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World ranking of cruise homeports from a customer pricing perspective

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ABSTRACT

Cruise homeports play a key role for local economies. The aim of this study is to build a world ranking of cruise homeports considering the price paid by the consumer. Methodologically, a hedonic model is defined. 176,000 prices from 2019 departures have been collected and analyzed. Results reveal how each homeport, country and region is ranked. It is interesting to note that itineraries departing and ending at the same port are cheaper; and that the more days at sea the itinerary has, the cheaper it is. Results lead to both theoretical and practical implications for destination stakeholders and cruise companies.

1. Introduction

The cruise industry is one of the areas of tourism that has experienced higher growth in recent years. The number of passengers estimated in 2019 was around 30,000,000 having increased by around 68.5% in the last ten years (Cruise Lines International Association – CLIA, 2019). From an academic point of view, research based on the cruise industry has experienced a high growth in recent years, which could be due to the lack of studies of this industry and the relatively small size of this market, which allows researchers to obtain robust and reliable results, in spite of the difficulty in obtaining data. Papathanassis and Beckmann (2011), Wang, Wang, Zhen, and Qu (2016) and Papathanassis (2017) reviewed the articles published about cruising and identified the main emerging interests, which include, among others: big data and online data mining in order to identify emerging source market penetration; product service adaptation and customer profile and characteristics; smart ships and robotics in order to optimize operations planning, efficiency and turnover, and vertical integration in order to identify the cruise ship life cycle management; Corporate Social Responsibility; and co-development and cruise port alliances and development governance. Asia is one of the areas that is experiencing more growth, mainly China, which represents 4.9% of the market –Asia as a whole deploys 9.2% of the world's passengers– (Cruise Lines International Association – CLIA, 2019). However, the number of studies focused on Asia and China is scarce and is a potential future research area (Hung, Wang, Guillet, & Liu, 2019). However, the sector does not have public organizations nor integrated sources from which to obtain data to develop academic studies. In fact, the industry has a great worldwide private association, Cruise Line Association (CLIA), and the main cruise regions have their private association (the Florida-Caribbean Cruise Association in the Caribbean, MedCruise in the Mediterranean and CruiseBaltic in the North of Europe). These associations publish useful reports but no data is available as cruise companies are reluctant to make available their own data. Moreover, compared to airlines or accommodation services, it is even more difficult to collect data in the cruise industry. For example, it may be due to the cruise product complexity, which combines transport and accommodation services. In terms of prices, specifically, some are available through the internet but collection and management processes are time-consuming and difficult to analyze.

One of the main actors in the cruise industry are destinations, which are commonly classified into homeports and ports of call, although some of them act as both (Lekakou, Pallis, & Vaggelas, 2009). The impact of these ports on the local economy is clearly different depending on the type of the port: according to Cruise Lines International Association – CLIA (2019), passenger spending in homeports before boarding a cruise is $376 and passenger spending in port while visiting during a cruise is $101. Although there is competition to be homeport (Niavis & Vaggelas, 2016), not all ports are capable of being a homeport, and cruise companies select ports according to a wide range of requirements (Lekakou et al., 2009; Niavis & Vaggelas, 2016), such as port services to cruise ships, natural port characteristics, port services to passengers, port

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infrastructure, attractive tourism areas, tourism activities, port services costs, port management elements, provision of intermodal transportation, political conditions and the regulatory framework, city amenities or proximity to markets of cruise passengers.

Although each port applies its own fees, these are only a small part of the cost of a cruise (Cruise Market Watch, 2019), so the decisions of cruise companies are mainly affected by other reasons. Moreover, usually customers do not know the cost of the port fees as they pay for a package (some available prices indicate the specific cost of the port fees, but the authors have observed that, sometimes, these can be used as a marketing tool more than a precise information). In this sense, port fees are not commonly a sufficient reason to substitute one port for another, and the isolated impact of the port fees on the cruise company's decision may not be relevant. In this vein, price competitiveness of a port can be the result of the price of the itinerary rather than the fees that ports apply.

The aim of this study is to build a world ranking of cruise homeports from the point of view of the price paid by a consumer. The analysis is carried out in three geographical dimensions: homeport, the country where the homeport is located, and the CLIA region where the homeport belongs. Methodologically, this study is developed using the hedonic approach, widely applied in the tourism industry and recommended when analyzing packages (Dwyer & Forsyth, 2011) as is the case of a cruise. In fact, the use of this methodology has been widely used in tourism literature (Picazo & Moreno-Gil, 2018). To our knowledge, this is the first study in the cruise industry that provides a ranking of port destinations from the point of view of prices. First, this ranking can be very useful for destinations because, for example, they will be able to understand how cruise companies plan their itineraries and the reasons to choose ports. Consequently, stakeholders in these destinations will be more informed to suggest further changes in their port fees in order to attract more cruise companies. It may be useful for them, too, because they will have better information about destinations' singularity, which influences passengers' willingness to pay. Second, from the point of view of cruise companies, it is a useful tool to understand the global situation of the price market competitiveness, and not only about their own company. Thus, in turn, will facilitate their price decisions. Third, from the point of view of passengers, for example, it allows them to know more about the cheapest and the most expensive destinations according to different characteristics, so that they can make decisions with more transparency, especially when the main reason of taking a cruise is to enjoy the ship. In fact, up to now, cruise companies, destinations and passengers do not have similar information to facilitate their decisions.

The next section of the paper presents the framework of analysis. Then, there is a detailed explanation of the materials used –databases and sources– and the methodology undertaken. After this, results are presented and extensively discussed. Finally, conclusions and some managerial implications are made.

2. Framework of analysis

This framework focuses on the destination value, highlighting the usefulness of creating rankings. As indicated in the introduction, there is no precedent in studies about rankings based on this approach in the cruise industry. However, previous literature about rankings in other sectors of the tourism industry have been addressed to set up the framework of the current study.

The value of a destination in the tourism industry has been analyzed mainly from the point of view of the competitiveness of the destination. Once the results have been obtained, it could be useful to rank them to facilitate comparisons, although rankings are not very common in academic research and some academics elude them in spite of their utility (Dusansky & Vernon, 1998). The measurement of a ranking presumes the availability of simple data (e.g. ranking of cruise passengers) and the most advanced and sophisticated rankings include the construction of one or some composite indicators. Academic ranking studies should focus on the composition of indicators as it allows researchers to contribute new ideas, concepts and methodologies that can be useful for them and for managerial purposes. Mendola and Volo (2017), for example, propose a 15-step protocol for building composite indicators in tourism after reviewing ten previous studies. The main disadvantage and criticisms of rankings is how they have been calculated and that they only indicate the ordinal position but not the real differences between competitors. In this sense, it is suggested that the value of the measure apart from the ordinal position is indicated: the fewer the differences are, the more possible it is to change the position in the ranking. Information to create rankings is usually obtained from surveys or data sources from official statistics (Enright & Newton, 2004; Gómez-Vega & Picazo-Tadeo, 2019). Some private stakeholders collect their own data and create their own ranking, which they then usually sell. In academic literature, some authors have also gathered information to create their own rankings. For example, Falzon (2012) builds a ranking of the price competitiveness of Mediterranean countries from the brochure of a specific tour operator.

From an entrepreneurial point of view, one of the most common reports referring to Destination Value is "The Travel & Tourism Competitiveness Report" published by the World Economic Forum (WEF) (2017). This report analyses the competitiveness of tourism destinations (136 countries), ranks them, and is free of charge. It is divided into 14 pillars, which are composed of nearly 100 indicators. This index, in spite of its magnitude, has also been questioned and there is space to develop more precise and useful indicators (Gómez-Vega & Picazo-Tadeo, 2019; Mazanec & Ring, 2011; Pulido-Fernández & Rodríguez-Díaz, 2016; Wu, Lan, & Lee, 2012). From the point of view of prices, one of the pillars of the report is 'Price competitiveness', which includes ticket fees and airport charges, hotel price index, purchasing power parity and fuel price levels. None of these indicators is specifically developed for cruise activity, although some of them can also affect it, such as airport charges and hotel prices, among others.

From an academic point of view, there are some attempts to address tourism destination competitiveness rankings. Table 1 summarizes some of these attempts. First, it is important to consider that some of these rankings are focused on specific regions or countries, such as Africa (e.g. Oyewole, 2004), Asia (Huang & Peng, 2012; Zhang, Gu, Gu, & Zhang, 2011), among others, while others take a worldwide scope (e.g. Claveria & Poluzzi, 2017; Dwyer, Forsyth, & Rao, 2000). The decision on the geographical approach may be relevant for the purposes of these rankings and their impact. Second, some studies develop these ranking taking the information from secondary information sources, such as Eurostat (e.g. Assaf & Josiassen, 2012) or World Tourism Organization reports (e.g. Claveria & Poluzzi, 2017), while others choose to do so through primary information sources (e.g. surveys). On the one hand, secondary information sources may be suitable in cases where the information is difficult to access or collect but they require further analyses, interpretations and evaluations. On the other hand, primary information sources, in spite of the complexity of the process, may lead to more specific and first-hand information. Third, the data analysis process is quite diverse in terms of methods and steps followed. These may be implemented alone or combined and they include from simple descriptive statistics (e.g. Dwyer et al., 2000) to more complex models, such as data envelopment analyses (e.g. Abad & Kongmanwatana, 2015; Assaf & Josiassen, 2012) or reduction techniques (Cai, Shi, & Ding, 2013). Thus, the selection and design of this data analysis step may be crucial to meet the objectives of each ranking. Fourth, the destination elements that are ranked in different rankings are also quite diversified and it also depends on the objectives and contribution of each investigation.

It is obvious that, due to the complexity of the term 'competitiveness', there is a wide range of items and categories considered in destination rankings. In other words, this type of studies involves a complex process due to all the individual elements of tourism activity, their own pricing and mix marketing policies, the critical role that tour

Table 1
Main articles published about tourism destination competitiveness rankings.

Authors (year of publication)	Geographical focus	Information sources	Examples of indicators and categories ranked	Data analysis (method followed)	Period analysis	Price included
Dwyer et al. (2000)	Worldwide; Countries.	Secondary; different sources.	Products and services price data; travel and ground costs.	Descriptive analyses	From 1985–1997	Yes
Enright and Newton (2004)	Asia and Oceania; cities.	Primary; Survey.	Destinations attractions and business-related factors.	Importance performance analysis (IPA)	Year 2000	No
Oyewole (2004)	Africa; countries.	Secondary; different sources.	Purchasing power parities; price competitiveness. Global index and some classifications, such as food, beverage, etc.	Descriptive analysis	From 1985–2000	Yes
Azzoni and de Menezes (2009)	Worldwide; countries.	Secondary; different sources.	Ground costs; total costs to visit a country.	Country Product Dummy (CPD)	Year 2006	Yes
Zhang et al. (2011)	Yangtze Delta, China; cities.	Secondary; different sources.	Tourism Resources Endowment; Tourism Reception Capacity; Tourism Industrial Strength and Tourism Support Ability.	Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)	Years 2005–2006	No
Assaf and Josiassen (2012)	Worldwide; countries.	Secondary; different sources (e.g. WTO, Euromonitor and Eurostat).	8 main tourism performance drivers, including Tourism Price Levels (ticket prices, fuel price levels and hotel price index).	Data Envelopment Analysis (DEA) and bootstrap truncated regression models	2005–2008	Yes
Huang and Peng (2012)	Asia; countries.	Secondary data; different sources Primary data; interviews.	Availability of attractions and services, affordability ('Hotel price'), positive market image, peace and stability, cultural links.	Fuzzy Rasch model in TOPSIS	Year 2009	Yes
Croes and Kubickova (2013)	Central America; Countries.	Secondary data; different sources	Tourist arrivals; Tourism receipts/Gross Domestic Product (GDP); Human Development Index; Gross Domestic Product per capital; Population	Herfindahl–Hirschman Index (HHI) Specific models	1990–2009	No
Abad and Kongmanwatana (2015)	European Union; countries.	Secondary data; different sources (e.g. Eurostat)	Bed nights in hotels and similar establishments; Nights spent in campsites; Human resources; Hotels and similar establishment Campsites; Tourism attractions.	Data Envelopment Analysis (DEA); Super-efficiency DEA; Non-radial Nerlove–Luenberger super-efficiency DEA model	Year 2009	No
Claveria and Poluzzi (2017)	Worldwide; countries.	Secondary data, different sources (e.g. WTO Compendium of Tourism Statistics)	The annual percentage growth rates of the main tourism indicators (international overnight visitors, total expenditure, etc.).	Reduction techniques for categorical data	2000–2010	No

operators play in some destinations (Buhalis, 2000), among other issues. For the present research, it is important to highlight that not all of them consider price competitiveness (see examples in Table 1). In addition, the articles that use prices in these rankings do it from different perspectives. For example, Murphy and Pritchard (1997) include price-value perceptions considering the place of origin of tourists and the season of the visit; Dwyer et al. (2000) consider travel costs and ground costs; Oyewole (2004) only considers purchase power parity; or Azzoni and de Menezes (2009) analyzed cost competitiveness of international destinations and set a ranking considering ground costs, which exclude air tickets and the total cost of visiting each country, taking into account the characteristics of the travel package. In a more complex attempt to address price competitiveness, Dwyer and Forsyth (2011) indicate that the determinants of tourism price competitiveness are: inflation and overall price levels; exchange rates; labor prices; tax levels and structures; infrastructure charges; environmental charges; productivity performance of tourism industries; and the impact on exchange rates due to structural shifts, such as resources booms that increase exports. Thus, to estimate this price competitiveness Dwyer and Forsyth (2011) propose eight measures: Consumer Price Index (CPI); Price index of tourist purchases; sectoral price indicators; package tour prices; purchasing power parity (PPP); Comprehensive Destination Price Competitiveness Index; Tourism trade-weighted index (TTWI) and Aviation Trade-Weighted Index (ATWI).

From the point of view of the ports and the cruise industry, there are very few ranking attempts. For example, Cabral and de Sousa Ramos (2014) rank container terminals in Brazil by considering: number of containers handled, berth length, depth and units, tariffs, etc. Specifically, for cruise ports, Cai et al. (2013) rank four ports in China according to 28 indicators grouped in 4 categories about: the cruise port condition; the comprehensive ability of tourism services; the level of economic development and transportation and telecommunications. In sum, in spite of all these and other attempts to rank tourism destinations and ports, it is still a novelty to develop a ranking of homeports from a customer pricing perspective.

3. Materials and methods

3.1. Database

Two of the main strengths of this research are the database itself and the fact that the information provided within it is entirely up-to-date. Data availability –very often some prices do not exist, belong to private companies or it is necessary to pay for them– and the way that it is displayed are some of the main challenges when carrying out analysis and obtaining robust results that can be useful for academics and practitioners in empirical academic research (Papathanassis, 2017). Sun, Jiao, and Tian (2011) point out some of the main difficulties and challenges in studies about Revenue Management and Pricing in the cruise industry.

The process of collecting and managing data is displayed in Fig. 1 and the data used is specified in Table 2. First of all, the authors identified the information needed according to the aims of the study (step 1) and searched for and selected the sources of information (step 2). Then, the authors collected data using an automatic process that was implemented at the end of December 2018 (step 3). The prices collected include port fees but do not include airfare fees, as those depend on the departure airport. The number of prices collected was initially 175,788 prices. Then, the authors reviewed the quality of data and adapted or deleted some of them (step 4). For example, not all the registers were complete and some appeared to be incorrect or duplicated. This step is considered very important in order to develop robust and reliable analyses. After this process, the final database was composed of 116,464 prices. These prices correspond to 13,873 departures, which can be

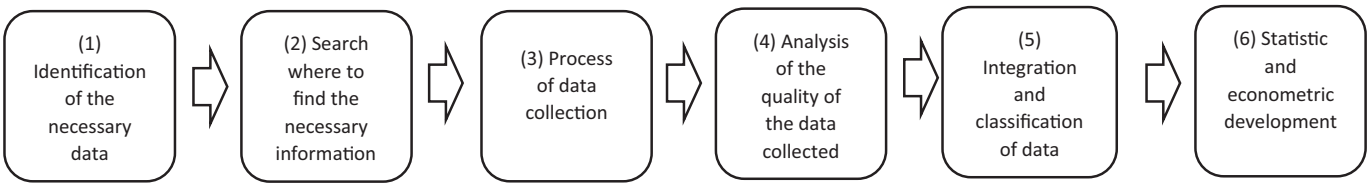


Fig. 1. Process of collecting and managing cruise data.

considered a high proportion of the market – there are no official departure statistics, but according to the departures identified on the webpage www.cruisetimetables.com the number of departures in 2019 is thought to have been 14,345. To our knowledge, this database can be considered one of the most important used in cruise research. Karlis and Polemis (2018) built and used a database of 259 Mediterranean itineraries from 2017 and Espinet (2018) built and used a database from 2018 of 6487 prices obtained from one of the major OTAs with the aim of comparing the cruise companies' strategies in Barcelona and some ports in Asia. In the fifth step, the authors integrated the information from the different sources and classified some of them (Fig. 1) in order to prepare data to develop the statistical and econometric analyses (step 6, further explained in the methodology section).

3.2. Methodology

This study is carried out using two methodologies, the first is the calculation of the average price paid per night by customers (not included in the price of the brochure), which is done using descriptive statistics. The second methodology, which is the basis of this research, is the hedonic approach that predicts the market price for a given set of unobserved characteristics. It is the methodology recommended when analyzing the price of packages such as in the case of the cruise product as they are not standardized products (Dwyer & Forsyth, 2011; Papatheodorou, Lei, & Apostolakis, 2012) and to produce price indexes (Erickson & Pakes, 2011) that facilitate building rankings. In fact, the hedonic approach is widely used and accepted in academic tourist literature. This methodology gives a moderate accuracy-reflectiveness of tourism, involves a large amount of data, facilitates cross-country comparisons at the moment and over time (Dwyer & Forsyth, 2011) and is considered a valid alternative method of examining demand patterns as reflexes the revealed preferences of consumers and has the ability to incorporate both demand and supply- side market characteristics (Papatheodorou et al., 2012). Papatheodorou (2002) and Mangion, Durbarry, and Sinclair (2005) used this methodology to estimate the competitiveness of Mediterranean resorts, and Baldassin, Gallo, and Mattevi (2017) used it to analyze price competitiveness of hotels in towns of artistic interest obtaining adjusted R square over 0.99. Vives, Jacob, and Payeras (2018) include 'hedonic pricing' in the hotel differentiation in the pricing optimization process that they suggest. The HPA has also been used to quantify the effects of different origins in other activities such as the steel market (Cerasa & Buscaglia, 2019) or the identification of the value of each artist in the art market (Fedderke & Li, 2020).

The HPA allows researchers to identify the marginal effect of a change of each indicator used (Rosen, 1974) when differentiated products are sold in perfectly competitive markets. This assumption is not as restrictive as it seems, as shown by Rigall-I-Torrent and Fluvià (Rigall-i-Torrent & Fluvià, 2007; Rigall-I-Torrent & Fluvià, 2011), then the equilibrium price schedule is the result of interacting consumers or tourists and firms, such as cruise companies. Hence, as noticed by Rigall-I-Torrent and Fluvià (2011), the marginal price of a characteristic is equal to both the average marginal willingness to pay of tourists for an additional unit of characteristic embedded in the tourism product, such as cruise packages, in this study, and to the amount of money for which firms, such as cruise companies, are willing to embed the characteristic in the final product –marginal cost–. Therefore, as shown by Rigall-I-Torrent and Fluvià (2011), it is possible to recover from the hedonic price function, information about the marginal value consumers place on a cruise characteristics and the marginal cost faced by cruise companies including different characteristics in their product. This information can be used to create rankings (Rigall-I-Torrent et al., 2011; Rigall-I-Torrent & Fluvià, 2011).

In the cruise industry, several authors have developed and worked on this methodology (; Espinet, 2018; Niavis & Tsiotas, 2018). In fact, Biehn (2006, p.138) points out: "The cruise product can contain several attributes including the ship, destination, cabin category, deck, fare class, number of guests, trip extensions, shore excursions". As a result of these considerations, formally, the cruise product can be defined as a vector of characteristics or attributes,

$$\boldsymbol{C}_i = (c_{i1}, \ldots, c_{im}) \tag{1}$$

where $i = 1, \ldots, n$ represents the ship and c_{im} the value of each of its m characteristics. All these have an impact on prices so that the hedonic price function (equilibrium price schedule) for each cruise is represented as:

$$\boldsymbol{P}_i = f(c_{i1}, \ldots, c_{im}) \tag{2}$$

where the functional form of P is assumed to be constant in time and across ships, though the weight or contribution of each attribute may change (Espinet, M[a], & M., Coenders, G., and Fluvià, M., 2003).

The functional form of (2) is assumed to be semi-logarithmic:

$$lnP_i = f\left(c_{i1}, \ldots, c_{im,}\, \beta_{n,}\, \varepsilon_i\right) \tag{3}$$

where P is the price, c_m are each of the m attributes of the cruise, β_n are the parameters to be estimated and ε_i is the error term of the regression.

As noticed by several authors (see, for instance, Espinet et al., 2003; Haroutunian, Mitsis, & Pashardes, 2005; Rigall-i-Torrent & Fluvià, 2007, Rigall-I-Torrent & Fluvià, 2011; Thrane, 2005), several alternative specifications are possible. However, since most of the variables are dichotomic, the number of alternative and easily interpretable specifications is limited. Therefore, we adopt the parsimonious semi-logarithmic regression specification used in the vast majority of existing hedonic studies. The random error term is independent and identically (normally) distributed (i.i.d.), with zero mean and constant variance. Estimation is performed by OLS. Using robust standard errors clustered by different variables (Liang & Zeger, 1986; Rigall-I-Torrent & Fluvià, 2011; Wooldridge, 2003) does not change the results.

The final variables included in the econometric model are displayed in Table 3. The dependent variable is the final price paid by cruise passengers, including port fees, which can change at any time according to the present common cruise pricing strategies and present high correlation between ports (Castillo-Manzano, Fageda, & Gonzalez-Laxe, 2014). It never includes airfare fees, as they depend on the departure airport. The independent variables were selected from Espinet Rius, Fluvià-Font, Rigall-Torrent, and Oliveras-Corominas (2018), Espinet (2018), and Niavis and Tsiotas (2018) and some were indicated by Niavis and Tsiotas (2018) and others are new for this research. The independent variables are the following: type of price, whether the itinerary begins and finishes in the same port and destination, the number of nights, the number of days at sea, capacity, type of cabin, month, ship

Table 2
Sources of information.

(1) Identification of the necessary data	(2) Search of data sources	(5) Data Integration and classification
Cruise company	There is not an official database of cruise companies and the authors identified them from the websites of: CLIA, Cruise timetables and some Online Travel Agencies (OTA).	The cruise company was included in the model as a dummy variable without any previous treatment or modification.
Itinerary information	The authors selected one of the most important American Online Travel Agencies (OTA) and then chose all departures around the world that this OTA provided in 2019. All the prices included port fees, never included air transport, and were in US Dollars. This webpage includes 87.4% of passengers of cruise companies according to the statistics of www.cruisemarketwatch.com (the most important cruise companies excluded are 'AIDA', 'P&O Australia' and 'TUI', which have focused their respective strategy on some markets –Germany, Australia and England, respectively–).	
- Code of identification		Each itinerary has a code of identification
- Date of departure		The date of departure was grouped by months in order to simplify the study and make it more understandable.
- Number of nights		The number of nights is included in the analysis as a numerical variable.
- Port of departure - Port of disembarkation		The geographical analysis –the aim of this study– is carried out according to three dimensions: - The port of departure - The country where the port belongs - The geographic region according to Cruise Lines International Association – CLIA (2019) classification and divided the group 'All Other' into other areas. The areas defined are: Africa; Alaska; Asia without China; Australia/New Zealand/ Pacific; Canada/New England; Caribbean; China; Hawaii/West USA; Mediterranean; Mexico/ Central America; North of Europe; South America and United Arab Emirates. In order to set the ranking of ports and countries, the authors selected those with minimum 50 departures in 2019 and the rest were included as 'Others'.
		The authors also created two new variables: - If the port of departure is the same that the port of disembarkation, in order to identify circular itineraries and its impact. - The number of days of the itinerary that spend at sea.
- Type of cabin		The five types of cabins are: the cheapest available, inside, ocean view, balcony and suite.
- Price of brochure		It is a numerical value, in USD dollars.
- Final price that the customer has to pay		It is a numerical value, in USD dollars.
Ship Information	It was directly obtained from the websites of the cruise companies, except a rating that was obtained from the OTA where the authors collected the prices in order to have a homogeneous indicator. The authors compared the rating of the OTA with the rating in other sources and there were high correlations.	
- Name		Textual identification of the ship not included in the model.
- Capacity		It is grouped into: up to 500 passengers; from 501 to 1000 passengers; from 1001 to 2000 passengers and more than 2000 passengers.
- Antiquity		It is grouped into: up to 5 years; from 6 to 10 years; from 11 to 15 years and more than 15 years.
- Rating (stars)		The possible values are: 3.0; 3.5; 4.0; 4.5; 5.0; 5.5; 6.0 and is a discrete variable.

rating, antiquity of the ship, cruise company and geographical area (CLIA region, country or port).

Three types of models per homeport, country and CLIA region were developed according to the variables indicated in Table 3: the first including all the variables, the second excluding the ship rating and the third excluding the cruise company. There are hardly any differences between the three models. The nine specifications developed resulted in an adjusted R^2 between 0.790 and 0.841. Consequently, the most complete model is the one displayed and analyzed. When developing the same model per quarter and CLIA region, the adjusted R^2 tends to be higher. In fact, the model using all the variables of Table 3 classifying per CLIA region has obtained an adjusted R^2 of 0.825 but if the model is carried out separately by quarter it obtains an adjusted R^2 between 0.834 (the first quarter) and 0.856 (the second quarter).

4. Results and discussion

This section presents the results obtained from the empirical research undertaken and discusses them extensively. The study is carried out separately per CLIA region, country of the port of departure and the port of embarkation. Moreover, due to the seasonality of some destinations, an analysis per CLIA region and quarters is undertaken. The specific results of each of the variables included in the model are located in the appendix, and only tables of rankings are displayed in the body of the article. Although it is not the aim of this article to delve into each of the indexes obtained from the econometric analysis, it is interesting to explain two new coefficients not available in previous research. On the one hand, when the itinerary begins and finishes in the same port, the price paid by a customer is cheaper (3.2%). From the database created, 59% of the itineraries are for up to 7 nights, 82% of which begin and finish in the same port and 99% begin and finish in the same CLIA region. Itineraries for up to 14 nights represent 88% of the itineraries, 78% of which begin and finish in the same port and 96% begin and finish in the same CLIA region. In fact, the distance from the previous port to the next port is one of the criteria defining the length of stay in a port (Chen & Nijkamp, 2018). These results about circular itineraries have several implications. First, cruise companies are able to provide cheaper itineraries, being more competitive by facilitating logistics in ports and obtaining more profits (Rodrigue & Notteboom, 2013). Second, cruisers pay less for an itinerary and it facilitates tourism from the same area as they begin and finish in the same port. If cruisers come from abroad, it is usually cheaper for them to obtain a return flight. Third, homeports have more transit, some of which can act as "locomotive ports" and are "must-see ports" (Esteve-Perez and Garcia-Sanchez, 2017b) when they are also a port of call, which has an important economic impact on the local economy (Chen & Nijkamp, 2018). Fourth, the whole region surrounding the homeport benefits from this itinerary (Karlis & Polemis, 2018; Pallis, Rodrigue, & Notteboom, 2014), reason why the cooperation is very useful.

On the other hand, it is relevant to address the composition of days in port and at sea in the itinerary, which is a decision of the cruise company, and that is constrained by distance – on average ships move 20

Table 3
Variables included in the estimated regressions.

Variable		Mean	Standard deviation	Clia Region of the port	Mean	Standard deviation	Port of departure	Mean	Standard deviation
LnPrice	Ln of the price	7.61	0.97	Africa	0.01	0.08	Amsterdam, Holland	0.01	0.10
Type of price	Price of the Brochure	0.49	0.50	Alaska	0.05	0.21	Anchorage (Seward), AK	0.01	0.07
	Price effectively paid by customers*	0.51	0.50	Asia Without China	0.04	0.20	Athens (Piraeus), Greece	0.01	0.11
Port of departure = port of arrival		0.75	0.43	Australia/NZ/ Pacific	0.03	0.17	Auckland, New Zealand	0.00	0.06
Nights	Number of nights	9.55	8.37	Canada/New England	0.01	0.11	Baltimore, MD	0.01	0.09
Days at sea	Number of the days of the itinerary At Sea	2.55	4.35	Caribbean*	0.32	0.47	Barbados	0.01	0.10
Capacity	Up to 500 passengers*	0.10	0.30	China	0.01	0.10	Barcelona, Spain	0.04	0.20
	From 501 to 1000 passengers	0.11	0.31	Hawaii/West USA	0.05	0.21	Bari, Italy	0.01	0.09
	From 1001 to 2000 passengers	0.09	0.28	Mediterranean	0.24	0.43	Bayonne, NJ	0.01	0.08
	More than 2000 passengers	0.70	0.46	Mexico/Central America	0.04	0.19	Bergen, Norway	0.04	0.19
Type of cabin	Cheapest	0.24	0.42	North of Europe	0.15	0.36	Berlin (Warnemunde), Germany	0.01	0.07
	Inside	0.18	0.38	South America	0.04	0.20	Boston, MA	0.01	0.08
	Oceanview*	0.19	0.39	United Arab Emirates	0.01	0.12	Buenos Aires, Argentina	0.01	0.08
	Balcony	0.20	0.40				Cartagena, Colombia	0.00	0.06
	Suite	0.20	0.40				Charleston, SC	0.01	0.08
Month	January	0.06	0.24	**Country of the port**	**Mean**	**Std. Dev.**	Colon, Panama	0.00	0.07
	February	0.07	0.25	Alaska	0.01	0.09	Copenhagen, Denmark	0.01	0.12
	March	0.08	0.28	Argentina	0.01	0.10	Dubai, United Arab Emirates	0.01	0.10
	April	0.08	0.27	Australia	0.02	0.14	Fort Lauderdale, FL	0.06	0.24
	May	0.09	0.28	Barbados	0.01	0.10	Fort-de-France, Martinique	0.00	0.06
	June	0.10	0.30	Brazil	0.01	0.08	Galveston, TX	0.02	0.15
	July*	0.09	0.29	Canada	0.03	0.16	Genoa, Italy	0.02	0.14
	August	0.10	0.30	Chile	0.00	0.06	Guadeloupe	0.01	0.07
	September	0.09	0.29	China	0.01	0.10	Hamburg, Germany	0.00	0.06
	October	0.09	0.28	Colombia	0.00	0.06	Hong Kong	0.00	0.07
	November	0.08	0.27	Denmark	0.01	0.12	Honolulu, Oahu, HI	0.01	0.10
	December	0.08	0.27	Ecuador	0.02	0.15	Jacksonville, FL	0.01	0.08
Ship rating	3.0 stars*	0.08	0.26	England	0.04	0.19	Kiel, Germany	0.00	0.06
	3.5 stars	0.11	0.31	France	0.03	0.17	Kirkenes, Norway	0.02	0.13
	4.0 stars	0.22	0.41	Germany	0.01	0.11	Lisbon, Portugal	0.00	0.07
	4.5 stars	0.27	0.44	Greece	0.01	0.11	London (Southampton), England	0.03	0.17
	5.0 stars	0.21	0.41	Guadeloupe Islands	0.01	0.07	London (Tilbury), England	0.00	0.06
	5.5 stars	0.08	0.28	Holland	0.01	0.11	Los Angeles (Long Beach), CA	0.02	0.15
	6.0 stars	0.04	0.19	Hong Kong	0.00	0.07	Los Angeles (San Pedro), CA	0.01	0.09
Antiquity of the ship	Up to 5 years*	0.43	0.49	Italy	0.13	0.34	Marseille, France	0.02	0.15
	From 6 to 10 years	0.16	0.37	Japan	0.01	0.11	Miami, FL*	0.08	0.28
	From 11 to 15 years	0.11	0.32	Malta	0.01	0.08	Mobile, AL	0.01	0.08
	More than 15 years	0.30	0.46	Martinique	0.00	0.06	Naples, Italy	0.01	0.08
Cruise companies	Azamara Club Cruises	0.01	0.09	Mexico	0.00	0.06	New Orleans, LA	0.01	0.11
	Blount Small Ship Adventures	0.00	0.03	New Zealand	0.00	0.06	New York (Brooklyn), NY	0.01	0.07
	Carnival	0.14	0.35	Norway	0.06	0.24	New York (Manhattan), NY	0.01	0.10
	Celebrity	0.05	0.22	Other	0.03	0.17	Other	0.11	0.32
	Costa Cruises	0.09	0.29	Panama	0.01	0.07	Palermo, Sicily, Italy	0.01	0.07
	Cruise & Maritime Voyages	0.01	0.11	Portugal	0.00	0.07	Palma de Mallorca, Spain	0.01	0.08
	Crystal	0.01	0.08	Puerto Rico	0.02	0.12	Papeete, Tahiti, Society Islands	0.01	0.08
	Cunard	0.02	0.14	Singapore	0.02	0.12	Port Canaveral, FL	0.04	0.20
	Disney	0.01	0.10	South Africa	0.00	0.06	Quito, Ecuador	0.02	0.14
	Holland America	0.06	0.24	Spain	0.06	0.23	Rome (Civitavecchia), Italy	0.04	0.19
	Hurtigruten	0.06	0.24	St. Maarten	0.00	0.06	San Diego, CA	0.01	0.07
	MSC Cruises	0.14	0.34	Sweden	0.00	0.07	San Francisco, CA	0.00	0.07
	Norwegian	0.06	0.25	Tahiti	0.01	0.08	San Juan, Puerto Rico	0.02	0.12

(*continued on next page*)

Table 3 (*continued*)

Variable		Mean	Standard deviation	Clia Region of the port	Mean	Standard deviation	Port of departure	Mean	Standard deviation
	Oceania Cruises	0.01	0.12	United Arab Emirates	0.01	0.12	Savona, Italy	0.01	0.11
	P&O Cruises	0.02	0.15	United States*	0.37	0.48	Seattle, WA	0.02	0.13
	Paul Gauguin Cruises	0.00	0.05				Shanghai, China	0.01	0.08
	Ponant	0.01	0.11				Singapore	0.02	0.12
	Princess	0.07	0.25				St. Maarten	0.00	0.06
	Pullmantur	0.02	0.14				Stockholm, Sweden	0.00	0.07
	Quark Expeditions	0.00	0.05				Sydney, Australia	0.01	0.11
	Regent	0.01	0.09				Tampa, FL	0.02	0.13
	Royal Caribbean*	0.11	0.32				Tokyo (Yokohama), Japan	0.01	0.09
	SeaDream Yacht Club	0.00	0.06				Ushuaia, Argentina	0.00	0.06
	Seabourn	0.01	0.12				Valletta, Malta	0.01	0.08
	Silversea	0.01	0.12				Vancouver, BC, Canada	0.02	0.15
	Star Clippers	0.01	0.10				Venice, Italy	0.03	0.17
	Viking Cruises	0.01	0.10						
	Voyages to Antiquity	0.00	0.06						
	Windstar	0.02	0.13						

All the fields are 'dummy variables' (values 0 or 1), except: lnprice, nights and days at sea.

* Category of reference.

knots per hour (around 37 Km/hour). The results obtained state that, the more time at sea the cheaper the itinerary (around 3.3% and 5.0%, depending on the model) as also pointed out by Wang, Wang, Zhen, and Qu (2017). In fact, there are several factors taken into account when deciding an itinerary such as the distance between ports, accessibility, port fees and preferences of the cruise companies (Castillo-Manzano et al., 2014; Niavis & Tsiotas, 2018) and the fuel cost (Wang et al., 2017). These results about the impact of the number of days at sea have several implications. First, cruise companies can engage customers by setting a more reduced price and informing them of the benefits of enjoying the days at sea on their ship. This allows cruise companies to earn money from the expenditure made onboard during the days at sea. Second, cruise passengers get a better price, but for an itinerary where there are more days at sea and may be it is not adapted to their needs. Third, ports and the region do not benefit from these measures.

Returning to the aim of this research, it is interesting to note that the indexes obtained – and the consequent rankings – reflect an adjusted price in each area (port, country and region), which is obtained after discounting the impact of the variables included in Table 3. In other words, this study reveals the index and ranking of each destination from the point of view of the adjusted prices – regardless of the characteristics of the ships and itineraries that embark in that port - provided by suppliers, which have been set according to cost – which includes exchange rate movements - and demand patterns.

The higher the position in the ranking, the more price competitive the destination is, which usually attracts customers, so it is the position many desire. Conversely, the lower the position in the ranking, the less price competitive the destination is, which can be due to the higher costs of the destination or the value of the differentiation and exclusivity (for example, expedition cruises through Patagonia). In fact, according to Niavis and Tsiotas (2018), the weight of the price of an itinerary – apart from the port fees – is 53.1% tourism attributes, 42.2% cruise companies' decisions and only 4.7% correspond to transport attributes (from these, 0.93% correspond to sailing speed and 3.75% to itinerary closeness). Destinations should analyze qualitatively the results presented and take decisions according to their position in the ranking and their competitors. Because the index values and ranking positions are the result of several attributes (see Table 3), the decisions made by destinations to change their position will sometimes be complex.

Another important consideration is how to use the index value and the ranking. Index value is a number based on 100 but ranking is a consecutive ordinal position. Due to the reduced differences between indexes in some cases, some rankings could change relatively easily in the near future. Destinations should pay attention to both values: index and ranking. Indexes and ranking reflect not only the strategy but also the dynamics of the market. So, in spite of the changes in destination strategies, the impact on the index may be disguised as it also depends on other changes in the whole market.

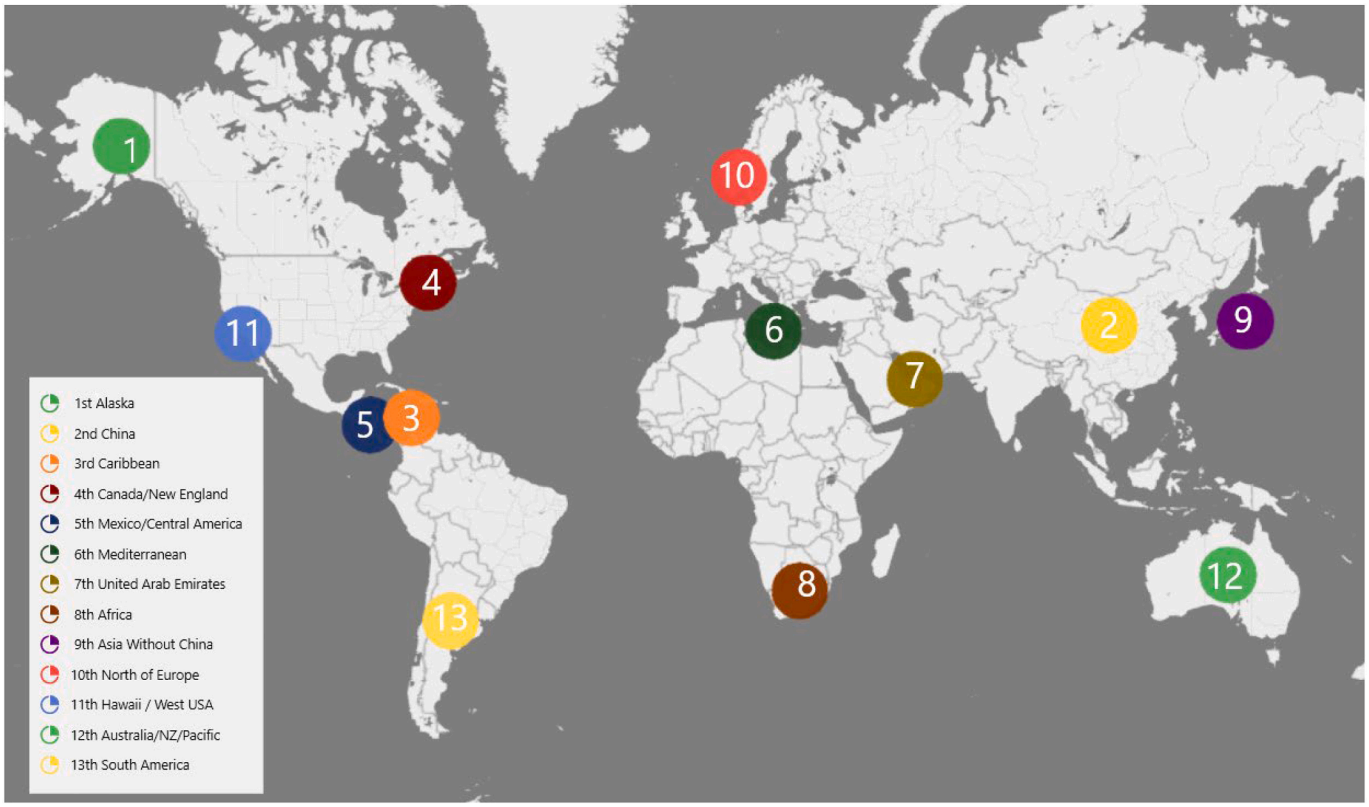
4.1. Analysis per CLIA Region

The average price per night ranges from 161.14 in the United Arab Emirates to 722.54 in South America. Rankings and index values are classified by CLIA area – per the entire year and per quarters – and are displayed in Table 4. Overall, Alaska, China and the Caribbean occupy the top positions of the cheapest areas. South America, Australia/New Zealand/Pacific and Hawaii/West USA are the most expensive areas (see Map 1). Changes are more likely to occur, for example, between Hawaii/West USA and North of Europe – with a difference of 0.24 points-, or the United Arab Emirates and the Mediterranean – with a difference of 1.41 points. However, other destinations, such as South America will probably maintain their position over time. It is interesting to note that the three most important destinations according to Cruise Lines International Association – CLIA (2019), the Caribbean (34.4%), the Mediterranean (17.3%) and Northern Europe (11.1%) have different positions in the ranking. A priori, the more passengers the destination receives, the cheaper it is, but not as a rule: some of the less crowded destinations such as Alaska (4.7%) and China (4.9%) are the cheapest.

The analysis per quarter reveals some interesting insights. First of all, and unlike other tourist activities, cruise companies have reduced seasonality as ships move to destinations according to potential demand and profits. In fact, from the 13,873 departures of the sample, 24% belong to the first quarter, 26% to the second, 27% to the third quarter and 23% to the fourth. Moreover, the average price per night changes relatively slowly – between 229.0 in the 4th quarter to 267.2 in the 3rd quarter (16.6% of difference). However, cruise traffic in some ports is seasonal mainly due to weather conditions (Esteve-Pérez and Esteve-Perez & García-Sanchez, 2017). For example, 98% of the itineraries in Alaska are in the second and the third quarters; 94% of the itineraries in the United Arab Emirates are in the first and the fourth quarters. Furthermore, considering the hemisphere, 78% of the itineraries in Africa, Australia, New Zealand and the Pacific are in the first and the fourth quarters. On the contrary, some destinations have a more stable demand per quarter (for example, the Caribbean, Mexico/Central America, Hawaii/West USA or China). Esteve-Pérez and Esteve-Perez and García-Sanchez (2017) indicate that there are two types of seasonality associated with cruise activity. On the one hand, the ports with only one peak season from May to October and on the other hand, those with

Table 4
Ranking and index by CLIA Region.

	The entire year				First quarter			Second quarter			Third quarter			Fourth quarter		
CLIA region	Average of nights	Average price paid per night	Index hedonic value	Ranking of index hedonic value	Clia zone	Index hedonic value	Ranking of index hedonic value	Clia zone	Index hedonic value	Ranking of index hedonic value	Clia zone	Index hedonic value	Ranking of index hedonic value	Clia zone	Index hedonic value	Ranking of index hedonic value
Alaska	8.8	243.17	92.29	1	Mediterranean	80.83	1	China	94.98	1	Mexico/Central America	96.88	1	Alaska	76.96	1
China	7.9	185.62	98.11	2	Africa	86.52	2	Canada/New England	96.92	2	China	97.36	2	North of Europe	96.59	2
Caribbean (Index 100)	8.2	179.10	100.00	3	United Arab Emirates	94.36	3	Caribbean (Index 100)	100.00	3	Caribbean (Index 100)	100.00	3	United Arab Emirates	99.76	3
Canada/New England	10.4	252.55	103.94	4	North of Europe	97.17	4	Alaska	100.76	4	Alaska	104.27	4	Caribbean (Index 100)	100.00	4
Mexico/Central America	7.4	167.98	105.73	5	Caribbean (Index 100)	100.00	5	Mexico/Central America	101.45	5	Asia Without China	113.52	5	China	105.44	5
Mediterranean	9.4	230.80	108.34	6	China	100.77	6	Africa	105.88	6	Canada/New England	126.66	6	Mediterranean	107.56	6
United Arab Emirates	12.0	161.14	109.75	7	Asia Without China	109.95	7	Asia Without China	109.82	7	Mediterranean	128.67	7	Canada/New England	108.83	7
Africa	16.3	283.85	114.03	8	Hawaii/West USA	110.01	8	Australia/NZ/ Pacific	111.51	8	Australia/NZ/ Pacific	131.21	8	Australia/NZ/ Pacific	111.50	8
Asia Without China	13.7	247.46	116.77	9	Mexico/Central America	114.12	9	Mediterranean	115.04	9	Hawaii/West USA	137.26	9	Mexico/Central America	113.07	9
North of Europe	11.2	338.83	119.84	10	Canada/New England	115.68	10	Hawaii/West USA	118.15	10	North of Europe	138.73	10	Hawaii/West USA	119.84	10
Hawaii/West USA	10.1	191.04	120.08	11	Australia/NZ/ Pacific	126.86	11	United Arab Emirates	124.78	11	South America	225.87	11	Asia Without China	120.46	11
Australia/NZ/ Pacific	16.2	324.27	129.55	12	South America	149.91	12	North of Europe	125.86	12				Africa	151.26	12
South America	12.7	722.54	176.01	13				South America	212.41	13				South America	166.55	13



Map 1. Ranking by CLIA Region, ordered from the cheapest (1) to the most expensive (13).

more than one peak as they are closest to the Strait of Gibraltar and represent a shorter sailing distance to destinations in Northern Europe.

In the first quarter, the three most price competitive destinations are the Mediterranean, Africa and the United Arab Emirates, respectively. European destinations may be more price competitive in this quarter because few itineraries depart from there due to the weather conditions (18.1% of departures in this quarter correspond to these areas, while considering the entire year they represent 40% of departures), so they need to be more price competitive. For cruises departing from Africa and the United Arab Emirates, located in the southern hemisphere, it is one of the best quarters, so allowing them to try to be more price competitive to attract cruise companies if they are not sufficiently differentiated. South America, Australia/New Zealand/Pacific and Canada/New England are the most expensive areas. The two first areas are located in the southern hemisphere, so it is the best time to visit these areas (almost 50% of departures of these areas take place in this quarter). Thus, these areas are more differentiated and valued by consumers during this quarter. The main changes in the first quarter ranking could take place between China and the Caribbean and between Hawaii/West USA and Asia without China.

In the second quarter, China, Canada/New England and the Caribbean are the most price competitive destinations. South America, Northern Europe and the United Arab Emirates are the most expensive areas. Again, demand patterns are key in the position of the ranking. Some changes in ranking could take place relatively easily between Mexico/Central America Alaska and the Caribbean or between Northern Europe and the United Arab Emirates.

In the third quarter, Mexico/Central America, China and the Caribbean are the most price competitive destinations. South America, Northern Europe and Hawaii/West USA are the most expensive areas. Some changes in ranking could take place relatively easily: China versus Mexico/Central America; Asia without China versus Alaska, and Northern Europe versus Hawaii/West USA.

In the fourth quarter, Alaska, Northern Europe and the United Arab Emirates are the most price competitive destinations. South America, Africa and Asia without China are the most expensive areas. Some changes in ranking could take place relatively easily: the Caribbean versus the United Arab Emirates; Canada/New England versus the Mediterranean and Asia without China versus Hawaii/West USA.

In summary, the analysis per quarter reveals different strategies. Some destinations hardly move in the ranking (South America, the Caribbean, Hawaii/West USA, Alaska and Australia/NZ/Pacific) applying a homogeneous strategy during the year. Asian destinations vary their position relatively little (around 5–6 places) in the ranking. The rest of the destinations have significant changes in the ranking. Commonly – but not always, the higher the demand, the higher the prices, and vice versa.

4.2. Analysis per country

The average price per night effectively paid ranges from $116.16 in Colombia to $896.53 in Ecuador. Ranking and index values classified by country are displayed in Table 5. Mexico, South Africa, Alaska, Puerto Rico and Canada are the cheapest countries. Ecuador, Colombia, Argentina, Chile and Tahiti are the most expensive countries (see Map 2). The case of Colombia is a clear example of the differences between the average price and the adjusted price. In fact, Colombia has the cheapest price per night, but the companies and ship/s that depart from there are low quality, so that, finally, the result is that Colombia is one of the most expensive countries as a homeport. From the 36 countries, twelve could easily improve their position, as in the cases of Canada, Hong Kong, Holland, Italy and Panama.

Apart from the interest in the position that each country occupies and its average price per night, results of the analysis per country of departure allow researchers to identify interesting situations, some of which will be explained when doing the analysis by port. In the case of the Caribbean, some ports are among the cheapest – Puerto Rico – and others are among the most expensive – Colombia and Martinique -,

Table 5
Ranking and index by country.

Country	Average of nights	Average price paid per night	Index hedonic value	Ranking of index hedonic value
Mexico	8.6	207.36	85.65	1
South Africa	16.7	237.77	88.10	2
Alaska	8.2	287.23	88.52	3
Puerto Rico	8.3	209.65	92.26	4
Canada	10.2	258.91	92.28	5
Norway	7.8	436.60	96.97	6
China	7.9	185.62	98.35	7
United States of America	8.1	174.65	100.00	8
St. Maarten	10.6	308.81	103.21	9
Singapore	14.7	207.33	105.56	10
Portugal	12.7	375.62	108.57	11
France	8.5	184.90	108.89	12
Spain	9.4	213.88	109.40	13
England	16.2	246.90	113.23	14
United Arab Emirates	12.0	161.14	113.64	15
Italy	9.3	213.14	113.85	16
Guadeloupe Islands	10.3	128.97	114.18	17
Hong Kong	16.3	272.46	114.22	18
Malta	11.4	268.51	115.99	19
Sweden	11.1	403.60	117.81	20
Barbados	10.3	230.27	118.77	21
Martinique	11.1	168.65	120.07	22
Australia	17.3	252.02	124.56	23
Greece	10.6	471.56	124.98	24
New Zealand	20.2	309.28	125.65	25
Panama	7.6	171.90	125.89	26
Japan	12.3	264.23	127.26	27
Germany	11.4	193.46	131.62	28
Holland	15.6	215.43	131.79	29
Denmark	11.6	284.69	133.41	30
Brazil	11.1	236.93	147.04	31
Tahiti	10.4	560.79	148.57	32
Chile	18.3	556.74	153.16	33
Argentina	15.0	700.73	173.12	34
Colombia	7.0	116.16	185.24	35
Ecuador	11.3	896.53	275.21	36

Notes: a) Not all destinations have been assigned to their country due to the distance and specific characteristics of the area. This is the case of: Alaska, Guadeloupe Islands, Martinique, Puerto Rico, St. Maarten and Tahiti.
b) In some cases, the same country is assigned to different CLIA region. Is the case of United States whose ports are located in The Caribbean, Canada/New England, Hawaii/West USA, or France, that has ports in the Mediterranean and Northern Europe.

revealing different strategies in the same area that can be due to the different destinations in the same area (Rodrigue & Notteboom, 2013). In the case of the Mediterranean, all the countries are located in mid-price, between the position 11 – Portugal – and 24 – Greece, revealing a homogeneous strategy. Northern Europe has countries in all positions: Norway has a relatively price competitive position (6th), meanwhile Germany, Holland and Denmark are among the most expensive (28th, 29th 30th respectively). These differences are due to the typology of cruise companies that depart from those ports. In the case of Asia, China is the cheapest – 6th place – and the other three countries are located in the mid position – between position 9 - Singapore and 26 – Japan. In the case of Mexico/Central America, the two countries specifically analyzed occupy the first position – Mexico – and Panama the 26th due to their different destinations in the same area. The countries that go through South America are the most expensive, between the 31th position (Brazil) and 36th (Ecuador).

4.3. Analysis per port of departure

Finally, the study is carried out from the point of view of the ports of departure (see Table 6). The average price per night paid ranges from $116.16 in Mobile AL to $1281.19 in Ushuaia. When estimating the adjusted price, the cheapest homeports are Kirkenes, Bergen, Port Canaveral, New Orleans and the two ports in Los Angeles. The most expensive ports are Quito, Honolulu, Ushuaia, Cartagena, Buenos Aires and Papeete (see Map 3). Several changes in the ranking positions are possible. For example, between the 5th and 10th position the difference is only 3.74 points and between the 11th and 17th there is a range of 4.24 points.

Apart from the interest in the position that each port occupies and its average price per night, results of the analysis per port of departure allow researchers to identify new interesting situations.

Alaska. The authors have considered the ports of Vancouver, Anchorage and Seattle. The first two are located in the top 10 positions for the cheapest prices, and Seattle is in the 21st. These results reveal a relative homogeneous strategy. Seattle is located in the South and is a bit more expensive, may be because of the location.

Asia (including China). The analysis corresponds to four ports, ranked in different positions. Shanghai is the best ranked (11th), followed by Singapore (22nd), Hong Kong (34th) and the most expensive port in Asia is Tokyo (55th). The differences could be explained again by the destinations visited during the itinerary that are completely different.

Australia/New Zealand/Pacific. The three ports considered – Auckland, Sydney and Papeete – are among the most expensive ports (occupy the 45th, 50th and 58th position respectively). These results reveal a homogeneous strategy in the area.

Caribbean. It has some of the cheapest ports – Port Canaveral, New Orleans, Jacksonville and San Juan de Puerto Rico – but it also has expensive ports such as Cartagena and Fort-de-France. This depends on the destinations visited during the stay, some of which are more popular with customers, and reveals a heterogeneous strategy in the same area (Rodrigue & Notteboom, 2013).

Hawaii/West USA. Los Angeles versus Honolulu. Some itineraries that depart from Los Angeles have Hawaii as a destination. If the itinerary departs from Los Angeles, the adjusted price is clearly cheaper (index value 91.31 and 93.07), meanwhile if the itinerary departs from Honolulu, the net price is among the most expensive (index value: 283.88). The reason could be that the ports of Los Angeles have more facilities enabling them to be homeports than Honolulu and that when the itinerary departs from Honolulu, more destinations in Hawaii are visited, meanwhile when departing from Los Angeles itineraries must spend days at sea due to the long distance. For example, from the sample, 104 itineraries depart and finish in Honolulu. These itineraries have on average 8.5 nights, not one at sea. On the contrary, from 74 itineraries that depart from Los Angeles and visit Hawaii, the average number of nights is 10.36 and of those 5.03 are spent at sea.

Mediterranean. Most ports are located in the middle positions – from 24 to 33 are Lisbon, Marseille, Genoa, Bari, Savona, Palma de Mallorca, Barcelona and Palermo -, and the most expensive port is Athens (51th). These results reveal a homogeneous price strategy in the main ports of the Mediterranean, which could be the result of a cooperation between ports (Fancello, Pano, Serra, & Fadda, 2014), although Karlis and Polemis (2018) indicate that some Mediterranean ports do not apply a strategy owing to their competitive advantage.

Mexico/Central America. Two of the three ports considered – Galveston, San Diego and Colon – occupy consecutive positions – 15th and 16th, revealing a homogeneous strategy. Colon occupies the 43th position and most itineraries move around the Panama Canal.

North of Europe. It has homeports located in extreme positions of the ranking. Kirkeness and Bergen, are the two cheapest, meanwhile five homeports are among the most expensive – positioned between 52 and 57 are: Kiel, Copenhaguen, Berlin-Warnemunde, London (Tilbury) and Amsterdam. The reason why Kirkeness and Bergen are cheaper is because 97% of their departures correspond to the company Hurtigruten, which is a cruise company mainly for locals and whose rating is

Map 2. Top and bottom Ranking by Country, ordered from the cheapest (1) to the most expensive (36).

the lowest.

South America. The three ports considered – Buenos Aires, Ushuaia and Quito – occupy the most expensive positions, revealing a homogeneous strategy.

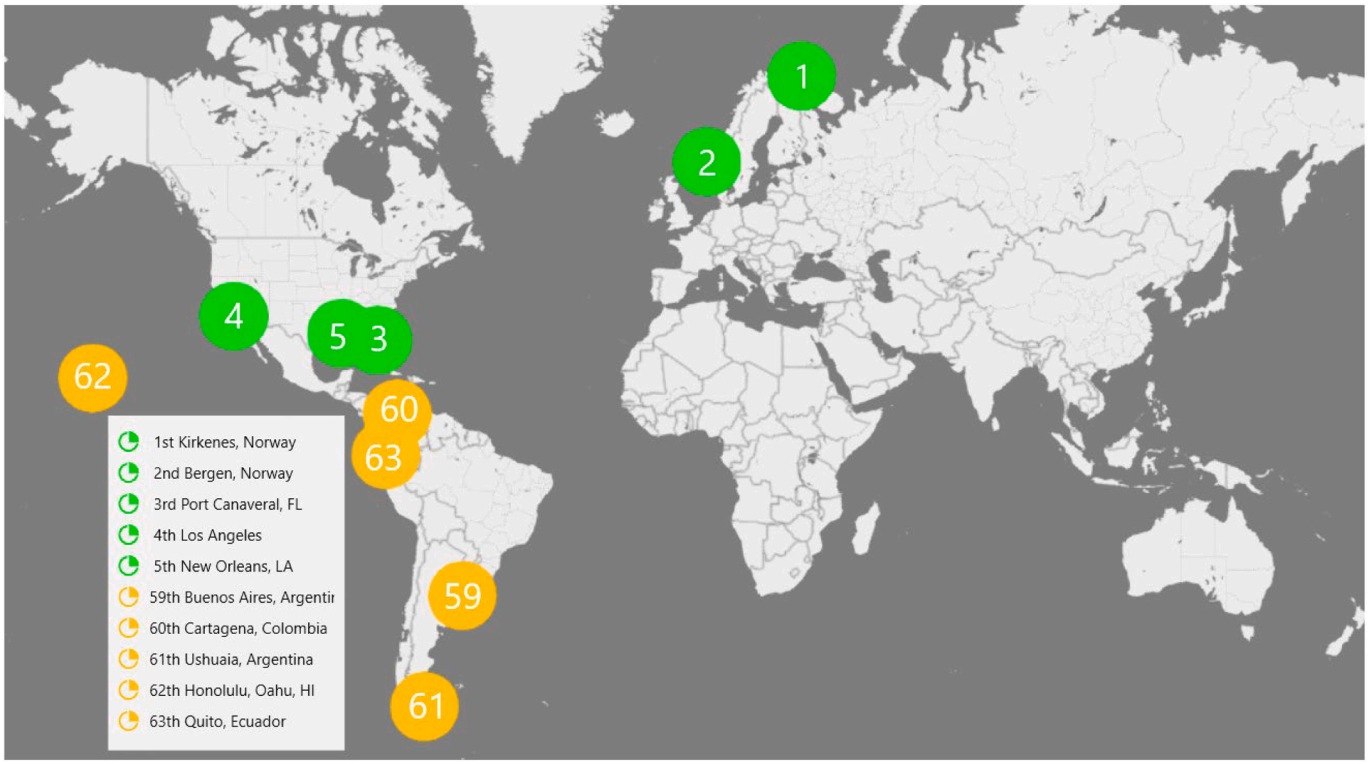
5. Discussion

The study presents a large number of results and the authors suggest analyzing them in detail. From the extensive results and discussion carried out, the authors highlight some results. Itineraries departing and ending in the same port are cheaper than the rest (on average 3.2%), and the more days at sea the itinerary has, the cheaper it is (on average 3.3%). These results are important in order to define cruise companies' strategies and their relation to ports. A trend to reduce the length of stay in ports is observed (Chen & Nijkamp, 2018), which could be supported by lower costs and higher potential incomes on the ship on the days at sea due to the wide range of possibilities onboard (Gui & Russo, 2011). From the point of view of the adjusted price, Alaska, China and the Caribbean occupy the top positions of the cheapest areas, meanwhile South America, Australia/New Zealand/Pacific and Hawaii/West USA are the most expensive areas. Mexico, South Africa, Alaska, Puerto Rico and Canada are the cheapest countries, and Ecuador, Colombia, Argentina, Chile and Tahiti are the most expensive. Kirkeness, Bergen, Port Canaveral, New Orleans and the two ports in Los Angeles are the cheapest homeports, and Quito, Honolulu, Ushuaia, Cartagena, Buenos Aires and Papeete are the most expensive. The impact of the cost of fees on the ports is reduced (Niavis & Tsiotas, 2018) so the reason why some destinations are cheaper or more expensive could be due to the attractiveness of the homeport and the ports visited, thereby being able to create a niche cruise tourism (Chen, 2016).

The specific results obtained allow the authors to summarize some strategies identified and to compare the results with other cruise academic research. The analysis per quarter of the CLIA area reveals three types of strategies: some destinations hardly move in the ranking (South America, the Caribbean, Hawaii/West USA, Alaska and Australia/NZ/Pacific) applying a homogeneous price strategy throughout the year, in spite of the fact that some of these areas have seasonal market patterns due to weather conditions, such as Alaska and Australia/NZ/Pacific (Rodrigue & Notteboom, 2013). Asian destinations vary their position relatively little (around 5–6 positions) in the ranking due to the great distance between these ports setting up different itineraries. The rest of the destinations have significant changes in the ranking mainly due to the seasonality of their weather (Rodrigue & Notteboom, 2013). In fact, in the cruise industry, cruise companies are not seasonal and they deploy their ships in the most profitable destinations (Esteve-Perez and García-Sanchez, 2017a). However, cruise destinations can be divided into annual and seasonal destinations mainly due to weather conditions (Esteve-Perez and García-Sanchez, 2017a). Within the same area, when differences exist they can be explained because of from that port depart cruises to other destinations or from there depart specific types of cruise companies. In summary, destination price strategies in the cruise industry are applied mainly from a seasonal and geographical area (Niavis & Tsiotas, 2018) and no individual strategies by port or by country are observed. These results reinforce the importance of the coordination between the port and the city (Daamen & Vries, 2013), and between nearby ports (Chen & Nijkamp, 2018; Falzon, 2012). Port regionalization is suggested (Gui & Russo, 2011) in order to attract cruise companies - most itineraries last less than two weeks and during that time, the places to visit are limited due to the reduced speed of the ships. These results support the fact that destinations can be considered a multidimensional and dynamic concept (Niavis & Tsiotas, 2018) and that cruises sell itineraries not destinations (Rodrigue & Notteboom, 2013). Destinations should potentiate their attractiveness in front of spending time at sea, where the homeports play a key role trying to convert the itinerary in a "must-see destination". Moreover, sometimes more responsibility for and cooperation with ports by cruise companies is suggested (Chen, Petrick, Papathanassis, & Li, 2019; Ma, Fan, & Zhang, 2018). Associations such as the Florida-Caribbean Cruise Association, MedCruise and CruiseBaltic play a key role to achieve this aim.

Table 6
Ranking and index by port.

Port of departure	Country	CLIA Region	Average of nights	Average price paid per night	Index hedonic value	Ranking of index hedonic value
Kirkenes, Norway	Norway	NORTH OF EUROPE	5.00	443.00	65.06	1
Bergen, Norway	Norway	NORTH OF EUROPE	8.85	401.65	81.33	2
Port Canaveral, FL	United States	CARIBBEAN	4.81	216.17	83.19	3
Los Angeles (Long Beach), CA	United States	HAWAII/WEST USA	4.76	148.07	91.31	4
New Orleans, LA	United States	CARIBBEAN	6.07	121.77	93.05	5
Los Angeles (San Pedro), CA	United States	HAWAII/WEST USA	17.49	165.14	93.07	6
Jacksonville, FL	United States	CARIBBEAN	4.69	116.60	93.58	7
San Juan, Puerto Rico	Puerto Rico	CARIBBEAN	8.33	209.65	94.56	8
Vancouver, BC, Canada	Canada	ALASKA	9.73	247.95	95.05	9
Anchorage (Seward), AK	Alaska	ALASKA	8.36	326.85	98.67	10
Shanghai, China	China	CHINA	8.34	179.06	99.34	11
New York (Manhattan), NY	United States	CARIBBEAN	13.02	187.09	99.90	12
Miami, FL	United States	CARIBBEAN	7.66	176.42	100.00	13
Charleston, SC	United States	CARIBBEAN	5.24	141.93	100.94	14
Galveston, TX	United States	MEXICO/CENTRAL AMERICA	6.01	140.25	102.04	15
San Diego, CA	United States	MEXICO/CENTRAL AMERICA	10.83	191.83	102.91	16
Mobile, AL	United States	CARIBBEAN	4.73	116.24	103.77	17
Tampa, FL	United States	CARIBBEAN	6.71	131.99	104.63	18
Fort Lauderdale, FL	United States	CARIBBEAN	10.70	156.98	105.97	19
St. Maarten	St. Maarten	CARIBBEAN	10.61	308.81	106.74	20
Seattle, WA	United States	ALASKA	7.75	213.36	108.27	21
Singapore	Singapore	ASIA WITHOUT CHINA	14.66	207.33	111.02	22
Bayonne, NJ	United States	CARIBBEAN	7.80	163.15	111.17	23
Lisbon, Portugal	Portugal	MEDITERRANEAN	12.76	375.62	112.08	24
Boston, MA	United States	CANADA/NEW ENGLAND	9.16	192.95	112.19	25
Marseille, France	France	MEDITERRANEAN	8.51	158.85	113.04	26
Genoa, Italy	Italy	MEDITERRANEAN	9.39	164.37	113.36	27
Bari, Italy	Italy	MEDITERRANEAN	7.17	162.72	114.31	28
Savona, Italy	Italy	MEDITERRANEAN	8.58	151.79	115.07	29
Palma de Mallorca, Spain	Spain	MEDITERRANEAN	7.00	175.20	115.17	30
New York (Brooklyn), NY	United States	CARIBBEAN	14.30	263.75	116.45	31
Barcelona, Spain	Spain	MEDITERRANEAN	10.08	228.47	117.23	32
Palermo, Sicily, Italy	Italy	MEDITERRANEAN	7.00	176.43	118.61	33
Hong Kong	Hong Kong	ASIA WITHOUT CHINA	16.35	272.46	118.78	34
Stockholm, Sweden	Sweden	NORTH OF EUROPE	11.67	438.43	120.30	35
Barbados	Barbados	CARIBBEAN	10.34	230.27	120.53	36
London (Southampton), England	England	NORTH OF EUROPE	14.92	226.56	122.37	37
Guadeloupe	Guadeloupe Islands	CARIBBEAN	10.25	128.97	122.63	38
Baltimore, MD	United States	CARIBBEAN	7.55	136.70	122.82	39
Naples, Italy	Italy	MEDITERRANEAN	6.98	197.56	124.24	40
Rome (Civitavecchia), Italy	Italy	MEDITERRANEAN	11.34	249.03	124.52	41
Venice, Italy	Italy	MEDITERRANEAN	8.96	263.12	124.96	42
Colon, Panama	Panama	MEXICO/CENTRAL AMERICA	7.22	150.55	125.53	43
Dubai, United Arab Emirates	United Arab Emirates	UNITED ARAB EMIRATES	12.71	170.18	127.20	44
Auckland, New Zealand	New Zealand	AUSTRALIA/NZ/PACIFIC	20.59	286.85	129.67	45
Valletta, Malta	Malta	MEDITERRANEAN	11.44	268.51	129.90	46
Hamburg, Germany	Germany	NORTH OF EUROPE	14.00	224.69	130.02	47
San Francisco, CA	United States	HAWAII/WEST USA	19.77	185.14	130.38	48
Fort-de-France, Martinique	Martinique	CARIBBEAN	11.15	168.65	130.61	49
Sydney, Australia	Australia	AUSTRALIA/NZ/PACIFIC	18.45	215.36	132.42	50
Athens (Piraeus), Greece	Greece	MEDITERRANEAN	10.59	471.56	133.04	51
Kiel, Germany	Germany	NORTH OF EUROPE	10.48	178.16	137.93	52
Copenhagen, Denmark	Denmark	NORTH OF EUROPE	11.51	284.69	139.64	53
Berlin (Warnemunde), Germany	Germany	NORTH OF EUROPE	10.03	181.88	142.53	54
Tokyo (Yokohama), Japan	Japan	ASIA WITHOUT CHINA	13.88	226.23	143.94	55
London (Tilbury), England	England	NORTH OF EUROPE	21.57	257.32	143.94	56
Amsterdam, Holland	Holland	NORTH OF EUROPE	15.50	221.07	145.47	57
Papeete, Tahiti, Society Islands	Tahiti	AUSTRALIA/NZ/PACIFIC	10.41	560.79	153.22	58
Buenos Aires, Argentina	Argentina	SOUTH AMERICA	16.54	409.69	157.92	59
Cartagena, Colombia	Colombia	CARIBBEAN	7.00	116.16	188.21	60
Ushuaia, Argentina	Argentina	SOUTH AMERICA	12.39	1281.19	227.39	61
Honolulu, Oahu, HI	United States	HAWAII/WEST USA	9.39	310.43	283.88	62
Quito, Ecuador	Ecuador	SOUTH AMERICA	11.86	849.09	372.37	63



Map 3. Top and bottom Ranking by Port, ordered from the cheapest (1) to the most expensive (63).

6. Conclusions

The aim of this study is to build a world ranking of cruise homeports from the point of view of the price paid by a cruise passenger. The analysis considers three geographical dimensions: the port of departure and the country and CLIA region where the port belongs. To achieve this aim, an extensive database of 2019 prices was created (116,464 prices from a leading OTA corresponding to 13,873 departures – more than 90% of the departures in 2019). The main methodology used was the hedonic approach, the most recommended when analyzing the price of tourist packages (Dwyer & Forsyth, 2011), which allows researchers to obtain the adjusted price of each destination. The values obtained are useful for both, destinations and cruise companies, in order to define their strategies and set negotiations (Niavis & Tsiotas, 2018). The models undertaken obtained adjusted R^2 between 0.825 and 0.856, which can be considered robust and reliable.

This research has two main contributions. First, it states a methodology to collect and manage cruise prices, which also could be useful for the whole tourism industry. In fact, when developing a research based on data, such as prices, the thoroughness with which the process of creating the database was carried out is extremely important and takes precedence over the statistical and econometric analysis. If data used for the analysis is not correct, all the results, conclusions and recommendations may be invalid. Second, this is the first study in academic literature that publishes a world ranking of destinations in the cruise industry by price. The index and rankings published can be very useful for destinations managers and cruise companies to compare competitors easily and quickly. In fact, up to now, destinations could compare qualitatively their strategy but a numerical value that could compare them, not only with their neighbors but also with destinations around the world, did not exist. After each value obtained, there is an explanation and microanalysis should be carried out to understand some situations – the study provides some of them. It is important to note that the position within a ranking means that there has been a better performance than others listed, but not necessarily a better performance overall (Pulido-Fernández & Rodríguez-Díaz, 2016). It could also be interesting for consumers to identify the cheapest and the most expensive areas considering the average price paid and the adjusted price.

The main limitation of this study is the use of only one price source (one leading American OTA). This drawback is partial as: a) this is one of the major OTA selling cruises around the world; b) prices are set by cruise companies and travel agencies can adapt only partially depending on the commission they receive; c) the whole analysis of one OTA allows the authors to integrate information from different cruise companies facilitating the comparison between them; d) due to the difficulties in obtaining information academic literature usually accepts the use of only one provider (e.g. Falzon, 2012).

This study opens opportunities for new research. First, it would be interesting to extend the study using other sources of prices (e.g. another OTA and directly from the cruise companies) in order to contrast the results obtained. Second, it would be interesting to integrate this data with others, such as the ports of each itinerary and the characteristics of each port in order to obtain results that can give information that is more precise for those working in the management of destinations. The opportunity to use of big data is convenient. Third, the authors suggest repeating this study at least every two years or every some years in order to compare the evolution of the price competitiveness of each destination, as do the reports of the WEF. Finally, the authors propose cooperating with associations in order to create rankings and composite indicators that can be useful for managerial and academic purposes benefitting both, and making academic research more useful and comprehensive.

CRediT authorship contribution statement

Josep Maria Espinet Rius: Conceptualization, Validation, Writing – original draft, Supervision. **Ariadna Gassiot Melian:** Methodology, Writing – review & editing, Visualization. **Ricard Rigall-I-Torrent:** Formal analysis, Writing – review & editing, Visualization.

Appendix A. Results of the hedonic models.

Variables		CLIA Region			Country of the port			Port of Departure		
		B	Sig.	% var.	B	Sig.	% var.	B	Sig.	% var.
	Constant	7.144	0.000		6.854	0.000		6.811	0.000	
	Number of nights	0.064	0.000	6.4%	0.062	0.000	6.2%	0.056	0.000	5.6%
	Days at Sea	−0.050	0.000	−5.0%	−0.044	0.000	−4.4%	−0.033	0.000	−3.3%
	Price of brochure	0.608	0.000	83.6%	0.608	0.000	83.6%	0.608	0.000	83.6%
	Port of departure = port of arrival	−0.013	0.000	−1.3%	−0.022	0.000	−2.2%	−0.031	0.000	−3.2%
Capacity	Up to 500 passengers	*Reference*			*Reference*			*Reference*		
	From 501 to 1000 passengers	−0.302	0.000	−26.1%	−0.178	0.000	−16.3%	−0.082	0.000	−7.9%
	From 1001 to 2000 passengers	−0.696	0.000	−50.2%	−0.407	0.000	−33.4%	−0.282	0.000	−24.6%
	More than 2000 passengers	−0.713	1.000	−51.0%	−0.441	0.000	−35.6%	−0.341	0.000	−28.9%
Type of cabin	Cheapest	−0.106	0.000	−10.0%	−0.107	0.000	−10.1%	−0.107	0.000	−10.1%
	Inside	−0.188	0.000	−17.1%	−0.186	0.000	−17.0%	−0.186	0.000	−17.0%
	Oceanview	*Reference*			*Reference*			*Reference*		
	Balcony	0.274	0.000	31.5%	0.275	0.000	31.6%	0.275	0.000	31.6%
	Suite	0.597	0.000	81.7%	0.600	0.000	82.2%	0.601	0.000	82.4%
Month	January	−0.287	0.000	−24.9%	−0.269	0.000	−23.6%	−0.251	0.000	−22.2%
	February	−0.274	0.000	−23.9%	−0.254	0.000	−22.5%	−0.236	0.000	−21.0%
	March	−0.265	0.000	−23.3%	−0.244	0.000	−21.6%	−0.226	0.000	−20.2%
	April	−0.223	0.000	−20.0%	−0.210	0.000	−18.9%	−0.206	0.000	−18.6%
	May	−0.167	0.000	−15.4%	−0.165	0.000	−15.2%	−0.160	0.000	−14.8%
	June	−0.037	0.000	−3.6%	−0.035	0.000	−3.5%	−0.033	0.000	−3.3%
	July				*Reference*			*Reference*		
	August	−0.059	0.000	−5.7%	−0.061	0.000	−5.9%	−0.058	0.000	−5.7%
	September	−0.179	0.000	−16.4%	−0.173	0.000	−15.9%	−0.177	0.000	−16.2%
	October	−0.268	0.000	−23.5%	−0.259	0.000	−22.8%	−0.264	0.000	−23.2%
	November	−0.311	0.000	−26.7%	−0.303	0.000	−26.1%	−0.297	0.000	−25.7%
	December	−0.217	0.000	−19.5%	−0.203	0.000	−18.4%	−0.185	0.000	−16.9%
Ship rating	3.0 stars	*Reference*			*Reference*			*Reference*		
	3.5 stars	−0.009	0.452	−0.9%	0.002	0.844	0.2%	−0.028	0.002	−2.8%
	4.0 stars	0.183	0.000	20.1%	0.190	0.000	20.9%	0.081	0.000	8.5%
	4.5 stars	0.215	0.000	24.0%	0.214	0.000	23.8%	0.161	0.000	17.4%
	5.0 stars	0.247	0.000	28.0%	0.246	0.000	27.9%	0.224	0.000	25.2%
	5.5 stars	0.345	0.000	41.2%	0.381	0.000	46.4%	0.384	0.000	46.8%
	6.0 stars	0.313	0.000	36.8%	0.568	0.000	76.5%	−0.004	0.892	−0.4%
Ship antiquity	Up to 5 years	*Reference*			*Reference*			*Reference*		
	From 6 to 10 years	−0.044	0.000	−4.3%	−0.018	0.000	−1.8%	−0.019	0.000	−1.9%
	From 11 to 15 years	−0.040	0.000	−3.9%	−0.013	0.003	−1.3%	−0.018	0.000	−1.8%
	More than 15 years	−0.076	0.000	−7.3%	−0.034	0.000	−3.4%	−0.069	0.000	−6.7%
Cruise Line	Azamara Club Cruises	0.469	0.000	59.9%	0.586	0.000	79.7%	0.540	0.000	71.5%
	Blount Small Ship Adventures	0.258	0.000	29.4%	0.527	0.000	69.4%	0.513	0.000	67.0%
	Carnival	−0.182	0.000	−16.7%	−0.156	0.000	−14.4%	−0.105	0.000	−10.0%
	Celebrity	0.438	0.000	54.9%	0.371	0.000	44.9%	0.271	0.000	31.1%
	Costa Cruises	−0.025	0.000	−2.5%	−0.076	0.000	−7.3%	−0.067	0.000	−6.5%
	Cruise & Maritime Voyages	0.594	0.000	81.1%	0.645	0.000	90.6%	0.467	0.000	59.4%
	Crystal	0.700	0.000	101.4%	0.566	0.000	76.2%	1.133	0.000	210.6%
	Cunard	0.552	0.000	73.7%	0.567	0.000	76.3%	0.453	0.000	57.2%
	Disney	0.598	0.000	81.8%	0.616	0.000	85.2%	0.705	0.000	102.5%
	Holland America	−0.007	0.364	−0.7%	0.003	0.749	0.3%	−0.061	0.000	−5.9%
	Hurtigruten	0.366	0.000	44.2%	0.722	0.000	105.9%	0.978	0.000	166.0%
	MSC Cruises	−0.049	0.000	−4.8%	−0.070	0.000	−6.8%	−0.036	0.000	−3.5%
	Norwegian	0.105	0.000	11.0%	0.130	0.000	13.9%	0.016	0.022	1.6%
	Oceania Cruises	0.774	0.000	116.9%	0.835	0.000	130.4%	0.797	0.000	121.9%
	P&O Cruises	0.187	0.000	20.5%	0.151	0.000	16.3%	0.149	0.000	16.1%
	Paul Gauguin Cruises	0.516	0.000	67.5%	0.623	0.000	86.4%	0.682	0.000	97.7%
	Ponant	0.373	0.000	45.2%	0.602	0.000	82.6%	0.609	0.000	83.8%
	Princess	−0.016	0.016	−1.6%	0.002	0.726	0.2%	−0.051	0.000	−5.0%
	Pullmantur	−0.335	0.000	−28.5%	−0.536	0.000	−41.5%	−0.553	0.000	−42.5%
	Quark Expeditions	0.984	0.000	167.4%	1.338	0.000	281.3%	1.378	0.000	296.6%
	Regent	1.135	0.000	211.1%	1.058	0.000	188.0%	1.636	0.000	413.4%
	Royal Caribbean	*Reference*			*Reference*			*Reference*		
	SeaDream Yacht Club	0.458	0.000	58.0%	0.637	0.000	89.0%	0.659	0.000	93.3%
	Seabourn	0.419	0.000	52.0%	0.370	0.000	44.7%	0.970	0.000	163.7%
	Silversea	0.976	0.000	165.4%	0.928	0.000	153.0%	1.507	0.000	351.5%
	Star Clippers	0.374	0.000	45.4%	0.576	0.000	77.8%	0.642	0.000	90.0%
	Viking Cruises	0.516	0.000	67.5%	0.674	0.000	96.1%	0.657	0.000	92.9%
	Voyages to Antiquity	0.338	0.000	40.2%	0.565	0.000	76.0%	0.606	0.000	83.2%
	Windstar	0.040	0.031	4.1%	0.233	0.000	26.2%	0.319	0.000	37.5%
CLIA Region	Africa	0.131	0.000	14.0%						
	Alaska	−0.080	0.000	−7.7%						
	Asia Without China	0.155	0.000	16.8%						

(*continued on next page*)

(*continued*)

Variables		CLIA Region			Country of the port			Port of Departure		
		B	Sig.	% var.	B	Sig.	% var.	B	Sig.	% var.
	Australia/NZ/Pacific	0.259	0.000	29.6%						
	Canada/New England	0.039	0.002	3.9%						
	Caribbean	*Reference*								
	China	−0.019	0.144	−1.9%						
	Hawaii/West USA	0.183	0.000	20.1%						
	Mediterranean	0.080	0.000	8.3%						
	Mexico/Central America	0.056	0.000	5.7%						
	North of Europe	0.181	0.000	19.8%						
	South America	0.565	0.000	76.0%						
	United Arab Emirates	0.093	0.000	9.7%						
Variables		CLIA Region			Country of the port			Port of Departure		
	Alaska				−0.122	0.000	−11.5%			
	Argentina				0.549	0.000	73.1%			
	Australia				0.220	0.000	24.6%			
	Barbados				0.172	0.000	18.8%			
	Brazil				0.386	0.000	47.0%			
	Canada				−0.080	0.000	−7.7%			
	Chile				0.426	0.000	53.2%			
	China				−0.017	0.199	−1.6%			
	Colombia				0.616	0.000	85.2%			
	Denmark				0.288	0.000	33.4%			
	Ecuador				1.012	0.000	175.2%			
	England				0.124	0.000	13.2%			
	France				0.085	0.000	8.9%			
	Germany				0.275	0.000	31.6%			
	Greece				0.223	0.000	25.0%			
	Guadeloupe Islands				0.133	0.000	14.2%			
	Holland				0.276	0.000	31.8%			
	Hong Kong				0.133	0.000	14.2%			
Country of the port	Italy				0.130	0.000	13.8%			
	Japan				0.241	0.000	27.3%			
	Malta				0.148	0.000	16.0%			
	Martinique				0.183	0.000	20.1%			
	Mexico				−0.155	0.000	−14.3%			
	New Zealand				0.228	0.000	25.6%			
	Norway				−0.031	0.058	−3.0%			
	Other				0.291	0.000	33.8%			
	Panama				0.230	0.000	25.9%			
	Portugal				0.082	0.000	8.6%			
	Puerto Rico				−0.081	0.000	−7.7%			
	Singapore				0.054	0.000	5.6%			
	South Africa				−0.127	0.000	−11.9%			
	Spain				0.090	0.000	9.4%			
	St. Maarten				0.032	0.121	3.2%			
	Sweden				0.164	0.000	17.8%			
	Tahiti				0.396	0.000	48.6%			
	United Arab Emirates				0.128	0.000	13.6%			
	United States of America				*Reference*					
	Amsterdam, Holland							0.375	0.000	45.5%
	Anchorage (Seward), AK							−0.013	0.415	−1.3%
	Athens (Piraeus), Greece							0.285	0.000	33.0%
	Auckland, New Zealand							0.260	0.000	29.7%
	Baltimore, MD							0.206	0.000	22.8%
	Barbados							0.187	0.000	20.5%
	Barcelona, Spain							0.159	0.000	17.2%
	Bari, Italy							0.134	0.000	14.3%
	Bayonne, NJ							0.106	0.000	11.2%
	Bergen, Norway							−0.207	0.000	−18.7%
	Berlin (Warnemunde), Germany							0.354	0.000	42.5%
Ports of departure	Boston, MA							0.115	0.000	12.2%
	Buenos Aires, Argentina							0.457	0.000	57.9%
	Cartagena, Colombia							0.632	0.000	88.2%
	Charleston, SC							0.009	0.547	0.9%
	Colon, Panama							0.227	0.000	25.5%
	Copenhagen, Denmark							0.334	0.000	39.6%
	Dubai, United Arab Emirates							0.241	0.000	27.2%
	Fort Lauderdale, FL							0.058	0.000	6.0%
	Fort-de-France, Martinique							0.267	0.000	30.6%
	Galveston, TX							0.020	0.023	2.0%
	Genoa, Italy							0.125	0.000	13.4%
	Guadeloupe							0.204	0.000	22.6%

(*continued on next page*)

(*continued*)

Variables	CLIA Region			Country of the port			Port of Departure		
	B	Sig.	% var.	B	Sig.	% var.	B	Sig.	% var.
Hamburg, Germany							0.263	0.000	30.0%
Hong Kong							0.172	0.000	18.8%
Honolulu, Oahu, HI							1.043	0.000	183.9%
Jacksonville, FL							−0.066	0.000	−6.4%
Kiel, Germany							0.322	0.000	37.9%
Kirkenes, Norway							−0.430	0.000	−34.9%
Lisbon, Portugal							0.114	0.000	12.1%
London (Southampton), England							0.202	0.000	22.4%
London (Tilbury), England							0.364	0.000	43.9%
Los Angeles (Long Beach), CA							−0.091	0.000	−8.7%
Los Angeles (San Pedro), CA							−0.072	0.000	−6.9%
Marseille, France							0.123	0.000	13.0%
Miami, FL							*Reference*		
Mobile, AL							0.037	0.022	3.8%
Naples, Italy							0.217	0.000	24.2%
New Orleans, LA							−0.072	0.000	−7.0%
New York (Brooklyn), NY							0.152	0.000	16.4%
New York (Manhattan), NY							−0.001	0.934	−0.1%
Other							0.205	0.000	22.8%
Palermo, Sicily, Italy							0.171	0.000	18.6%
Palma de Mallorca, Spain							0.141	0.000	15.2%
Papeete, Tahiti, Society Islands							0.427	0.000	53.2%
Port Canaveral, FL							−0.184	0.000	−16.8%
Quito, Ecuador							1.315	0.000	272.4%
Rome (Civitavecchia), Italy							0.219	0.000	24.5%
San Diego, CA							0.029	0.084	2.9%
San Francisco, CA							0.265	0.000	30.4%
San Juan, Puerto Rico							−0.056	0.000	−5.4%
Savona, Italy							0.140	0.000	15.1%
Seattle, WA							0.079	0.000	8.3%
Shanghai, China							−0.007	0.652	−0.7%
Singapore							0.105	0.000	11.0%
St. Maarten							0.065	0.001	6.7%
Stockholm, Sweden							0.185	0.000	20.3%
Sydney, Australia							0.281	0.000	32.4%
Tampa, FL							0.045	0.000	4.6%
Tokyo (Yokohama), Japan							0.364	0.000	43.9%
Ushuaia, Argentina							0.821	0.000	127.4%
Valletta, Malta							0.262	0.000	29.9%
Vancouver, BC, Canada							−0.051	0.000	−4.9%
Venice, Italy							0.223	0.000	25.0%
n	116,464			116,464			116,464		
Adjusted R^2	0.825			0.828			0.841		
F	7709.4			5910.9			5029.17		
Maximum VIF	22.459			36.817			43.128		
Average VIF	4.130			4.060			3.635		
p-value	0.000			0.000			0.000		

References

Abad, A., & Kongmanwatana, P. (2015). Comparison of destination competitiveness ranking in the European Union using a non-parametric approach. *Tourism Economics, 21*(2), 267–281.

Assaf, A. G., & Josiassen, A. (2012). Identifying and ranking the determinants of tourism performance: A global investigation. *Journal of Travel Research, 51*(4), 388–399.

Azzoni, C. R., & de Menezes, T. A. (2009). Cost competitiveness of international destinations. *Annals of Tourism Research, 36*(4), 719–722.

Baldassin, L., Gallo, M., & Mattevi, E. (2017). Tourism in European cities: Price competitiveness of hotels in towns of artistic interest. *Tourism Economics, 23*(1), 3–28.

Biehn, N. (2006). A cruise ship is not a floating hotel. *Journal of Revenue and Pricing Management, 5*(2), 135–142.

Buhalis, D. (2000). Marketing the competitive destination of the future. *Tourism Management, 21*(1), 97–116.

Cabral, A. M. R., & de Sousa Ramos, F. (2014). Cluster analysis of the competitiveness of container ports in Brazil. *Transportation Research Part A: Policy and Practice, 69*, 423–431.

Cai, E., Shi, J., & Ding, H. (2013). Quantitative comparative analysis of the cruise homeport competitive situation in China - taking Shanghai, Xiamen, Tianjin and Sanya for example. *International Journal of Business and Social Science, 4*(12), 279–285.

Castillo-Manzano, J. I., Fageda, X., & Gonzalez-Laxe, F. (2014). An analysis of the determinants of cruise traffic: An empirical application to the Spanish port system. *Transportation Research Part E: Logistics and Transportation Review, 66*, 115–125.

Cerasa, A., & Buscaglia, D. (2019). A hedonic model of import steel prices: Is the EU market integrated? *Resources Policy, 61*, 241–249.

Chen, C. A. (2016). How can Taiwan create a niche in Asia's cruise tourism industry? *Tourism Management, 55*, 173–183.

Chen, J. M., & Nijkamp, P. (2018). Itinerary planning: Modelling cruise lines' lengths of stay in ports. *International Journal of Hospitality Management, 73*, 55–63.

Chen, J. M., Petrick, J. F., Papathanassis, A., & Li, X. (2019). A meta-analysis of the direct economic impacts of cruise tourism on port communities. *Tourism Management Perspectives, 31*, 209–218.

Claveria, O., & Poluzzi, A. (2017). Positioning and clustering of the world's top tourist destinations by means of dimensionality reduction techniques for categorical data. *Journal of Destination Marketing & Management, 6*(1), 22–32.

Croes, R., & Kubickova, M. (2013). From potential to ability to compete: Towards a performance-based tourism competitiveness index. *Journal of Destination Marketing & Management, 2*(3), 146–154.

Cruise Lines International Association – CLIA. (2019). 2020 State of the cruise industry outlook. Retrieved from the webpage https://cruising.org/-/media/research-updates/research/state-of-the-cruise-industry.ashx. The 8th November 2020.

Cruise Market Watch. (2019). 2018 cruise market source region. Retrieved from https://cruisemarketwatch.com/passenger-origins/. The 25th April 2019.

Daamen, T. A., & Vries, I. (2013). Governing the European port–city interface: Institutional impacts on spatial projects between city and port. *Journal of Transport Geography, 27*, 4–13.
Dusansky, R., & Vernon, C. J. (1998). Rankings of US economics departments. *Journal of Economic Perspectives, 12*(1), 157–170.
Dwyer, L., & Forsyth, P. (2011). Methods of estimating destination price competitiveness: A case of horses for courses? *Current Issues in Tourism, 14*(8), 751–777.
Dwyer, L., Forsyth, P., & Rao, P. (2000). The price competitiveness of travel and tourism: A comparison of 19 destinations. *Tourism Management, 21*(1), 9–22.
Enright, M. J., & Newton, J. (2004). Tourism destination competitiveness: A quantitative approach. *Tourism Management, 25*(6), 777–788.
Erickson, T., & Pakes, A. (2011). An experimental component index for the CPI: From annual computer data to monthly data on other goods. *American Economic Review, 101*(5), 1707–1738.
Espinet, J. M., Saez, M., Coenders, G., & Fluvià, M. (2003). Effect on prices of the attributes of holiday hotels: A hedonic prices approach. *Tourism Economics, 9*(2), 165–177.
Espinet, J. M. (2018). Global and local pricing strategies in the cruise industry. *Journal of Revenue and Pricing Management, 19*, 329–340.
Espinet Rius, J. M., Fluvià-Font, M., Rigall-Torrent, R., & Oliveras-Corominas, A. (2018). Cruise tourism: A hedonic pricing approach. *European Journal of Management and Business Economics, 27*(1), 101–122.
Esteve-Perez, J., & García-Sanchez, A. (2017). Characteristics and consequences of the cruise traffic seasonality on ports: The Spanish Mediterranean case. *Maritime Policy & Management, 44*(3), 358–372.
Esteve-Perez, J., & Garcia-Sanchez, A. (2017). Strategic positioning analysis of Spanish cruise ports. *Maritime Business Review, 2*(2), 158–170.
Falzon, J. (2012). The price competitive position of Mediterranean countries in tourism: Evidence from the Thomson brochure. *Tourism Management, 33*(5), 1080–1092.
Fancello, G., Pano, P., Serra, P., & Fadda, P. (2014). Port cooperation policies in the Mediterranean Basin: An experimental approach using cluster analysis. *Transportation Research Procedia, 3*, 700–709.
Fedderke, J. W., & Li, K. (2020). Art in Africa: Hedonic price analysis of the South African fine art auction market, 2009–2014. *Economic Modelling, 84*, 88–101.
Gómez-Vega, M., & Picazo-Tadeo, A. J. (2019). Ranking world tourist destinations with a composite indicator of competitiveness: To weigh or not to weigh? *Tourism Management, 72*, 281–291.
Gui, L., & Russo, A. P. (2011). Cruise ports: A strategic nexus between regions and global lines — Evidence from the Mediterranean? *Maritime Policy & Management, 38*(2), 129–150.
Haroutunian, S., Mitsis, P., & Pashardes, P. (2005). Using brochure information for the hedonic analysis of holiday packages. *Tourism Economics, 11*(1), 69–84.
Huang, J. H., & Peng, K. H. (2012). Fuzzy Rasch model in TOPSIS: A new approach for generating fuzzy numbers to assess the competitiveness of the tourism industries in Asian countries. *Tourism Management, 33*(2), 456–465.
Hung, K., Wang, S., Guillet, B. D., & Liu, Z. (2019). An overview of cruise tourism research through comparison of cruise studies published in English and Chinese. *International Journal of Hospitality Management, 77*, 207–216.
Karlis, T., & Polemis, D. (2018). Cruise homeport competition in the Mediterranean. *Tourism Management, 68*, 168–176.
Lekakou, M. B., Pallis, A. A., & Vaggelas, G. K. (2009). Which homeport in Europe: The cruise industry's selection criteria. *Tourismos: An international multidisciplinary journal of tourism, 4*(4), 215–240.
Liang, K. Y., & Zeger, S. L. (1986). Longitudinal data analysis using generalized linear models. *Biometrika, 73*(1), 13–22.
Ma, M. Z., Fan, H. M., & Zhang, E. Y. (2018). Cruise homeport location selection evaluation based on grey-cloud clustering model. *Current Issues in Tourism, 21*(3), 328–354.
Mangion, M. L., Durbarry, R., & Sinclair, M. T. (2005). Tourism competitiveness: Price and quality. *Tourism Economics, 11*(1), 45–68.
Mazanec, J. A., & Ring, A. (2011). Tourism destination competitiveness: Second thoughts on the world economic forum reports. *Tourism Economics, 17*(4), 725–751.
Mendola, D., & Volo, S. (2017). Building composite indicators in tourism studies: Measurements and applications in tourism destination competitiveness. *Tourism Management, 59*, 541–553.
Murphy, P. E., & Pritchard, M. (1997). Destination price-value perceptions: An examination of origin and seasonal influences. *Journal of Travel Research, 35*(3), 16–22.
Niavis, S., & Tsiotas, D. (2018). Decomposing the price of the cruise product into tourism and transport attributes: Evidence from the Mediterranean market. *Tourism Management, 67*, 98–110.
Niavis, S., & Vaggelas, G. (2016). An empirical model for assessing the effect of ports' and hinterlands' characteristics on homeports' potential. *Maritime Business Review, 1*(3), 186–207.
Oyewole, P. (2004). International tourism marketing in Africa: An assessment of price competitiveness using the purchasing power parities of the ICP. *Journal of Travel & Tourism Marketing, 16*(1), 3–17.
Pallis, A. A., Rodrigue, J. P., & Notteboom, T. E. (2014). Cruises and cruise ports: Structures and strategies. *Research in Transportation Business & Management, 13*, 1–5.
Papathanassis, A. (2017). Cruise tourism management: State of the art. *Tourism Review, 72*(1), 104–119.
Papathanassis, A., & Beckmann, I. (2011). Assessing the 'poverty of cruise theory' hypothesis. *Annals of Tourism Research, 38*(1), 153–174.
Papatheodorou, A. (2002). Exploring competitiveness in Mediterranean resorts. *Tourism Economics, 8*(2), 133–150.
Papatheodorou, A., Lei, Z., & Apostolakis, A. (2012). Hedonic price analysis. In *Handbook of research methods in tourism: Quantitative and qualitative approaches* (pp. 170–182). Edward Elgar Publishing.
Picazo, P., & Moreno-Gil, S. (2018). Tour operators' marketing strategies and their impact on prices of sun and beach package holidays. *Journal of Hospitality and Tourism Management, 35*, 17–28.
Pulido-Fernández, J. I., & Rodríguez-Díaz, B. (2016). Reinterpreting the world economic Forum's global tourism competitiveness index. *Tourism Management Perspectives, 20*, 131–140.
Rigall-i-Torrent, R., & Fluvià, M. (2007). Public goods in tourism municipalities: Formal analysis, empirical evidence and implications for sustainable development. *Tourism Economics, 13*(3), 361–378.
Rigall-I-Torrent, R., & Fluvià, M. (2011). Managing tourism products and destinations embedding public good components: A hedonic approach. *Tourism Management, 32*(2), 244–255.
Rigall-I-Torrent, R., Fluvià, M., Ballester, R., Saló, A., Ariza, E., & Espinet, J. M. (2011). The effects of beach characteristics and hotel location with respect to the beach on hotel prices. *Tourism Management, 32*, 1150–1158.
Rodrigue, J. P., & Notteboom, T. (2013). The geography of cruises: Itineraries, not destinations. *Applied Geography, 38*, 31–42.
Rosen, S. (1974). Hedonic prices and implicit markets: Product differentiation in pure competition. *Journal of Political Economy, 82*(1), 34–55.
Sun, X., Jiao, Y., & Tian, P. (2011). Marketing research and revenue optimization for the cruise industry: A concise review. *International Journal of Hospitality Management, 30*(3), 746–755.
Thrane, C. (2005). Hedonic price models and sun-and-beach package tours: The Norwegian case. *Journal of Travel Research, 43*(3), 302–308.
Vives, A., Jacob, M., & Payeras, M. (2018). Revenue management and price optimization techniques in the hotel sector: A critical literature review. *Tourism Economics, 24*(6), 720–752.
Wang, K., Wang, S., Zhen, L., & Qu, X. (2016). Cruise shipping review: Operations planning and research opportunities. *Maritime Business Review, 1*(2), 133–148.
Wang, S., Wang, K., Zhen, L., & Qu, X. (2017). Cruise itinerary schedule design. *IISE Transactions, 49*(6), 622–641.
Wooldridge, J. M. (2003). Cluster-sample methods in applied econometrics. *American Economic Review, 93*(2), 133–138.
World Economic Forum (WEF). (2017). *The travel & tourism competitiveness report 2017*. World Economic Forum.
Wu, W. W., Lan, L. W., & Lee, Y. T. (2012). Critiquing the world economic Forum's concept of destination competitiveness: A further analysis. *Tourism Management Perspectives, 4*, 198–206.
Zhang, H., Gu, C. L., Gu, L. W., & Zhang, Y. (2011). The evaluation of tourism destination competitiveness by TOPSIS & information entropy–a case in the Yangtze River Delta of China. *Tourism Management, 32*(2), 443–451.