

# Tourist destination competitiveness: An international approach through the travel and tourism competitiveness index

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## ABSTRACT

Few studies have analysed the challenges that the countries may have to face to become competitive as tourism destinations. To address this gap, this research analyses competitiveness through two key dimensions: the comparative advantage and competitive advantage of a destination. The model proposed is based on Crouch and Ritchie's competitiveness model and the Travel and Tourism Competitiveness Index for a sample of 137 countries. The methods applied are data envelopment analysis and truncated regression with bootstrap. The results reveal that those countries with a major comparative advantage do not necessarily present a highly competitive advantage since the positions in both competitiveness dimensions are related to the degree of development of the countries. The tourist-related and environmental-related managerial capabilities that lead significant strategic assets being achieved for a better competitive advantage are also identified. The findings offer useful managerial information since they provide a valuable understanding of the competitiveness of countries when compared to others.

## 1. Introduction

The potential economic benefit from tourism for the economy of a country has been the focus of recurrent and relevant research in the tourism literature. The expansion of the tourism sector is therefore widely considered a key inductor of direct and indirect positive effects on the economy and on the well-being of communities (Ma & Hassink, 2013; Tang & Tan, 2015; Tugcu, 2014). As a result, countries with less developed economies are increasingly turning to tourism as a means of growth, development, and foreign exchange earnings (Andrades & Dimanche, 2017). Accordingly, the promotion and management of their tourist destinations takes on special importance, with the optimal and efficient management of their competitiveness being particularly relevant.

The competitiveness of tourist destinations remains a key factor not only for the development of national economies, but also for local communities (Leung & Baloglu, 2013). The management of these tourism destinations thus becomes fundamental in the study of the tourism industry for Destinations Marketing Organisations (DMOs) and tourism agents (Pike & Page, 2014). The tourism destination managers require appropriate competitive tourism strategies capable of dealing efficiently and effectively with the changing and dynamic environment

that surrounds the tourism industry. It is important to ascertain and take advantage of the best ways to compete in the market in order to stay ahead of global competition (Du Plessis, Saayman, & Van der Merwe, 2017). Nevertheless, gaining a sustainable competitive advantage in today's highly competitive tourism environment is far from easy. From a more theoretical level, theorists mention that tourist destinations must also be aware of what it means to be competitive based on the universal definition of competitiveness, understanding in turn the competitive models and factors that influence and determine competitiveness.

According to Ritchie and Crouch's TDC model (Ritchie & Crouch, 2003), competitiveness is a synergy between the comparative advantage and the competitive advantage of the tourist destination. The comparative advantage is identified with the endowment of resources of a destination (natural or cultural attractors), supporting resources (infrastructure, accommodation, tourist facilities), and destination management (managerial capabilities of a destination), whereas competitive advantage puts the focus on the efficiency and effectiveness in managing those resources.

In the last decade, a growing interest has emerged surrounding the assessment of tourist destination competitiveness and the identification of the factors that help destinations improve their competitive positions. There are studies in the tourism literature whose main goal is to provide

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a ranking of countries mainly based on tourism destinations resources and policies, which then pay attention to the comparative advantage dimension of competitiveness. In this vein, most research on tourist destination competitiveness has been based on building composite indicators as benchmarking tools to provide a ranking of tourist destinations in terms of competitiveness. Based on the multidimensional nature of competitiveness, [Dwyer and Kim \(2003\)](#) identified a set of indicators of destination competitiveness to provide a comparison between countries: resource endowments, resources created, service quality and accessibility, and destination management elements. [Gooroochurn and Sugiyarto \(2005\)](#) subsequently proposed a weighted composite index for tourism competitiveness, based on eight indices and twenty-three components for >200 countries, which constituted a valuable tool for the identification of the strengths and weaknesses of destinations. The Travel and Tourism Competitiveness Index (TTCI) can be considered as an extension of Gooroochurn and Sugiyarto's competitiveness index, despite being defined as an unweighted composite index with four sub-indices in the 2019 edition ("Enabling Environment", "Travel and Tourism Policy and Enabling Conditions", "Infrastructure", "Natural and Cultural Resources"). Since then, most studies on tourism destination competitiveness have evolved around the calculation of weights for the various TTCI sub-indices, and thus have improved their formulation ([Martín, Mendoza, & Román, 2017](#); [Pérez-León, Guerrero, & Caballero, 2022](#); [Salinas, Serdeira, Martín, & Rodríguez, 2020](#)). Other studies assess tourist destination competitiveness based on tourism efficiency and then focus on the competitive advantage dimension of competitiveness. While there are few studies analysing the efficacy aspect on managing tourist destinations ([Chaabouni, 2019](#); [Petrova, Dekhtyar, Klok, & Loseva, 2018](#)), others analyse the efficiency of those destinations to allocate certain resources to achieve optimal destination performance ([Radovanov, Dudic, Gregus, Horvat, & Karovic, 2020](#); [Soysal-Kurt, 2017](#)).

From the literature reviewed on tourism, most of the research has only focused on one dimension of competitiveness, either comparative or competitive advantage of a destination when a competitiveness destination is analysed. To overcome this limitation, this study delves into the understanding of tourism destination competitiveness by adopting a hybrid approach that integrates the two dimensions of competitiveness: comparative advantage and competitive advantage. Based on previous arguments, the present paper aims to go beyond the debate surrounding tourism destination competitiveness, based on two principal objectives. The first goal involves a reliable view of the current state of the tourism destination competitiveness (comparative and competitive advantage) based on Ritchie and Crouch's model and on the TTCI. The comparative advantages of a destination are related to the resources and capabilities of a destination to compete, and which can be collected from the TTCI sub-indices and pillars. The competitive advantages are related to the performance achieved of a destination (efficacy), generally relate to international tourism income, tourist arrivals and tourism employment and the efficiency of a destination to allocate optimally the resources to achieve maximum performance. The second goal involves determining the managerial capabilities (as predictors) that best explain the competitive advantage of a destination in terms of efficiency, which can also be collected from the TTCI. These findings might provide tourism managers with valuable and up-to-date knowledge of the potential strengths a destination might achieve to be competitive.

The present research, which focuses on the analysis of the comparative advantage and competitiveness of countries, aims to address the following research questions: Do the destinations with higher values in the TTCI also display competitive advantage with respect to their competitors? What are the managerial capabilities of the destinations that determine tourism destination competitive advantage? The answer to these questions provides knowledge to policymakers on the current competitive situation of the tourist destinations, and on how a tourist destination might enhance its competitiveness and therefore the well-

being of the local communities. From a theoretical perspective, this might provide a starting point to trigger more questions and for further studies to be initiated on the competitiveness of destinations by adopting an approach that integrates comparative and competitive advantages of a destination.

The paper is structured as follows. The Introduction section is followed by that of the Theoretical Background, which discusses the main arguments, premises, and models that support the empirical section. Based on these theoretical arguments, the research model is presented. Subsequently, the Methodology section describes methodological issues in detail. The results are then presented. The article concludes with the theoretical contribution, the managerial implications, and reveals its limitations, which might lead to future research avenues.

## 2. Theoretical background

### 2.1. Competitiveness tourism destination

Although competitiveness is a widely studied subject that is pursued and debated in the academic literature in various thematic areas and fields of research, it is especially relevant when it comes to business and strategic management ([Ferns & Walls, 2012](#); [Santos, Ferreira, & Costa, 2014](#)). In the managerial context, Smith developed the issue of competitiveness as a scientific discipline in the late 1970s, and subsequently, based on [Porter \(1990\)](#) findings (the value chain), many researchers have addressed competitiveness in their analysis.

More recently, focusing on the tourism sector, and since tourism is primarily a service-driven industry, researchers in this field have had to adjust their definitions of competitiveness, develop new models, and identify factors that would be applicable to the tourism industry ([Cronjé & Du Plessis, 2020](#)). Moreover, in this context, the literature on international competitiveness has been critically reviewed with a view to develop a suitable framework for tourism research ([Dwyer & Kim, 2003](#)). This academic task, however, is not without controversy. Therefore, despite the relevance in defining and describing the notion of tourism competitiveness to understand the role that it plays within tourism, and even though several authors have established definitions of this topic ([Crouch & Ritchie, 1999](#); [Dwyer & Kim, 2003](#)), there is still confusion within the literature as to what exactly it entails ([Hamarneh, 2015](#)). This misperception, rooted in the discrepancies between the established definitions, extends to other elements related to the competitiveness of the tourist destination, such as the factors and models of competitiveness in the tourism industry. Therefore, it has become crucial to continue investigating into the competitiveness of tourist destinations, as well as maintaining a reliable understanding of the state of the art ([Cronjé & Du Plessis, 2020](#)). Furthermore, it is also necessary to consider certain environmental elements that exert a certain influence on Tourism Destination Competitiveness (TDC) and therefore on its handling by the managers of the DMOs and by tourist agents. The ability of each tourist destination to at least maintain its competitiveness therefore becomes vital for the economies of each of these countries ([Ritchie & Crouch, 2003](#)) since certain levels of competitiveness are an essential guarantee for the successful management of a destination and for ensuring its prosperity ([Mazanec & Ring, 2011](#)). It is therefore crucial that destinations are aware of what needs to be done to become more competitive than other destinations. Accordingly, several experts argue that certain requirements must be met for the competitiveness of the tourist destination, without which the efforts of tourist agents would in vain ([Andrades & Dimanche, 2017](#)).

Notwithstanding, beyond these strategical decisions, the tourism destination needs a regulatory framework that allows the development of tourism activity in an efficient, sustainable, and fair manner. New items, such as safety, quality standards, environmental sustainability, and the regulation of commercial operations, are becoming increasingly in demand ([Ritchie & Crouch, 2000, 2003](#)). Many of these standards are compiled in the Travel and Tourism Competitiveness Index (TTCI)

proposed by the World Economic Forum (WEF) launched biannually since 2007. This index results from an amalgam of indicators grouped into four main categories that represent the sub-indices of TDC: Enabling Environment; Travel and Tourism Policy and Enabling Conditions; Infrastructure; and Natural and Cultural Resources (World Economic Forum, 2019). The index provides a ranking of countries in terms of their own comparative advantages, and this provides managers with a good knowledge of the strengths in terms of the resources and capabilities of a destination that can lead it to project a specific image to the market, which is associated with its uniqueness, specific history, natural and cultural resources, and its strategic actions (Carreira, González-Rodríguez, & Díaz-Fernández, 2021).

In addition to the aforementioned postulates, several researchers argue that the core of the tourism sector is in the resources that the destination endows and creates. These form the basis for the development of tourism products and services that previous researchers required for a tourism destination to be competitive (Dwyer & Kim, 2003). Therefore, according to these arguments, the availability of resources either increases or decreases the likelihood of the destination attracting tourists and obtaining a differentiated position that allows the desired competitiveness to be achieved. To deal with this situation, the belief is growing that tourism managers must consider that resources in themselves mean little if they are not skilfully transformed and managed into tourism products. Along these lines, and agreeing with previous researchers (Andrades & Dimanche, 2017; Crouch, 2011; Uysal, Sirgy, Woo, & Kim, 2016), we argue that an effective and efficient management of resources that leads to the design, development, and implementation of the best destination strategy, is that which makes the difference capable of affecting the competitiveness of the tourist destination. Hence, the present work carries out the analysis of the competitiveness of the tourist destination based on a well-known model of Competitiveness of Tourist Destinations (TDC), such as TDC model proposed by Crouch and Ritchie, which is linked to the TTCL, and which undoubtedly includes key elements from the Resource Based View (RBV) framework.

## 2.2. The Crouch and Ritchie's tourism destination competitiveness model

The study of competitiveness has become a dominant paradigm in the academic literature in recent years (Almeida-Santana & Moreno-Gil, 2018). In terms of tourism destination competitiveness, both the notion and measurement have received increasing attention in the tourism economics literature (Abreu-Novais, Ruhanen, & Arcodia, 2016; Croes & Semrad, 2018; Novais, Ruhanen, & Arcodia, 2018). The main causes are largely attributed to both the growing economic relevance of the tourism sector and the increasing competition in the tourism market, which requires a deeper understanding of both the resources and capabilities of tourism destinations and of the specific attitudes and needs of tourists (Fernández, Azevedo, Martin, & Martin, 2020; Mendola & Volo, 2017).

Overall, papers focused on tourism destination competitiveness analysis can be classified into three groups: papers that have developed models on tourism destination competitiveness (Dwyer & Kim, 2003; Ritchie & Crouch, 2003); papers that have focused on a particular aspect of tourism destination competitiveness (Baker, Hayzelden, & Sussmann, 1996); and papers which have analysed position or capabilities of a particular tourism destination (Ahmed & Krohn, 1990; Cucculelli & Goffi, 2016). In relation to these studies, several models have been proposed to investigate the competitiveness of certain tourist destinations using various determinants and attributes (Kovačević, Kovačević, Stankov, Dragičević, & Miletić, 2018). In this regard, the Crouch and Ritchie (1999) model stands out, which provides a comprehensive description of the nature of comparative and competitive advantage in tourism, by applying Porter (1990) core diamond theory of country competitive advantage (Zhang & Jensen, 2007).

Crouch and Ritchie's TDC model, considered one of the most

complete TDC models (Andrades & Dimanche, 2017; Nadalipour, Khoshkhou, & Eftekhari, 2019), identified two different and interrelated environments: micro and macro. Thus, while the microenvironment refers to the salient elements of the tourist destination which must be compared with competitors, the macro environment refers to the elements or forces that, lie outside the microenvironment that need to be adapted or overcome to remain competitive (Crouch & Ritchie, 1999). Furthermore, as these authors pointed out, the micro and macro environments simultaneously affect the "core of competitiveness" defined by the following four main components: "Core resources and attractors (physiography, culture and history, market ties, mix of activities, special events, entertainment and superstructure); Supporting factors and resources (infrastructure, accessibility, facilitating resources, hospitality, enterprise); Destination management (resources stewardship, marketing, finance and venture capital, organisation, human resource development, information/research, quality of service, visitor management); and Qualifying determinants (location, interdependencies, awareness/image/brand, cost/value)" (Crouch & Ritchie, 1999: 146–147).

In addition to these micro- and macro-levels, linked to this TDC model, we also find the notion of comparative and competitive advantage. According to Crouch and Ritchie (1999), while comparative advantage refers to the resource endowment of the destination area (human, physical, knowledge, and capital resources; tourist infrastructure and superstructure; historical and cultural resources), competitive advantage refers to the deployment of resources (audit and inventory; maintenance; growth and development; efficiency and effectiveness). Grounded in the findings of Crouch and Ritchie (1999), other researchers have contributed towards broadening the understanding of TDC as well as of the factors of greatest influence on the level of competitiveness of destinations. In this vein, previous studies have concluded that there are certain attributes related to the supply-side of the destination (such as quality, resources, destination environment, infrastructure, and value) that may influence tourists' intention to return (Beerli & Martin, 2004; Enright & Newton, 2005; Melián-González & García-Falcón, 2003; Murphy, Pritchard, & Smith, 2000).

In short, the TDC model shows many different elements upon which the competition between tourism destinations is based. Achieving superior performance and a better position in the market will thus depend not only on the resources and capabilities of the destination, but also on a destination's ability to manage and organise its resources efficiently, thereby maximising its level of performance in the face of tourism competition (Cracolici, Nijkamp, & Rietveld, 2008).

The effective strategic actions of tourist destinations are essential to maintain or increase market share in a national and/or international tourism market. Today, mainly due to the high competitiveness between tourist destinations, tourist behaviour is often volatile and unpredictable. This means that, in the long run, the life cycle of a tourism destination depends to a large extent on the ability to effectively combine and manage its resources and capacities. Therefore, DMO managers and policymakers must manage their tourism destination by striving to gain the maximum share of tourism demand (domestic and international) through an efficient combination of their resources (inputs). In this way, DMO managers can evaluate the tourism performance of a tourism destination by assessing its efficiency. This assessment will allow them to identify strengths, weaknesses, and opportunities of the tourism destinations, and threats to said destinations. Hence, this efficient performance of the tourist destination can be evaluated based on an analysis of the competitiveness of the tourism destination (Cracolici et al., 2008).

## 2.3. Research model

Undoubtedly, the academic literature asserts that competitiveness is an important aspect when considering the development and promotion of a tourist destination (Aguar-Barbosa, Chim-Miki, & Kozak, 2021; Kim, Liu, & Williams, 2021; Mariani, Bresciani, & Dagnino, 2021).

There is a need to better understand why certain countries are more successful as destinations than others. According to Crouch and Ritchie's TDC model, the competitiveness of a tourist destination is a symbiosis between the comparative advantage and the competitive advantage of that tourist destination. However, from the literature, most empirical studies have not addressed tourist destination competitiveness in terms of comparative and competitive advantage jointly. Several studies focus on the comparative advantage dimension of competitiveness by designing an alternative competitiveness indicator from the TTCI sub-indices and pillars to overcome its weakness (Gómez-Vega, Herrero-Prieto, & Valdivia, 2021; Mazanec & Ring, 2011; Pérez-León et al., 2022; Rodríguez-Díaz & Pulido-Fernández, 2021; Wu, Lan, & Lee, 2012). The weights enable the identification of the main features (culture, natural resources, infrastructure) of a destination in order to attract international tourists. Others focus more on the competitive dimension by paying attention to either the effectiveness or the efficiency of destinations. World Economic Forum (WEF) reports and several studies (Chaabouni, 2019; Petrova et al., 2018; Terzić, 2018; World Economic Forum, 2019) take a step forward by assessing the competitive advantage of a destination through the efficacy aspect of competitiveness using the correlation coefficient between the TTCI and destinations' performance outputs (e.g., tourist arrivals, tourism receipts). However, these studies are not exempt of limitations. Since country size and the different levels of development of countries are not considered, the comparability across countries appears to be biased. Furthermore, the correlation between TTCI and the destination outputs, which displays a cause-effect relationship, offers insufficient information to DMOs to improve the competitiveness of a destination (Mazanec & Ring, 2011). In fact, looking at the cause-effect relationship, the only information provided is that the two variables move in the same direction. Other studies focus on the efficiency aspect of competitiveness (Chaabouni, 2019; Gómez-Vega et al., 2021; Hadad, Hadad, Malul, & Rosenboim, 2012; Radovanov et al., 2020; Soysal-Kurt, 2017). The main goal of these studies is to provide a ranking of countries based on their tourism efficiency and their main difference is related to the selection of the basic characteristics (inputs and outputs) employed in the data envelopment analysis models to calculate the efficiency scores. However, no discussion is available regarding the selection of inputs and outputs based on a theoretical framework. Hence, an analysis of the two dimensions of competitiveness grounded in a conceptual framework becomes necessary since countries positioned in the top rankings of comparative advantage often fail to maintain their position in terms of efficiency. A good understanding of the comparative and competitive advantage of a destination is especially relevant for managers who must make decisions not only regarding investments into culture, natural resources, and infrastructures, but also on those strategic actions to optimally allocate their resources that enable the destination to achieve the best performance in terms of arrivals, tourism income, and/or tourism employment.

Further to previous findings, the present study adopts a hybrid approach of the competitiveness with respect to that hitherto portrayed in the literature by taking into consideration the two dimensions of competitiveness, namely comparative advantage, and competitive advantage. In particular, the research model is built on the premises established in Crouch and Ritchie's TDC model, on RBV framework, and on the WEF TTCI. Likewise, the present research faces a call in the tourism literature to develop further tourism studies on competitiveness for the better comprehension of the existing TDC models, which would allow for an integrated approach that displays how comparative and competitive advantage are best related and how they differ (Siggel, 2006; Zhang & Jensen, 2007).

The research model adopted rooted on Crouch and Ritchie's TDC model (Crouch & Ritchie, 1999) is displayed in Fig. 1. The TTCI offers insights on competitiveness regarding the necessary conditions in terms of resources and managerial capabilities for countries to develop tourism successfully. Ritchie and Crouch's conceptual model and the

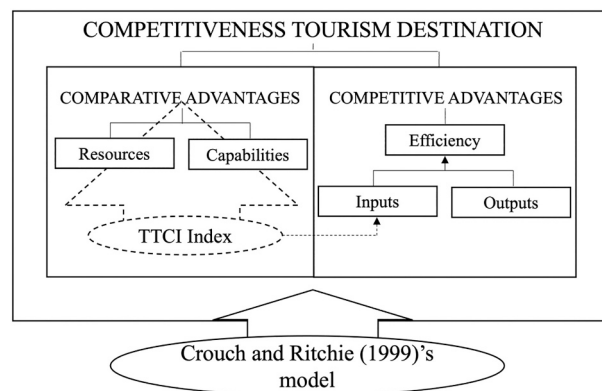


Fig. 1. Research model. Competitiveness tourism destination.

Source: Author's own based on RBV Theory, Crouch and Ritchie (1999)'s TDC model and TTC Index (WEF)

TTCI supports the identification of those factors that DMO managers and tourism agents must consider for the development of the attractiveness of tourism destinations, in order to increase their competitiveness (Andrades & Dimanche, 2017). The model identifies the comparative advantages of the tourist destination with the resources and managerial capabilities collected in the TTCI, since the TTCI is grounded in the comparative advantage theory (Mazanec & Ring, 2011). Likewise, the research model also employs premises and insights from the RBV framework. Following appeals in the literature to analyse competitive advantages beyond the efficacy analysis through tourist flows and tourist income (Zhang & Jensen, 2007), the present study also focuses on the efficiency dimension of competitiveness. Specifically, the efficiency benchmarking scores of the destinations are calculated by using the pillars of the TTCI which correspond to destination attractors and supporting resources as inputs in the empirical analysis. As explained in Section 3.2, the remaining pillars of the TTCI, which represent the destination capabilities in management, will be employed to identify the main drivers of competitiveness. Thus, the research model takes advantage of the strengths of each framework based on the positive synergies established. Not only does this enable the reinforcement of the research model on the competitiveness of tourist destinations, but it also offers a broader and more complete vision of this phenomenon and enriches the knowledge acquired to date.

Rooted on the research model and the arguments exposed above, the research questions derived from the model are formulated as follows:

**RQ1.** Do the destinations with higher values in the WEF TTCI and then showing high comparative advantage also display competitive advantage with respect to their competitors?

**RQ2.** What are the managerial capabilities that determine the tourism destination competitive advantage?

### 3. Methodology

#### 3.1. Research method

One of the goals of this paper is to gauge the efficiency of the tourist destinations as an indicator of the country's competitive advantage, and to analyse its determining factors. The methodological approach is composed of two stages.

First, data envelopment analysis (DEA) is implemented. Data envelopment analysis as developed by Farrell (1957) is a non-parametric methodology for the assessment of the efficiency scores of a set of Decision-Making Units (DMUs); these scores are obtained based on data on the input consumption and the output production. Graphically, this methodology constructs a frontier where the efficient units are located, such that the units that are not found in the frontier are considered

inefficient.

However, due to both the size of the sample and the heterogeneity of the units in the sample (137 countries, see Section 4.2) in that they might affect the results of DEA, it is necessary to apply a cluster analysis so that the results become more robust. The cluster analysis is performed using the squared Euclidean distance as a measure of association and by combining the hierarchical techniques (using Ward’s method) and non-hierarchical techniques (K-Means clustering method).

Once the sample has been standardised, the DEA is implemented for each cluster to obtain the countries’ efficiency scores. Specifically, the standard output-oriented CCR DEA model is used in this paper. Application of the CCR model is justified using homogenised samples, which has been previously standardised through cluster analysis (Gómez-Vega et al., 2021). On the other hand, the output-oriented model has been selected following Farrell (1957), who suggests the choice of an output-oriented measure if there are several inputs and a single output (in this paper, DEA is implemented with six inputs and one output variable, as explained in the Section 4.2.). The model (Charnes, Cooper, & Rhodes, 1978) is defined as follows.

Suppose there is a set  $D = \{1, 2, \dots, n\}$  of independent DMUs, which are identified with 137 tourist destinations each of which employs a set  $I = \{1, 2, \dots, m\}$  of different inputs in quantities  $x_{ik}$  to generate a set  $O = \{1, 2, \dots, r\}$  of different outputs in quantities  $y_{jk}$ . The efficiency score of a given DMU,  $k_0 \in D$ , can be computed as follows:

$$\max \theta_{k_0}$$

$$s.t. \sum_{k \in D} \lambda_k x_{ik} \leq x_{i k_0} \quad \forall i \in I$$

$$\sum_{k \in D} \lambda_k y_{jk} \geq \theta_{k_0} y_{j k_0} \quad \forall j \in O$$

$$\lambda_k \geq 0 \quad \forall k \in D$$

$$\theta_{k_0} \text{ free}$$

where  $\theta_k$ ,  $x_k$ , and  $y_k$  are, respectively, the efficiency score, input, and output of destination  $k$ , and  $\lambda_k$  is the destination’s weight.

The proposed model assigns the score 1 to efficient units, whereas the inefficient units obtain a score lower than 1.

In the second stage, regression analysis is applied to identify the managerial capabilities (as predictors) that explain a high level of competitive advantage (efficiency scores). Specifically, a set of pillars from the “Enabling environment” and “Travel & Tourism Policy and Enabling Conditions” (World Economic Forum, 2019) are employed to explain the efficiency scores obtained in DEA (dependent variable), as justified in the following section. In this context, the use of censored regression models, such as the Tobit model, is common, but, due to the existence of correlation problems between explanatory variables, error terms, input, and output variables, the use of a double bootstrap procedure is necessary (Simar & Wilson, 2007). In this paper, Algorithm 1 of Simar and Wilson (2007) is applied, in which the efficiency scores are regressed on a set of explanatory variables, with 95% confidence intervals for each estimated parameter. The model can be specified as follows:

$$\theta_k = \beta x_k + \varepsilon_k$$

where  $\theta_k$  is the efficiency score of the  $k$ th destination,  $\beta$  represents a vector of parameters,  $x_k$  is a vector of explanatory variables, and  $\varepsilon_k$  is a normally and independently distributed error term. The bootstrap estimates are produced using 2000 bootstrap replications.

### 3.2. Data collection and variables

The choice of the variables included in the empirical analysis is based on the proposed theoretical framework and is supported by the tourism

literature. The TTCI data has been widely used in the literature to analyse destination competitiveness (Assaf & Josiassen, 2012; Gómez-Vega et al., 2021; Gómez-Vega & Picazo-Tadeo, 2019; Pérez-León et al., 2022; Radovanov et al., 2020; Rodríguez-Díaz & Pulido-Fernández, 2021; Salinas, Guaita-Martínez, & Martín-Martín, 2022; Uyar, Kuzey, Koseoglu, & Karaman, 2022). The TTCI (2019 edition) has been used as a proxy of the comparative advantages of destinations. The TTCI pillars are composed of the resources of a destination and its capabilities to compete. Based on the RBV framework (Barney, 1991), the resources in TTCI are identified with the pillars included in the sub-index “Natural and Cultural Resources” (as endowment resources), with supporting resources such as the sub-index “Infrastructure”, and the pillar “ICT infrastructure” from the sub-index “Enabling Environment”. The capabilities of a destination are identified in those pillars included in the sub-index “Travel and Tourism Policy and Enabling Conditions” and the sub-index “Enabling Environment” (except the pillar ICT infrastructure since it is included as supporting resources) as strategic assets of a country to transform the resources into competitive advantage (World Economic Forum, 2019).

Competitive advantage is measured through the efficiency scores with the application of DEA. The identification of inputs and outputs to determine the efficiency scores remains an open question in tourism research (Nurmatov, Lopez, & Millan, 2021) due to its insufficient discussion. In the present paper, the efficiency of the destinations’ benchmarking scores is calculated through one output and six input variables. Studies employed data from the TTCI as inputs to analyse the efficiency of destinations (Assaf & Josiassen, 2012; Gómez-Vega et al., 2021; Hadad et al., 2012; Mendieta-Peñalver, Perles-Ribes, Ramón-Rodríguez, & Such-Devesa, 2018; Radovanov et al., 2020). The inputs of the DEA are selected from the resources (endowment and supporting resources) included in the TTCI. Specifically, inputs are those pillars of the TTCI which are related to destination attractors and supporting resources: “ICT Readiness” (Input1), “Air Transport Infrastructure” (Input2), “Ground and Port Infrastructure” (Input3), “Tourist Service Infrastructure” (Input4), “Natural Resources” (Input5), and “Cultural Resources and Business Travel” (Input6). Following Gómez-Vega et al. (2021), international receipts per capita has been taken as the output variable for the efficiency analysis (Gómez-Vega et al., 2021; Mitra, 2020; Soysal-Kurt, 2017).

Although the TTCI includes 140 countries, the final sample used in the paper consists of 137 countries due to the non-unavailability of TTCI and/or Human Development Index (HDI) information of three countries: Liberia, Mauritania, and Taiwan. The existence of a heterogeneous sample of countries leads us to conduct a cluster analysis to identify homogenous groups of countries as required by the DEA. The Human Development Index (HDI) has been used as an indicator to classify countries according to three factors: level of wealth, education, and health in a country. The HDI has been used in the literature to categorise the countries into homogeneous groups (Gómez-Vega et al., 2021; Hadad et al., 2012).

The goal of the implementation of Simar and Wilson’s truncated regression is to identify the strategic resources that explain the efficiency benchmarking scores obtained in the previous stage; consequently, efficiency scores are considered as a dependent variable. As for explanatory variables, the pillars of the TTCI corresponding to the destination capability in management are included: “Prioritisation of Travel and Tourism” (PTT), “Price Competitiveness” (PC), “International Openness” (IO), “Environmental Sustainability” (ES), “Business Environment” (BE), “Health and Hygiene” (HH), “Safety and Security” (SS), and “Human Resources and Labour Market” (HRLM). Furthermore, GDP per capita (as the explanatory control variable) is included together with a dummy variable (C1) that identifies whether a country belongs to Cluster 1.

Table 1 shows the descriptive statistics of variables used in cluster analysis, DEA, and regression analysis.

**Table 1**  
Descriptive statistics.

Variable	Description	Source	Pillar of TTCI	Obs	Mean	Std. Dev.	Min	Max
Cluster analysis								
HDI	Human Development Index (0–1)	UN	–	137	0.749	0.149	0.398	0.957
Efficiency analysis: Production function variables								
Output	International tourism receipts per capita (\$)	WEF	–	137	584.124	887.08	0.253	4908.399
Input1	ICT readiness (1–7)	WEF	5	137	4.588	1.211	1.7	6.615
Input2	Air transport infrastructure (1–7)	WEF	10	137	3.132	1.236	1.221	6.635
Input3	Ground and port infrastructure (1–7)	WEF	11	137	3.499	1.105	1.842	6.398
Input4	Tourist service infrastructure (1–7)	WEF	12	137	4.069	1.342	1.65	6.698
Input5	Natural resources (1–7)	WEF	13	137	3.152	0.967	1.637	5.974
Input6	Cultural resources (1–7)	WEF	14	137	2.229	1.404	1.012	6.962
Regression analysis: Explanatory variables								
BE	Business environment (1–7)	WEF	1	137	4.498	0.680	2.372	6.126
SS	Safety and security (1–7)	WEF	2	137	5.323	0.774	2.974	6.7
HH	Health and hygiene (1–7)	WEF	3	137	5.073	1.303	1.719	6.986
HRLM	Human resources and labour market (1–7)	WEF	4	137	4.544	0.633	2.958	5.848
PTT	Prioritisation of travel and tourism (1–7)	WEF	6	137	4.587	0.852	1.881	6.167
IO	International openness (1–7)	WEF	7	137	3.299	0.898	1.323	5.534
PC	Price competitiveness (1–7)	WEF	8	137	5.331	0.619	3.19	6.731
ES	Environmental sustainability (1–7)	WEF	9	137	4.316	0.536	3.26.09	5.979
GDPpc	GDP per capita (PPP, constant 2017 \$)	WB	–	135	24,455.13	22,581.11	751.664	116,518.3
C1	Dummy (1 = countries of Cluster 1; 0 = countries of Cluster 2)	Own.	–	137	0.693	0.4627	0	1

**4. Results**

In order to respond to RQ1: *Do the destinations with higher values in the WEF TTCI also display competitive advantage with respect to their competitors?* a bidimensional analysis is carried out with the TTCI as proxy of the comparative advantage and the efficiency scores as proxy of the competitive advantage. To this end, first a cluster analysis to group countries based on HDI is required. Table 2 shows the results of cluster analysis, from which the sample of 137 countries is classified into two clusters according to the level of development: countries of Cluster 1 (0.83) have a higher level of development than do countries of Cluster 2 (0.56). Therefore, the sample has been divided into two groups with a higher homogeneity in terms of development level: Cluster 1 contains developed countries such as Finland, Singapore, and Sweden (see Table 3), while Cluster 2 is composed of developing countries such as Burundi, Cambodia, and Cape Verde (see Table 4). These results have been validated with the ANOVA procedure. The high value of the F statistic, 375.34, and the associated p value, 0.00, indicate that the selected clusters are homogeneous. The list of countries included in each cluster can be seen in Table 2.

Following the output-oriented CCR DEA model, which is described in Section 4.1, Table 3 and Table 4 present HDI, TTCI, and efficiency scores (EF. S) for countries in each cluster. These results should be discussed independently for each group of cluster. First, the results regarding efficiency scores must be explained. Efficient destinations are those obtaining an efficiency score with value 1 while inefficient destinations are those with an efficiency score lower than 1. For Cluster 1, there are nine efficient countries (Albania, Bahrain, Hong Kong, Kyrgyz R., Lebanon, Montenegro, Seychelles, Slovak R., and Uruguay) and the remaining countries have an inefficient score, although the last four countries of the scale (China, Ukraine, Norway, and Argelia) exhibit medium-efficiency scores (not far below 30%). There are eight efficient countries in Cluster 2 (Burundi, Cambodia, Cape Verde, El Salvador, Guatemala, Haiti, Nicaragua, and Nigeria), and in this case the last three

**Table 2**  
Cluster analysis results.

	Cluster 1	Cluster 2
HDI	0.834	0.5563
Countries	95	42

countries present extremely low efficiency scores below 1%, which means that the margin of improvement is over 99%. It can be said that there is a higher proportion of efficient countries in Cluster 2 than in Cluster 1, since 9.5% of the countries of Cluster 1 are efficient, while this percentage is over 19% in Cluster 2. Moreover, a lower dispersion of the efficiency scores in Cluster 1 than in Cluster 2 is also observed. The mean efficiency is greater in Cluster 1 (78.04%) than in Cluster 2 (64.38), which implies that the margin of improvement is lower in highly developed countries than in less developed countries. These results are in accordance with Gómez-Vega et al. (2021) and Hadad et al. (2012).

Furthermore, the outcomes of DEA could also be employed for comparison with the TTCI values. Figs. 2 and 3 represent a comparative analysis between efficiency scores (competitive advantage) and the TTCI values (comparative advantage) for countries in Clusters 1 and 2, respectively. Four sets of countries can be identified according to the 75th percentile for each indicator (TTCI and efficiency score): countries with highly competitive and comparative advantages; countries with highly competitive advantage but medium-low comparative advantage; countries with high comparative advantage but medium-low competitive advantage; and countries with medium-low competitive and comparative advantages.

These figures reveal that the pattern of countries with respect to the TTCI and the efficiency scores are different depending on the degree of development by HDI. From Cluster 1 and the ranking position of countries by TTCI data, the countries in the top ten rankings in terms of comparative advantage (TTCI) are: Spain (ranked 1), France (ranked 2), Germany (ranked 3), Japan (ranked 4), USA (ranked 5), UK (ranked 6), Australia (ranked 7), Italy (ranked 8), Canada (ranked 9), and Switzerland (ranked 10). However, they do not maintain these favourable positions when the competitive advantage is analysed through the efficiency scores (Table 3 and Fig. 2). In fact, these countries are not the most efficient within Cluster 1: Spain (efficiency score 0.7374), France (efficiency score 0.6773), Germany (efficiency score 0.6056), Japan (efficiency score 0.5473), USA (efficiency score 0.6338), UK (efficiency score 0.6232), Italy (efficiency score 0.7046), Canada (efficiency score 0.6538), and Switzerland (efficiency score 0.6959). Likewise, those countries that turned out to be efficient (efficiency scores = 1) did not occupy the first positions in the ranking obtained from the TTCI except for Hong Kong and Singapore with high TCCI (11th and 13th positions) and the highest efficiency scores. According to the proposed theoretical model, Hong Kong and Singapore would be the most competitive



**Table 4**  
Efficiency scores, TTCI and HDI values of Cluster 2.

Country		HDI	TTCI	EF.S.	Country		HDI	TTCI	EF.S.
Burundi	BDI	0.43	2.66	1	Namibia	NAM	0.65	3.67	0.72
Cambodia	KHM	0.59	3.39	1	Senegal	SEN	0.51	3.26	0.62
Cape Verde	CPV	0.67	3.55	1	Côte d'Ivoire	CIV	0.54	3.11	0.59
El Salvador	SLV	0.67	3.23	1	Benin	BEN	0.55	3.02	0.58
Guatemala	GTM	0.66	3.39	1	India	IND	0.65	4.42	0.57
Haiti	HTI	0.51	2.76	1	Eswatini	SWZ	0.61	3.12	0.57
Nicaragua	NIC	0.66	3.49	1	Kenya	KEN	0.60	3.63	0.56
Nigeria	NGA	0.54	2.82	1	Zimbabwe	ZWE	0.57	3.15	0.55
Lao PDR	LAO	0.61	3.42	0.91	Mali	MLI	0.43	2.81	0.50
Honduras	HND	0.63	3.46	0.89	Sierra Leone	SLE	0.45	2.78	0.49
Tanzania	TZA	0.53	3.43	0.88	Burkina Faso	BFA	0.45	2.78	0.47
Rwanda	RWA	0.54	3.25	0.88	Yemen	YEM	0.47	2.42	0.42
Angola	AGO	0.58	2.74	0.86	Ethiopia	ETH	0.49	3.02	0.41
Gambia	GMB	0.50	3.23	0.86	Mozambique	MOZ	0.46	2.91	0.41
Zambia	ZMB	0.58	3.16	0.85	Bangladesh	BGD	0.63	3.10	0.20
Ghana	GHA	0.61	3.15	0.81	Tajikistan	TJK	0.67	3.28	0.17
Cameroon	CMR	0.56	2.90	0.79	Malawi	MWI	0.48	2.93	0.14
Nepal	NPL	0.60	3.35	0.77	Chad	TCO	0.40	2.52	0.14
Morocco	MAR	0.69	3.90	0.77	Pakistan	PAK	0.56	3.10	0.10
Lesotho	LSO	0.53	3.02	0.75	Guinea	GIN	0.48	2.92	0.05
Uganda	UGA	0.54	3.19	0.73	Congo	COD	0.48	2.68	0.03

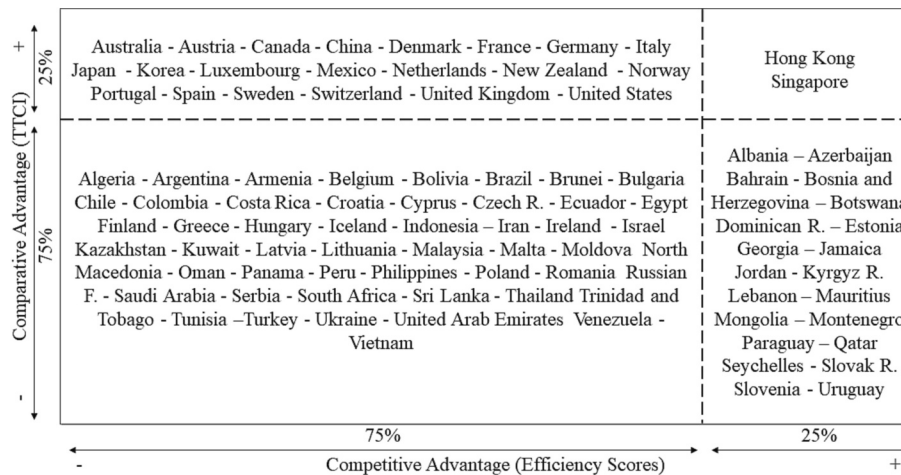


Fig. 2. Comparison between efficiency scores and TTCI for Cluster 1.

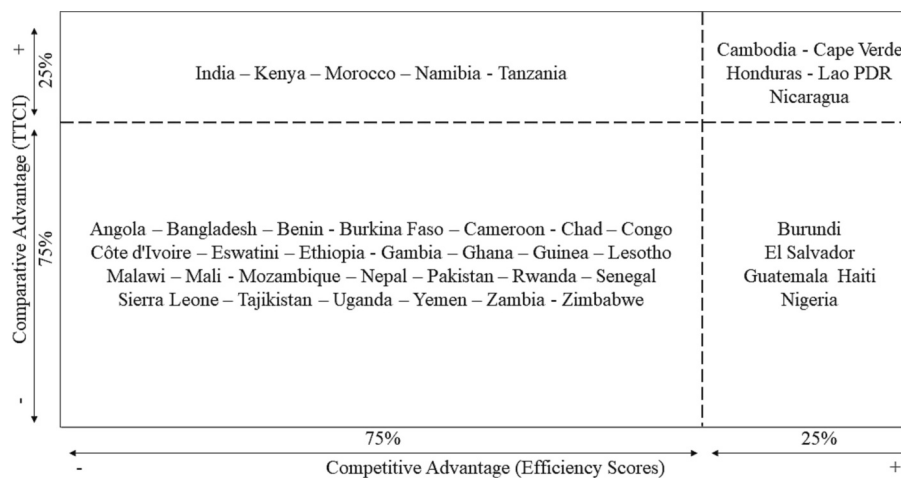


Fig. 3. Comparison between efficiency scores and TTCI for Cluster 2.



**Table 5**  
Parameter estimates.

Dependent variable: Efficiency Scores			
Variables	Coefficients	Std. Error	P-value
BE	0.2882	0.0642	0.653
SS	0.0869	0.0437	0.047*
HH	-0.0535	0.035	0.126
HRLM	-0.132	0.0826	0.11
PTT	0.1484	0.0412	0.000***
IO	0.038	0.0393	0.333
PC	0.0976	0.0489	0.046*
ES	0.0209	0.0626	0.738
GDPpc	1.82e-06	1.26e-06	0.148
C1	0.2596	0.0974	0.008**

Note: Statistical significance at \* 10%, \*\* 5%, and \*\*\* 0%. BE: Business Environment; SS: Safety and Security (SS); Health and Hygiene (HH); Human Resources and Labor Market (HRLM); Prioritisation of Travel and Tourism (PTT); International openness (IO); price Competitiveness (PC); Environmental Sustainability (ES). GDP per capita (GDPpc); C1: be in Cluster 1.

managerial capabilities of tourist destinations.

The present research arises from the premise that countries have certain resources and possess capabilities to compete and employ those resources (all included in the TTCI) to produce outputs as proxy for a best performance (Martín et al., 2017). To determine how well a destination can transform its resources on performance, destination efficiency is obtained by DEA. The use of DEA is justified since it is recognised to be applicable in scenarios where the goal is to provide a ranking of comparable units where the components cannot be strictly interpreted as inputs or outputs (Seiford, 1996). By taking into consideration the relevance of the two dimensions of competitiveness, (as displayed in Fig. 1), namely comparative advantage of a destination (TTCI) and the competitive advantage (efficiency scores), Figs. 2 and 3 show a more complete picture in terms of tourism destination competitiveness. The graphical representation of TTCI against the destination's efficiency score, leads to the identification of how well a destination performs in terms of comparative and competitive advantage, and therefore yields its relative destination position with respect to others in these two competitiveness dimensions. Even though previous studies have analysed the existing correlation between the TTCI and destination macroeconomic outputs (Petrova et al., 2018; Webster & Ivanov, 2014), no studies have yet discussed the position of the countries from a comparative advantage perspective and a competitive advantage perspective simultaneously. Countries with the best ranking in terms of TTCI do not necessarily maintain their position in terms of efficiency. Although certain destinations are effective in attracting tourists and are therefore evaluated as very competitive by the TTCI, they fail to efficiently employ their attractive resources to boost their competitiveness and to effectively translate it into not only the development of the travel and tourism industry but also into socio-economic benefits for the local population (as can be observed in Figs. 2 and 3). Being aware of the positioning of destinations from a double perspective appears to be especially relevant for policymakers who should not only invest in those TTCI resources that need to be improved but should also take policy actions that lead to the country's resources being used more efficiently, and consequently enhancing the destination's ability to compete.

Previous academic research has analysed the causal relationship between the TTCI (sub-indices and pillars) and the main macroeconomic indicators of the tourism industry (Petrova et al., 2018; Terzić, 2018). However, these studies focused more on the correlation between the TTCI, and the performance of a destination defined in terms of efficacy (by focusing on tourism spending, share of tourism production in the total country's GDP, etc.) rather than on the efficiency of a destination in accomplishing a best performance. The present research addresses this issue by using the Simar and Wilson truncated regression that enables identification of the destinations' management capabilities that best

explain its competitiveness as measured by the efficiency benchmarking scores. From Table 4, the TTCI pillars "Prioritisation of Travel and Tourism", "Price Competitiveness", and "Safety and Security" exert a significant and positive influence on the country's competitiveness. The significant and positive coefficient of "Prioritisation of Travel and Tourism" means that countries that pay more attention to the tourism sector are more efficient and therefore more competitive. This result is also supported in the literature although the prioritisation of the tourism sector by a country is measured through a different proxy, such as the tourism share of GDP (Chaabouni, 2019; Radovanov et al., 2020). "Safety and Security" has traditionally been considered as one of the principal concerns when travelling, and constitutes one of the major determinants of the desire and intention to travel (Caber, González-Rodríguez, Albayrak, & Simonetti, 2020; Gallego, Font, & González-Rodríguez, 2022; Rittichainuwat, Nelson, & Rahmafritra, 2018; Verkoeyen & Nepal, 2019; Williams, Wassler, & Ferdinand, 2022) and forms a key destination attribute for destination competitiveness (Córdova-Jurado & Torres-Matovelle, 2019; Tahar, Haller, Massa, & Bédé, 2018). "Environmental Sustainability", despite its positive influence on competitiveness, is not significant at 5% which means there is still room for improvement in those sustainable actions at a destination level to attract environmentally responsible tourists. Unlike other studies that identified "International Openness" as a determinant for competitiveness (Radovanov et al., 2020), in the present study, and for the 2019 edition of the TTCI, "International Openness" appears to exert an insignificant effect on competitiveness. Destinations fail to transform their competitiveness potential in terms of international openness into economic benefits. "Price Competitiveness", despite being marginally significant (at 10% of significance level), allows the destinations to provide lower prices for high-quality services, which encourages international travel, and therefore leads to the greater international competitiveness of a destination. Despite the lack of strong empirical evidence towards ensuring the relevant significance of "International Openness" and "Price Competitiveness" on efficiency, destinations should not neglect their efforts on both pillars since undoubtedly both have an impact on offering better-quality products and services that compete on price.

## 5.1. Theoretical and managerial implications

### 5.1.1. Theoretical implications

The research responds to a call in the literature to exhibit a theory-guided approach when comparing destinations (Gómez-Vega et al., 2021; Mazanec & Ring, 2011). The theoretical framework employed herein is focused on, one hand, on a hybrid approach based on Crouch and Ritchie's TDC model that considers the two key aspects of competitiveness, comparative and competitive advantage of a destination, and, on the other hand, on the information provided by TTCI on resources and capabilities of a destination. The RBV approach therefore additionally supports the theoretical framework from which the research questions are formulated. From the existing literature, apart from discussion on methodological issues around the TTCI, hardly any reflection exists on what the TTCI conceptually represents when analysing competitiveness. The TTCI, grounded in the comparative advantage theory, is an indicator of the comparative advantages of a country, and therefore represents only one dimension of competitiveness, although it is necessary to consider the other dimension, namely competitive advantage, when analysing competitiveness.

This paper also extends the previous literature in terms of scope and method. This paper responds to recommendations from the literature regarding the design of schemes of a more sophisticated nature to monitor competitiveness and to guarantee judgements of managerial relevance in terms of not only conceptual framework, but also scope and method (Mazanec & Ring, 2011). Thus, the present research constitutes a step forward towards triggering further studies on destination competitiveness that monitor competitiveness from a temporal and

geospatial approach, since it provides a competitiveness tool for destinations by assessing both the comparative advantage (through TTCI) and the competitive advantage (through efficiency scores). On one hand, the identification of inputs and outputs to determine tourism efficiency remains an open question in tourism research (Nurmatov et al., 2021) with hardly theoretical discussion. Unlike other studies that justify the choice of inputs and outputs based on a literature review (Assaf & Dwyer, 2013; Bosetti, Cassinelli, & Lanza, 2007; Fuchs, Peters, & Weiermair, 2002), the present research justifies the choice of inputs and outputs based on the proposed theoretical approach. On the other hand, the present study, which analyses 137 countries from the TTCI 2019, constitutes further added value as it differs from tourism benchmarking studies that are limited to a single country or to a limited number of countries (Chaabouni, 2019; Cracolici et al., 2008; Radovanov et al., 2020). By using data from developed and developing countries based on the HDI, the international scope provides a valuable source of evidence for academia and policymakers (Chaabouni, 2019).

In addition, the study conducts a methodological approach in two stages, based on DEA procedure and bootstrap truncated regression, which overcomes the bias presented in the Tobit regression models. The conceptual framework on which the empirical analysis is based, also allows for the identification of those destinations' managerial capabilities in tourism that make destinations perform better in terms of competitive advantage. The information provided by the benchmarking tool and the identification of the most relevant managerial capabilities provide policymakers with a tool for decision-making related to strengthening the position of a destination in the global economy.

### 5.1.2. Managerial implications

From a practical perspective, this study offers insights to DMOs and governments so that they can develop accurate strategies to improve the competitiveness of a destination.

Governments and DMOs must pay attention to the two dimensions of competitiveness, namely, comparative advantage and competitive advantage, in their assessment of the competitiveness of a tourist destination. Generally, DMOs use mostly the TTCI to evaluate the competitiveness of a destination without realising that the index, although useful, only reflects the comparative advantage dimension of competitiveness. Therefore, DMOs should employ the TTC index, its sub-indices, and its pillars to identify which resources (natural, cultural, infrastructure) and capabilities (tourism and enabling policies) require suitable investments so that they can be reinforced and improved, which can lead the destination to attain a stronger position in terms of comparative advantage with respect to its reference destinations.

Furthermore, DMOs and governments must complement the evaluation of the comparative advantage with the competitive advantage of a destination. Undoubtedly, certain destinations are more efficient than others when transforming comparative advantages into competitive advantages (Azzopardi & Nash, 2013; Ritchie & Crouch, 2003). Therefore, how efficient a destination is, becomes an important issue to be faced by policymakers to make managers aware of the strengths and weaknesses of a destination in terms of competitiveness. Efficiency analysis, such as that conducted in the present paper through DEA, provides DMOs with a benchmarking tool to understand how well a destination is behaved when allocating their resources to achieve better performance in terms of outputs (tourist arrivals, international receipts) and therefore to reinforce the sustainable development of a tourist destination. Efficiency analysis would help DMOs estimate potential sources of inefficiencies of tourism practices. This knowledge helps politicians and both public and private stakeholders to address the sources of such inefficiencies and consequently to enhance the promotion and development of a tourist destination and also to improve the quality of life and level of wealth of local communities (Andrades & Dimanche, 2017).

Destination Marketing Organisations must plan and develop tourism policies based on strategies and operating actions that create an

advantage over their competitors (Cracolici et al., 2008). However, DMOs have to be cautious as regards identifying which group of countries to compare with ("key competitors") in terms of competitiveness in order to identify proper strategic actions towards being competitive. This is relevant since destinations are at different stages of their life cycle and of their economic and social development and therefore the relative position of the least developed countries will be always much more unfavourable than that of developed countries (World Economic Forum, 2019). To address this concern, this paper has specifically used the HDI as criteria to identify two groups of countries for comparative purposes. However, DMOs might identify other accurate groups of reference countries regarding their comparative goals (Chen, Chen, Wu, Zheng, & Li, 2022; Gómez-Vega et al., 2021).

In order to improve tourism efficiency, the second stage of our analysis presents insights that should be carefully considered by DMOs. As revealed from the research findings, TTCI provides valuable information to DMOs and governments regarding the managerial capabilities of a destination to be competitive through the sub-indices (and their pillars), "Enabling Environment" and "Travel and Tourism Policy and Enabling Conditions", and this can explain tourism efficiency in some way. Through the destination ranking position in these sub-indices, DMOs can identify which managerial capabilities require more attention, thereby leading to a competitive travel and tourism industry at the national level. From our findings, it is revealed that the prioritisation of travel and tourism regulations exerts the most influence on the tourism efficiency in the two groups of destinations considered. Countries should therefore reinforce the tourism-related capabilities as shown by the "Travel and Tourism Policy" and "Enabling Conditions" to be more competitive with respect to their competitors. "Safety and Security" appears to be the most influential pillar from "Enabling Environment" on the tourism efficiency. "Safety and Security" should be reinforced through a suitable asset allocation to increase destination competitiveness, since it has been found to be the most influential indicator in the pillar "Enabling Environment". The identification of those environmental managerial capabilities of a destination, such as that of the pillar "Safe and Security", and those tourism-related managerial capabilities, such as that of "Prioritisation of Travel and Tourism" that exert more influence on tourism efficiency is also relevant for tourism business since this knowledge can help in the management of the businesses in consonance with the strengths and weaknesses of the destination in which they are immersed. Moreover, the other capabilities from the pillars of the sub-indices, "Travel and Tourism Policy and Enabling Conditions" and "Enabling Environment", should also be considered since they also offer potential opportunities to improve destination competitiveness. "International Openness" and "Price Competitiveness" foster international competition and hence attain lower prices and a better quality of services for international tourists, and therefore they encourage desire to travel. Destination Marketing Organisations should also pay attention to "Environmental Sustainability" actions due to the growing awareness and conscientiousness of tourists regarding environmental issues when choosing a destination (González-Rodríguez & Tussyadiah, 2022).

### 5.2. Limitations and future research avenues

The research, however, retains certain limitations that could lead to future lines of research. In order to obtain in-depth and comprehensive insights, the two-stage DEA model could be expanded to cover a longer period which would enable the analysis of the time evolution of the competitiveness at a country level and the analysis of whether and how factors, such as environmental sustainability and ICT infrastructure, change their influence on competitiveness over time. It would be particularly interesting to analyse competitiveness in a post-pandemic period in comparison to the pre-pandemic period, and to identify whether other resources or managerial capabilities, such as those of hygiene and the digital revolution, whose promotion in the tourism

industry has been accelerated by the pandemic, might exert the highest influence on destination competitiveness. Furthermore, other indicators apart from those provided by the TCI might be considered when addressing additional aspects of a sustainable competitive destination. Thus, further theoretical frameworks can be explored by employing other theories, such as the motivation protection theory and the new institutional theory (Aladag, Köseoglu, King, & Mehraliyev, 2020).

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### Credit authorship contribution statement

M. Rosario González-Rodríguez designed the study, conducted methodology, data analysis and results; wrote discussions and conclusions; contributed to write the manuscript overall; review & editing; project administration.

M. Carmen Díaz-Fernández wrote the introduction and literature section review as well as to contribute to the manuscript overall.

Noemí Pulido Pavón, was involved in data curation, methodology and data analysis, and wrote the results section as well as to contribute to the manuscript overall.

### Declaration of Competing Interest

None.

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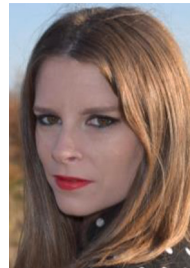
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