COMPOSITE INDICATOR FOR MEASURING THE WORLD INTEREST BY PORTUGAL'S TOURISM

Gorete Dinis[1]
Carlos Costa[2]
Osvaldo Pacheco[3]

ABSTRACT

Tourism is a phenomenon with unique characteristics and particularities, which makes its measurement difficult. The rapid changes in society and consumer behaviour associated with the countries' economic situation have made the collection of statistical data difficult, impacting on the dissemination of updated and relevant indicators. This fact evidences the difficulty in having timely knowledge of the sector and consequently the tourism stakeholder's hard and imprecise decision-making. The Internet has proved to be an important source of data, and it is possible, through tools like Google Trends (GT), to know timely the interests and intentions of potential consumers in tourism. The objective of this paper is to present a methodology for building a composite indicator to measure the world interest of Portugal as a tourist destination. The composite indicator is conceptually based on the classification of activities and products' characteristics of tourism that are part of the proposed tourism supply defined in the Tourism Satellite Accounts (TSA). Primary indicators were collected over a year using GT and weighted with indicators of total tourist consumption in Portugal. Our findings indicate that the interest of Internet users worldwide by tourism in Portugal varies throughout the year and the interest of search differs according to the tourism product characteristics.

Keywords: Composite Indicator, Google Trends, Portugal, Internet Searches, Tourism.

JEL Classification: Z30, Z32

1. INTRODUCTION

Due to tourism complexity, statistical tools and indicators are essential. Indicators published by the official authority in Portugal are, in the case of tourism, mostly statistical operations based on the application of surveys. The carrying out of these statistical operations, particularly those in which the survey unit is the international visitor, is expensive because mainly the visitor uses different means of transport and means of communication to travel to the holiday destination and stay in different accommodation types. However, the tourism consumer motivations, needs and desires are multiple and are continually changing, which makes its characterisation even more difficult, and their knowledge cannot be substantiated by using the visitors of only a few stakeholders of the tourism supply.

Global trends increasingly determine the selection of tourism destinations and the success of the tourism sector will depend on how these trends are incorporated into their management and planning (Buhalis & Costa, 2006). Furthermore, knowledge about the

---
[1] Polytechnic Institute of Portalegre, GOVCOPP, CiTUR Algarve, Portalegre, Portugal (gdinis@ipportalegre.pt)
[2] University of Aveiro, GOVCOPP, Aveiro, Portugal (ccosta@ua.pt)
[3] University of Aveiro, IEETA, Aveiro, Portugal (orp@ua.pt)

evolution of consumers, their preferences and travel and tourism's patterns of consumption are determinant in guiding the development of tourism in a given territory (TP, 2013b). Information and communication technologies, more specifically the Internet, have changed the way tourism consumers plan and organise their holidays and how they share their experiences (Buhalis & Law, 2008, Xiang & Gretzel, 2010). This means that the Internet, beyond the source of information is now also an important source of data, being the electronically stored data an admirable new world for statisticians (Macfeely, 2009).

The Google search engine is the search market world leader (StatCounter, 2018a). The GT tool provides real-time data based on searches performed on Google search engine that can be very useful for the decision-making of tourism stakeholders, since this data reflects the intentions and needs of potential consumers in tourism, with the advantage of being available before the publication of official tourism indicators.

The aim of this paper is to propose a new composite indicator based on GT's data that intends to measure the online interest of the Internet users of the world by tourism in Portugal. For that purpose, GT data were collected daily for a year for a set of primary indicators proposed based on the TSA conceptual framework and a set of keywords that were considered identifiers of the destination Portugal.

This paper starts with a literature review followed by a description of the used methodology for the construction and validation of the composite indicator. Finally, we present the results and the performed analysis, ending with the conclusion. Our results contribute to increase the knowledge on the potential of Google-based search data to construct new indicators that allow knowing the interest, intentions and behaviour of the potential consumer in tourism by a specific destination.

2. LITERATURE REVIEW

Tourism is a relatively recent activity (Cooper, Fletcher, Fyall, Gilbert & Wanhill, 2005). Nevertheless there are several researchers and definitions that have arisen to conceptualise and delimit this phenomenon. Tourism can be approached from a demand perspective or the tourism supply. If the identification of the demand agent does not offer great doubts, in the case of the tourism supply the difficulties are more significant, either by the identification of the supply agent or through the product offered (Matias, 2007). This difficulty together with the intrinsic and unique characteristics of this sector led to the perspective "from the final demand for goods and services acquired by visitors, and not by the nature of the goods and services that are produced" (Eusébio, Marujo, Borges & Serra, 2012: 11).

One of the main problems in the tourism supply definition is to separate the activities that are exclusively used by the tourism consumer of those that also provide services to the resident population and/or to other sectors of activity. With the main objective of quantifying the tourism economic impact, several international organizations, with emphasis on UNWTO and Eurostat, have proposed a conceptual and methodological framework within the TSA. This instrument of international reference, proposes a classification for the products and economic activities that make up the tourism supply such as: i) specific products, which include products characteristic of tourism, comprising all products that would cease to exist, or whose consumption would reduce significantly in the absence of tourism, and which are normally considered the core of the tourism activity and related products; and (ii) non-specific products. (UN, UNWTO, EUROSTAT & OECD, 2010).

Tourism demand can also be analysed according to other perspectives. If viewed from a physical or geographical perspective, it can be measured using volume variables, such as "arrivals at the borders of each country" or "international arrivals", "number of visitors",

"number of overnight stays" and/or "number of guests" in the accommodation facilities. From an economic point of view or a monetary perspective, tourism demand can be obtained through "tourism consumption", "tourism expenditure" and/or "international tourism receipts". Measuring tourism demand through the indicators listed above has advantages being, however, their relevance as a measure limited.

At European level, the European Tourism Statistics System is organized on the basis of Regulation 692/2011 of the European Parliament and of the Council of 6 July, which recommends the Member States to collect, process and disseminate harmonized statistics on tourism demand and supply and the transmission of indicators to Eurostat, some of which are mandatory and others not, concerning domestic and national tourism. For this study, it should be noted that the indicators to be transmitted in the field of internal tourism focus on tourist accommodation and seek to show, on the one hand, the existing supply and capacity in terms of accommodation and, on the other, the demand and occupation of these accommodations.

In Portugal, due mainly to budgetary restrictions in the period 2007 to 2017, external tourist demand was quantified by the number of guests and/or the number of overnight stays by country of residence, there is no statistical data on the number of international tourists and visitors. Failure to carry out the statistical operations that allowed knowing the tourist movements in Portugal's borders also prevented the realisation of the TSA and consequently, the obtaining and dissemination of other indicators, such as tourism consumption indicators. In general, tourism consumption is understood as the "total consumption by visitors or others in favour of the visitor for and during their travel and stay at the place of destination" (Libreros, 2006: 6), provided that the products and services purchased are related to travel (UNWTO, 1999). Tourism consumption, taking into account the individuals country of residence, is classified as outbound, inbound, domestic and may be broken down by type of product purchased and visitor category (hiker or tourist) (UN, UNWTO, CEC & OECD, 2001). In this study, it is important to emphasise the concept of internal tourism consumption, which results from the aggregation of domestic tourist consumption and inbound tourism consumption and refers to the consumption made by resident and non-resident visitors in the country of travel (UN et al., 2010).

The approaches mentioned above regarding tourism demand and the way it can be quantified are related to the effective tourist demand, that is, to the "current number of people who participate in the tourist activity as buyers of the services and who have the means and the willingness"(UNWTO, 1998: 62). However, it is important to conceptualize the latent or suppressed tourist demand that "is formed by people who do not participate in the tourist activity (do not travel)" and that integrates the potential demand, formed by persons who do not travel for a particular reason but who may do so in the future, when the circumstances which prevented the trip from being fulfilled change; and deferred or deferred searches, which includes people who "could not travel due to any problem related to the surroundings or caused by the tourism supply" (UNWTO, 1998: 62), and that in Mathieson and Wall (1982) opinion can be tourists if they are motivated. This type of tourism demand is difficult to measure and is therefore rarely addressed by researchers.

In recent years we have witnessed the decision-making and consumer choice process changing from the "funnel" to the "calyx" (TP, 2014). For decades, tourism consumers have based their travel planning and booking decisions on traditional information sources, including tourist guides, brochures, magazine and newspaper publications made available through traditional distribution channels. However, this scenario has changed with the proliferation of information available online and the popularisation of the Internet among consumers, leading to a revolution in the way consumers access information, choose the tourism destination, make reservations, and share their experiences (Buhalis & Law, 2008).

The fact is that in all decision-making process steps, ICT plays an essential role (Buhalis & Law, 2008).

Understanding information search behaviour is critical for any tourism product or service provider who wants to improve marketing communication with tourism consumers (Hyde, 2006 in Grønflaten, 2009). Cai, Feng and Breiter (2004) report that the information-seeking behaviour of a potential tourist involves decisions about which content and which information channels to look for. Regarding the online consumer, Fesenmaier (2012) refers in his travel information search model that, in the digital world, the search occurs in the trip's different phases. Xiang and Fesenmaier (2006) argue that a search engine is an essential tool for consumers to plan their trips and is often referred to as the "first step" in a trip decision-making process. According to Dinis, Costa and Pacheco (2016), a study based on data from the "Customer Journey to Online Purchase" tool, search engines influence throughout the decision-making process, although for most consumers in the study countries is relatively superior in the pre-purchasing decision phase. A Google study (Google, 2011) for the UK market also found that in the travel purchase decision process the user starts the process on a search engine, then heads to different sites, returning to the search engine search and browse among the several suppliers' websites before making the purchase.

The online search process begins with the query formulation when the user enters the search terms (Pan, Xiang, Fesenmaier & Law, 2009). Levene (2006) in Pan, Xiang, Law, & Fesenmaier (2011) and Xiang, Pan, Law, & Fesenmaier (2010) mention that the formulation of the search query is influenced by the user's knowledge of the scientific field of search, the user's understanding of the operation of the search engine and the objectives of the search. Taking into account the search objectives, these can be classified in: i) navigation searches, when the user intends to find the website of a specific organization; ii) informational searches, when the user wishes to obtain information about a certain content or theme; and (iii) transactional search, when the purpose is to locate a site with the purpose of performing a certain action or to obtain another product (Jansen, Booth & Spink, 2008). In the study conducted by the authors, 80% of the search queries were informative, 10% navigational and 10% transactional.

In recent years, several authors have developed research to understand the nature and characteristics of search in search engines related to tourism (e.g. Jansen, Ciamacca & Spink, 2008; Xiang & Pan, 2011). Although studies have limitations, such as not analyzing all search engines or focusing on analyzes in very short time periods, their results shows that the search terms used in the query formulation are related to the local geography, prevailing the term "city", which sometimes appears in conjunction with hotels and other aspects of travel (i.e. attractions, transportation and restaurants). In the study developed by Xiang and Pan (2011), with regards to the most searched aspects of travel, is mentioned accommodation, highlighting the term "hotel", and "transport" and less-researched "restaurants" and "shops". The authors also concluded that searches depend on the size and level of tourist development of the cities, and found that, in larger cities, in addition to the consultations related to accommodation and transportation, there are, among other generic terms, maps, parks and attractions; while in a small or medium-sized tourist cities, searches focus on these places specific attractions..

As shown in Figure 1 the search engine market worldwide is dominated by Google, with a market share of 90.1% in May 2018. In terms of market share by country, only in Russia, the search market is dominated by YANDEX RU (51%) and Google (45,3%), and in China by Baidu (70%) (StatCounter, 2018).

Figure 1. Search Engine Market Share Worldwide
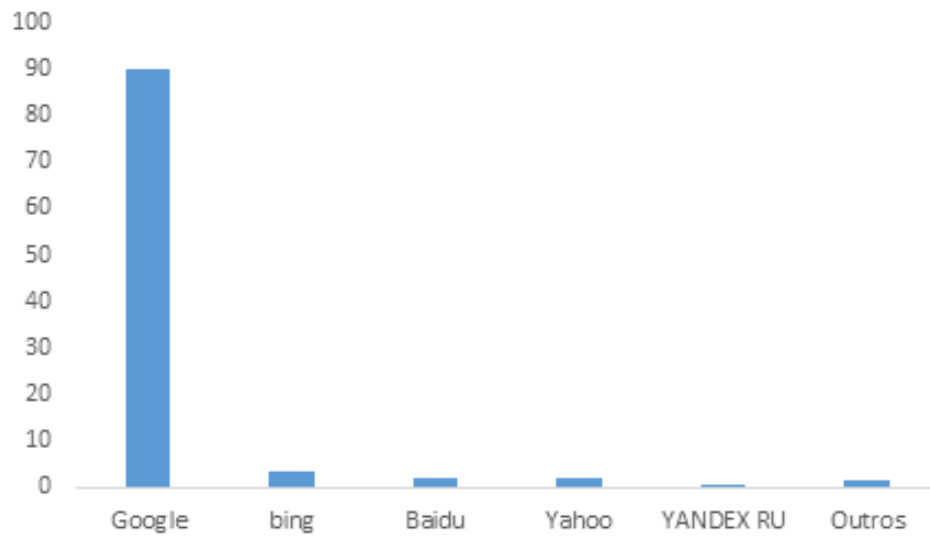
Source: Own elaboration from StatCounter data (2018)

The use of search engines when searching for information leaves a digital footprint. This data, mainly due to their quantity, diversity and ubiquity can provide information on the consumers' intentions and needs and assist in the prediction of mass behaviour. Several authors in various areas of knowledge (for example Ginsberg, Mohebbi, Patel, Brammer, Smolinski & Brilliant, 2009; Choi & Varian, 2009; Li, Pan, Law & Huang, 2017) have already demonstrated that the search data is correlated with the official statistical data and can be used to predict, in due time, phenomena such as the appearance of influenza epidemics, tourist demand for a destination, private consumption and unemployment rate.

For reasons of confidentiality, Google Inc. does not provide search engine data in absolute terms but makes the information available in relative terms on a daily or weekly basis through the GT tool. The GT data related to travel searches is subdivided into 11 subcategories of the first level and 14 of the second level, as can be observed in Table 1.

Table 1. Travel Category and subcategories from GT

	Subcategories	**Subcategories**
Travel Category	Travel Agencies & Services	Tourist Boards & Visitor Centres Vacation Offers
	Car Rental & Taxi Services	n.a
	Bus & Rail	n.a
	Cruises & Charters	n.a
	Tourist Destinations	Beaches & Islands Historical Sites & Buildings Lakes & Rivers Museums Mountain & Ski Resorts Regional Parks & Gardens Theme Parks Zoos-Aquariums-Preserves
	Travel Guides & Travelogues	n.a
	Hotels & Accommodations	n.a
	Luggage & Travel Accessories	n.a
	Carpooling & Lift-sharing	n.a
	Air Travel	Airport Parking &Transportation Recreational Aviation (Personal Aircraft)
	Specialty Travel	Adventure Travel Agritourism Ecotourism Sightseeing Tours Vineyards & Wine Tourism

n.a- not available

Source: Own elaboration from GT data

In our opinion, the areas included in the GT travel category do not reflect the real scale of the tourism phenomenon. Also, the existing tourism indicators in Portugal are insufficient due to the constant changes in the consumer behaviour and the travel arrangements, made available late to tourism stakeholders, making decision-making more difficult and increasing the risk uncertainty. These facts all together justify this study. In the literature there is no single methodology for the construction and evaluation of composite indicators, however, there are some authors and organizations that have studied this subject and that served as reference for the development of the methodology that is presented in the following section (for example UNWTO, 1996, 2004; Silva, Mendes & Guerreiro, 2001; OECD, 2003, 2008; Mendola & Volo, 2017).

3. METHODOLOGY

The main objective of this paper is to propose the creation of a composite indicator, called the Google Output Relevance Indicator Internal [GORI (WORLD) _PT: TOURISM], which measures online public interest, from 118 countries including Portugal, by the tourism in Portugal.

In order to achieve this objective, it was considered that the most appropriate conceptual framework to represent the tourism supply is the one developed within the scope of the TSA, which was discussed in the previous section. As such, the characteristics products of tourism were listed, subsequently, the tourism characteristic products that map in terms of search in the GT

were selected as primary indicators, and the respective acronyms were defined, as can be seen in Table 2.

Table 2. Characteristic tourism products, primary indicators and respective abbreviations

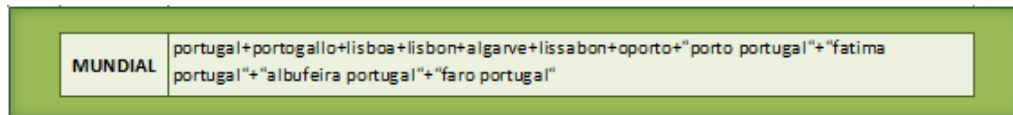|	Primary indicators	Abbreviations
Food & Beverage Services	Restaurants	RESTAUR
Accommodation	Hotels and accommodation	HTALOJ
Transportation	Air travel	VAEREA
	Buses and trains	AUTCOMB
	Cruises and charters	CRUZECH
	Rental car and taxi services	RENTACAR
Travel Agencies and Tour Operator and Tourist Guides	Travel agencies: holidays offer	AVFERIAS
Cultural Services	Zoos-aquariums-reservations	JARDZOO
	Historical sites and buildings	EDIFHIST
	Library and museums	BMUSEU
	Concerts and music festivals	CFESTIV
Recreation and Leisure Services	Thematic parks	PTEMATIC
	Mountain resorts and Ski	MONTSKI
	Golf	GOLFE
Others	Beaches and islands	PRAIA

Source: Own Elaboration

In the construction of the composite indicator, we considered as primary indicators the tourism characteristic products that GT classified in the "travel" category, but also products classified in other categories, such as restaurants classified as "food and beverages", libraries and museums classified in the category "reference", concerts and music festivals classified in the subcategory "events and listings", which in turn are in the category "arts and entertainment".

As can be seen from Table 2, the GORI (WORLD) _PT: TOURISM indicator is composed of 15 primary indicators grouped in seven parameters, corresponding to the tourism characteristics products considered in the TSA. For each product, it was identified a primary indicator, with the exception of "cultural services" and "recreational services", which due to the diversity of the products they integrate, we have chosen to assign four and three indicators, respectively, that were considered as being the most representative of the product.

The next phase was the search terms identification used by the Internet users that best represented "Portugal" destination. It was considered the municipalities or cities that presented a greater number of overnight stays in establishments in Portugal according to known statistics. Also, the search term "Portugal" and the capital of the country "Lisboa" were placed in other languages, namely English and Italian, as can be seen in Figure 2.

Figure 2. Search terms of the composite indicator

| MUNDIAL | portugal+portogallo+lisboa+lisbon+algarve+lissabon+oporto+"porto portugal"+"fatima portugal"+"albufeira portugal"+"faro portugal" |

Source: Own Elaboration

Before aggregating the primary indicators, the data was analysed to ensure that the conditions are met to apply the intended statistical techniques. In this study, we opted for no data processing because the primary indicators are available in the same unit of measure, the extreme values and outliers were not considered relevant, and the indicator does not present missing cases. Thus, whenever the data generation of the GT indicated that there was not enough search volume to show results, the observation assumed the value "zero".

As it was verified in the literature review, that potential consumers of tourism seek information in search engines according to their needs and knowledge about tourism products and destinations. Therefore, it was considered that the primary indicators should have different weights, obtained with based on the effective tourist demand, similar to the indicators developed by PriceStats (PriceStats, 2013) that combines in their construction published data with data obtained through the Internet.

As there is no statistical data on the number of tourism consumers in Portugal and abroad who are looking for the products characteristic of tourism in national territory, it was decided not to consider physical demand, but rather the monetary demand, proposing different weights for the primary indicators based on the tourist consumption of visitors, namely the internal tourist consumption of 2007 of CST Portugal, obtained through the weight of each of the parameters of the internal tourist consumption in the total monetary tourist consumption of the products characteristic of tourism.

In the following equation, it is possible to observe the weight of each parameter of the composite indicator:

$$0.34(RESTAUR)+0.28\ (HTALOJ)+\ (0.15\ (VAEREA)+0.04\ (AUTCOMB)+0.006\ (AUTCOMB)+0.002\ (CRUZECH)+0.042(RENTACAR)]+0.03(AVFERIAS)+0.005\ [(JARDZOO)+(EDIFHIST)+(\ BMUSEU)+\ (CFESTIV)]+0.054[(PTEMATIC)+(MONT\ SKI)+(GOLFE)]+0.041(\ PRAIA)$$

Data from the primary indicators were collected daily in the GT during one year (March 28, 2013, to March 27, 2014). Although the values obtained for each primary indicator are available daily, they are obtained based on the searches carried out in Google in the broader period "the last 90 days", this methodological option is due to the fact that it is difficult to obtain data for lower temporal periods.

The composite indicator was validated based on the methodology of Carmines and Zeller (1979). Thus, in relation to criterion validity, the GORI (WORLD) _PT: TOURISM indicator was related with a similar indicator, the search volume index obtained in the GT for the category "trips", which was obtained following the same methodology and collected from GT in the same period. The indicator is validated concerning content because it was considered the internationally recognised TSA conceptual framework. In relation to reliability, that is, the consistency over time, the indicator was validated with the Cronbach's Alpha coefficient.

4. RESULTS

Analysing Figure 3, we can observe the indicator GORI (WORLD) _PT: TOURISM obtained in the period from 28/03/13 to 27/03/2014. It can be verified that the whole world Internet users search interest by the tourism destination Portugal assumes medium/high values (over 55) between April and July. From August to December, Portugal's popularity decreases, reach high values again in January 2014.

Figure 3. Graphic representation of the composite indicator
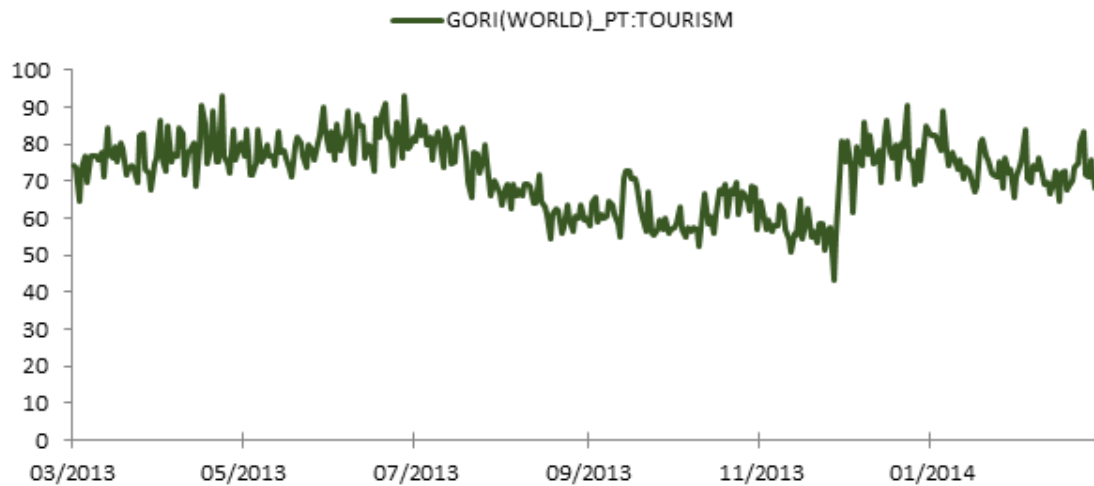
Source: Own elaboration from GT (www.google.pt/trends/)

Regarding the descriptive statistics presented in Table 3, it can be seen that the GORI (WORLD)_PT: TOURISM indicator shows a high mean value (71.91) and a standard deviation of 9.36. The indicator presents a modal value of 69.3, which is the lowest value that is repeated more times in the data series. The higher search interest by the tourism destination Portugal takes place on May 20 and July 24, 2013, reaching a peak of interest of 93.2. On the other hand, Portugal's lowest popularity is on December 24, 2013, with a search volume index of 43.4.

Table 3. Descriptive statistics of the composite indicator

DESCRIPTIVE STATISTICS	GORI (WORLD)_PT: TOURISM
Average	71.91
Standard deviation	9.36
Mode	69.3*
Minimum	43.4
Maximum	93.2
Observations	365

*Multiple modes exist. The smallest value is shown.

Source: Own Elaboration

Looking at the primary indicators that constitute the composite indicator, it can be observed that, in average, the Internet users from all over the world show a lower interest in Concerts and Festivals (CEFESTIV), Golf (GOLFE) and Theme Parks (PTEMATIC) in

Portugal, with a search index of less than 50, but still higher than 40. On the other hand, the characteristic products of tourism which, on average, are of more significant interest to Internet users are transport, namely air travel (VAEREA) and buses and trains (AUTCOMB) (68.0), accommodation (HTALOJ) (69.5), zoos-aquariums-reservations (66.9) and restaurants (RESTAUR) (66.3) (see Table 4).

Table 4. Primary Indicators Average

Composite Indicator	RESTAUR	CFESTIV	GOLFE	BMUSEU	AVFERIAS	RENTACAR	AUTCOMB	CRUZECH	MONTSKI	JARDZOO	EDIFHIST	PTEMATIC	PRAIA	HTALOJ	VAEREA
GORI (WORLD)_PT:Tourism	66.3	41.8	43.5	56.5	57.5	58.7	68.0	54.8	51.5	66.9	60.7	46.6	57.0	69.5	73.2

Source: Own Elaboration

Analysing Figure 4, it can be seen that the world search interest in products characteristic of tourism differs according to the month of the year. In this way, it can be seen that there is a greater interest in car rental (RENTACAR), beaches and islands (PRAIA) and theme parks (PTEMATIC) in July (01/07) compared to other products. Travel agencies/holiday offerings (AVFERIAS), air travel (VAEREA), historical buildings (EDIFHIST) and libraries and museums (BMUSEU) are more popular products in April (01/04) than in the other months under review. The mountain and ski resorts (MONTSKI) product is the subject of increased search interest in January and October, as well as restaurants (RESTAUR) in January (01/01) and concerts and festivals (CFESTIV) in October (01/10).

Figure 4. Graphical representation of the primary indicators from GORI(WORLD)_PT: TOURISM
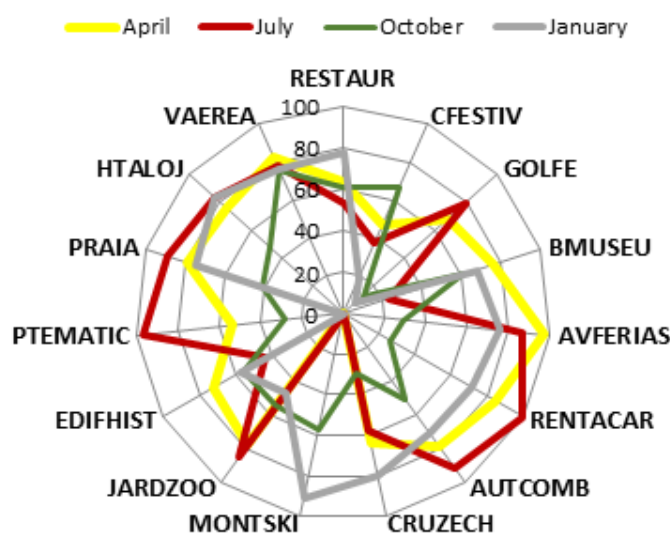
Source: Own elaboration from GT data (www.google.pt/trends/)

The composite indicator was analysed in relation to the concurrent validity, that is, the indicator was correlated with the search volume index (ISV) obtained in the GT with the same methodological criteria, in terms of time period, geographic location of Internet users, collection of the data and selection of the search terms, in the general category entitled "trips". The GORI (WORLD) _ PT: TOURISM presents a high correlation with the "travel" ISV, with a Pearson coefficient of 0, 85, which means that there is a great similarity between the indicators.

Regarding the internal consistency or reliability of the composite indicator, analysing Table 2 with the Cronbach's Alfa results and the inter-item correlations, it is possible to observe that the GORI (WORLD)_PT: TOURISM indicator present a Cronbach's Alpha of 0.73, which indicates that the composite indicator has good reliability. In addition, it was observed that primary indicators are generally important for the computation of the respective composite indicator; however, it is important to mention that if the primary indicator Mountain resorts and Ski (MONTSKI) was excluded from the proposed composite indicator the Cronbach's Alpha value would have a significant increase, reaching the value of 0.82.

Table 5. Reliability of the indicator, according to Cronbach's Alpha value

Indicator	Cronbach's Alfa	Cronbach's Alpha based on standardised items	N. of items
GORI(WORLD)_ PT: TOURISM	0.73	0.77	15

Source: Own elaboration from SPSS

5. CONCLUSION

The objective of this article is to create a new composite indicator that is able to measure the online interest of Internet users by tourism in Portugal. In order to achieve this objective, a methodology was developed which consisted of the selection of primary indicators, having as theoretical conceptual framework the TSA characteristic products; in the selection of research terms that identified the geographical area under study, which was based on the municipalities with the highest number of overnight stays in hotel establishments in the Portugal; in the criterion for the weighting and aggregation of the indicators, choosing to consider as a weighting the proportion of the internal tourism consumption per product characteristic of tourism. Finally, the composite indicator was validated in relation to a competing indicator (ISV in the "trips" category) collected under the same methodological conditions as the primary indicators, and the reliability and internal consistency of the indicator were tested using the Cronbach's Alpha value.

The composite indicator proposed and developed in the article is called GORI (WORLD) _PT: TOURISM and is thus a weighted average of the fifteen primary indicators that compose it, whose data was obtained using the GT tool daily for a year. The results show that the interest of Internet users in Portugal is almost always higher than 50, assuming higher values in the period from April to July 2013 and from January to March 2014. The average of the indicator is approximately 72.0, and the lowest value the indicator reaches is 43.4. From the analysis carried out on the primary indicators, it was concluded that the average interest of tourists in Portugal differs according to the tourism characteristic product and the popularity of the product among potential consumers also varies according to the time of year. Concerning the validation and reliability of the composite indicator, it is concluded that it has a high correlation with the competing indicator and that the reliability of the indicator is good, being in general necessary all the primary indicators for its construction.

The study presents limitations associated in part with the type of data made available by the GT, which does not allow to know the index of the volume of search in absolute terms nor the obtaining of daily data based only on the searches done by the Internet users in that period. Moreover, the difficulty in collecting data from the GT due to the fact that it is performed daily for a considerable number of indicators makes it impossible for it to be presented for a longer and, especially, more recent period of time. The GT's limitation

relative to the limit on the number of search terms that can be used also limited the selection of the search terms chosen to identify Portugal.

For future research, we suggest that the composite indicator should be construed with terms of search that include other municipalities in Portugal and that it should also be tested with other primary indicators, especially those selected to represent cultural services and recreation and leisure services. Besides, the methodology for constructing the indicator could be applied to know the online interest of Internet users by other tourism destinations.

REFERENCES

Buhalis, D. & Costa, C. (2006) (Eds.). *Tourism management dynamics: trends, management and tools*. Burlington: Butterworth-Heinemann/Elsevier.

Buhalis, D. & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet—The state of eTourism research. *Tourism Management*, 29(4), 609-623.

Broder, A. (2002). A taxonomy of Web search. *ACM Sigir forum*, 36(2), 3-10.

Cai, L. A., Feng, R., & Breiter, D. (2004). Tourist purchase decision involvement and information preferences. *Journal of Vacation Marketing*, 10(2), 138-148.

Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment. Quantitative Applications in the Social Sciences*. EUA: Sage Publications.

Cooper, C., Fletcher, J., Fyall, A., Gilbert, D. & Wanhill, S. (2005). Tourism, Principles and Practice, (3ª. Ed.). Essex: Pearson Education Limited. H. Choi & H. Varian (2009). *Predicting the Present with Google Trends*. Retrieved November 12, 2011, from http://bit.ly/1zODvPz.

Dinis, G. Costa, C. & Pacheco, O. (2016). Os Canais de Marketing Digital no Processo de Tomada de Decisão de Compra em Turismo. *International Business and Economics Review,* 7, 138-152.

Eusébio, C., Marujo, N., Borges, M., Serra, J. (2012). Análise das metodologias adotadas a nível internacional e nacional para desenvolver uma CST para as economias regionais. In Marujo, Noémi, N., Borges, M. & Serra, J. (Coords.), *Quadro Metodológico para a Elaboração da Conta Satélite do Turismo para a Região do Alentejo*. Castelo Branco: RVJ Editores.

Fesenmaier, D. (2012). *Designing smart tourism destinations*. Retrieved August 11, 2012, from http://bit.ly/103AiPb.

Google. (2011). *Beyond last click: Understanding your consumers' online path to purchase - Insights and learnings from Google's clickstream research*. USA: Google. Retrieved September 16, 2012, from http://bit.ly/1mn2mHn.

Ginsberg, J. & Mohebbi, M.H., Patel, R.S, Brammer, L., Smolinski, M.S., Brilliant, L. (2009). Detecting influenza epidemics using search engine query data. *Nature*, 457, 1012-1014. Retrieved August 16, 2011, from http://bit.ly/1so0jDn.

Grønflaten, Ø. (2009). Predicting Travelers' choice of information sources and information channels. *Journal of Travel Research,* (48)2, 230-244.

Jansen, B. J., Booth, D. L., & Spink, A. (2008). Determining the informational, navigational, and transactional intent of Web queries. *Information Processing and Management*, 44(3), 1251-1266.

Libreros, M. (2006). *Designing the Tourism Satellite Account (TSA) Methodological Framework*. Madrid: World Tourism Organization.

Li, X., Pan, B., Law, R. & Huang, X. (2017). Forecasting tourism demand with composite search index. *Tourism Management*, 59, 57-66.

Macfeely, S. (2009). Developing tourism statistics at the sub-national level: A Response - Issues and Insights. *Paper presented at International Conference on Measuring Tourism Economic Contribution at Sub-National Levels*, Málaga, Spain. 29-31 October 2008. UNWTO. Retrieved August 11, 2011, from http://bit.ly/1NYflLg.

Matias, A. (2007). *Economia do turismo: teoria e prática*. Lisboa: Instituto Piaget.

Mathieson, A., & Wall, G. (1982). *Tourism, economic, physical and social impacts*. London: Longman, Wiley.

Mendola, D. & Volo, S. (2017). Building composite indicators in tourism studies: Measurements and applications in tourism destination competitiveness. *Tourism Management*, 59, 541-553.

OECD. (2003). *OECD Environmental Indicators: Development, Measurement and Use*. Reference paper. Paris: OECD.

OECD. (2008). *Handbook on constructing composite indicators: methodology and user guide*. OECD-JRC. Paris: OECD Publishing.

Pan, B., Xiang, Z., Law, R., & Fesenmaier, D. R. (2011). The Dynamics of Search Engine Marketing for Tourist Destinations. *Journal of Travel Research*, 50(4), 365-377.

Pan, B., Xiang Z, Fesenmaier, D. & Law, R. (2009). *Destination Online Competitiveness and Search Engine Marketing*. Retrieved August 16, 2016, from http://bit.ly/1LfPnDe.

PriceStats. (2013). *PriceStats uses online prices to calculate innovative economic indicators*. Retrieved August 2013, from http://bit.ly/1NPsj9S.

Regulamento (UE) n.º 692/2011 do Conselho e Parlamento Europeu de 6 de julho de 2011 (concerning European statistics on tourism and repealing Council Directive 95/57/EC). *Jornal Oficial da União Europeia*, L 192/17 de 22/7/2011.

Silva, J. A., Mendes, J. C. & Guerreiro, M. M. (2001). *Construção de Indicadores de Avaliação da Qualidade no Turismo*. Relatório final, vol. 1. Faro: Universidade do Algarve.

StatCounter. (2018). *Search Engine Market Share Worldwide - May 2018*. Retrieved May 16, 2018, from https://bit.ly/2Bib17K.

Turismo de Portugal. (2014). *A comunicação do destino Portugal: a ascensão do online*. Retrieved July, 30, 2014, from http://bit.ly/US3rKx.

UN, UNWTO, EUROSTAT & OECD. (2010). *Tourism Satellite Account: Recommended Methodological Framework 2008*. New York: United Nations Publications.

UN, UNWTO, CEC & OECD. (2001). *Tourism Satellite Account: Recommended Methodological Framework*. New York: United Nations Publications.

UNWTO. (2004). *Indicators of Sustainable Development for Tourism Destinations: A Guidebook*. Madrid: World Tourism Organization.

UNWTO. (1999). *Conta satélite do turismo: quadro conceptual*. Madrid: Organização Mundial de Turismo.

UNWTO (1998). *Introducción al Turismo*. Madrid: Organização Mundial do Turismo.

UNWTO (1996). *What Tourism Managers Need to Know: A Practical Guide to the Development and Use of Indicators of Sustainable Tourism*. Madrid: World Tourism Organization.

Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management*, 31(2), 179-188.

Xiang, Z., Pan, B., Law, R. & Fesenmaier, D.R. (2010). Assessing the visibility of destination marketing organizations in Google: A case study of convention and visitor bureau Websites in the United States. *Journal of Travel & Tourism Marketing*, 27(7), 694-707.

Xiang, Z., & Fesenmaier, D. R. (2006). Assessing the initial step in the persuasion process: Meta tags on destination marketing Websites. *Information Technology & Tourism*, 8*(*2), 91-104.

Xiang, Z. & Pan, B. (2011), Travel queries on cities in the United States: Implications for search engine marketing for tourist destinations. *Tourism Management*, 32(1), 88-97.