establishments as a measure of human capital; the number of beaches with a Blue Flag quality distinction as a measure of the quality and the effort of exhibiting a good image abroad; the average annual temperature and the length of the beaches as a measure of the environmental resources directly related to sun and beach segment. The last two variables are not under the control of destination managers. And, as output, the tourism revenues, estimated as the product of the number of tourists in the destination over the period, the average stay of tourist and the average daily expenditure at the destination.

According to the above criteria, the model must deal with non-controllable inputs. In order to incorporate them in the calculation of efficiency scores, it is performed a three-stage DEA model as Muñiz proposed (2002).

To fully design the DEA model, the orientation and return to scale must be determined. These choices must consider the characteristics of the data and the purpose of the analysis. Because tourism destinations face great difficulty in modifying and moving their resources (such as climate, landscape, accommodation industry, and cultural heritage), their managers thus have low control over them, and must focus on maximizing the results of the available resources. Consequently, it is selected an output-oriented DEA model to evaluate efficiency.

Additionally, the destination size is statistically significant in explaining the constant return to scale efficiency scores. The U of Mann-Whitney contrast also indicates that the destination size influences in the efficiency scores. Therefore, it is proposed a three-stage, variable return to scale, output-oriented DEA model.

The results meet the aims set at the beginning of the paper. The managers of each destination are provided with information about different efficient levels (Table 1 – Columns 1 to 3), the variables which have contributed more in this efficiency (corresponding to the highest value of Table 1 – Columns 4 to 6), the inputs which should be improved to gain efficiency (corresponding to the lowest value of Table 1 – Columns 4 to 6) and the efficient destinations which are benchmarks for the inefficient destinations (Table 1 – Column 7).

According to the overall results (see Table 1), the three-stage output-oriented variable return to scale DEA model classifies exactly half of the evaluated destinations as efficient, where Gran Canaria, Lanzarote, Majorca and Tenerife are the most efficient destinations. All of them are island destinations with a policy mainly oriented to mass tourism and certain quality levels in the offered services.

The variable that differentiates more efficient destination from inefficient ones is the recognized quality of the beaches, measured by the Blue Flag awards (see Table 1 – Column 6). The results also conclude that an optimal dimension is a critical condition of gaining efficiency (see Table 1 – Column 4), although the number of employees is more important for the inefficient destinations than for the efficient ones (see Table 1 – Column 5). Anyway, the study of the returns to scale shows that it would be worthwhile to increase the inputs in order to raise the revenues.

Finally, it is analyzed the influence of a set of variables, related to tourism supply and demand, in the technical efficiency scores of each destination. A logit analysis is performed using as variables: the percentage of foreign tourists in relation to total tourists, the average occupancy rate during the period, the percentage of bed-places in hotels in relation to total bed-places and the concentration rate in foreign

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Table 1. Summary of Overall Results

	Technical efficiency score (1)	Technical efficiency scale (2)	Average cross efficiency (3)	Contribution to Technical efficiency			Benchmarks (in order of importance and with influence ⩾10%) (7)
				Bed- places (4)	Employees (5)	Blue Flags (6)	
C. Almeria	0.617	0.954	0.478	28.1%	64.2%	7.7%	C. Valencia, Maresme, Gran Canaria and C. Tropical
C. Luz (Cadiz)	0.536	0.722	0.274	44.5%	0.0%	55.5%	C. Valencia and Tenerife
C. Tropical	1	0.658	0.516	29.7%	70.3%	0.0%	
C. Luz (Huelva)	0.378	0.861	0.272	46.9%	18.3%	34.8%	C. Tropical and C. Cálida
C. Sol	0.551	0.958	0.447	62.0%	0.0%	38.0%	Tenerife and C. Valencia
Majorca	1	1	0.871	0.0%	0.0%	100.0%	
Minorca	0.515	0.992	0.410	28.9%	63.4%	7.7%	Maresme, Gran Canaria and C. Tropical
Ibiza-Form.	0.772	0.990	0.570	0.0%	93.9%	6.1%	Maresme, C. Dorada and Gran Canaria
Gran Canaria	1	1	0.928	36.8%	63.2%	0.0%	
Lanzarote	1	0.992	0.875	75.1%	24.9%	0.0%	
Fuerteventura	0.891	0.966	0.754	63.5%	17.4%	19.1%	Lanzarote and C. Tropical
Tenerife	1	1	0.849	100.0%	0.0%	0.0%	
Garraf	0.647	0.765	0.385	39.8%	5.5%	54.7%	C. Tropical and Alentejo
Maresme	1	1	0.720	0.0%	100.0%	0.0%	
C. Brava	0.876	0.983	0.586	0.0%	93.3%	6.7%	C. Dorada
C. Dorada	1	0.976	0.720	0.0%	43.4%	56.6%	
C. Azahar	0.760	0.906	0.464	0.0%	78.7%	21.3%	C. Valencia, Maresme and C. Dorada
C. Valencia	1	0.794	0.581	0.0%	12.8%	87.2%	
C. Calida	1	0.674	0.535	57.8%	6.8%	35.4%	
Alentejo	1	0.312	0.203	31.7%	0.0%	68.3%	
Algarve	1	1	0.425	91.3%	0.0%	8.7%	
Madeira	0.479	0.826	0.191	73.6%	0.0%	26.4%	Alentejo, C. Tropical and Tenerife
Mean for efficient destinations				38.4%	29.2%	32.4%	
Mean for inefficient destinations				35.2%	39.5%	25.3%	

tourism by nationality, calculated using the normalized Herfindahl-Hirschman Index. A positive link between efficiency and the percentage of foreign tourists is found. So, the higher the percentage the more efficient the destination.

The performed analysis provides itself very useful information to managers about their competitors and the variables that have greater influence on efficiency. However, the results must be interpreted under the limitations of the proposed methodology and the used dataset; this paper is a first step and it is necessary to conduct more research to better understand the mechanism that leads some destinations to be more efficient than others.

Moreover, this paper contributes to the extant literature on efficiency of destinations (Cracolici & Nijkamp, 2006; Bosetti, Cassinelli, & Lanza, 2007; Botti, Peypoch, Robinot, & Solonadrasana, 2009; Barros et al., 2010) because it estimates the efficient scores incorporating uncontrollable variables by using a three-stage DEA methodology, focusing on long-term efficiency and giving importance to tourism revenues over tourist arrivals or the number of bed-nights. A

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