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Should the World Economic Forum's global tourism competitiveness index be improved?

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Abstract

Purpose – This research paper aim at providing a new approach of calculating the destinations competitiveness index. How can these variables been aggregated in other to reflect the realities of very distinct productive environments? We assume that: The weighting of variables provides a better measure of destinations competitiveness. Base on the Neo-Technological theory, after a life cycle differentiation, we used a panel data approach to calculate the weight of each variable as the spearman correlation coefficient of its contribution to tourism inflows growth. After integrating these weights, we came to the point that by applying an appropriate weight to its components, we end up having a competitiveness index that significantly improve the correlation between competitiveness and tourism inflows growth.

Keywords Tourist destination, Neo-technological theory, Competitiveness, Life cycle, Classification

Paper type Research paper

1. Introduction

The competition between tourist destinations that has grown over the past two decades has led to a growing need for knowledge not only about the competitive capacity of a destination but also about the strengths and weaknesses of its competitors (Pulido-Fernández and Rodríguez-Díaz, 2016). This need for knowledge acquisition has led to the emergence of a large body of economic literature based primarily on the competitiveness of tourist destinations, with an emphasis on the analysis of its determining factors. For the proponents of this orientation, the interest of their work consisted in identifying, measuring and systematising the variables which determine the competitive position of host countries. Indeed, destination competitiveness allows public authorities, destination managers as well as different tourism entrepreneurs to measure the performance of a destination in relation to its competitors (Croes and Kubickova, 2013) but also to

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explain and predict a country's tourism behaviour to facilitate management decision-making (Pulido-Fernández and Rodríguez-Díaz, 2016).

While several other tools for measuring the competitiveness of tourism destinations have also been proposed by researchers over the past decade (Croes, 2011; Croes and Kubickova, 2013; Gooroochurn and Sugiyarto, 2005; Leung and Baloglu, 2013; Pulido-Fernández and Rodríguez-Díaz, 2016), it was under the impetus of the World Economic Forum (WEF) that the first annual report on the competitiveness of tourism in 124 countries around the world was published in the late 2007s. Indeed, known as the Travel and Tourism Competitiveness Report, it aims to provide a comprehensive policy tool to measure the factors and policies that make tourism development attractive; which would allow all stakeholders to work together to improve tourism competitiveness in their national economies.

To achieve this, the WEF proposes a synthetic destination competitiveness index called the Travel and Tourism Competitiveness Index (TTCI) and four competitiveness sub-indices. The first sub-index is related to the enabling environment. The second takes into account travel and tourism policy and enabling conditions. The third is infrastructure, and the fourth is natural and cultural resources. These indices were derived from the available information, organised into 14 pillars of tourism competitiveness, which, in turn, are divided into 90 variables or indicators of competitiveness.

Although the TTCI is the most widely used instrument in international comparisons for valuing the offers of tourist destinations, two main criticisms of this index concern the nature and arbitrary weighting of the variables within each pillar. Indeed, as regards the nature of the variables, the TTCI does not take into account the market size effect as a variable which can impact on the search for competitiveness. Similarly, the weighting of the variables does not follow the logic of the growth of flows that a competitiveness indicator should reflect. In fact, in the calculation of the TTCI, all the variables have the same weight, even though their contributions to tourism demand are different; this does not make it possible to highlight the growth in flows which, implicitly, reflects the level of competitiveness of destinations. The question that arises is how to obtain a weighting of the variables that can reflect the level of competitiveness of each tourist destination as well as their sometimes very distinct productive environments? To answer this question, we formulate the hypothesis that the weighting of the variables makes it possible to obtain a measure of the competitiveness of the destinations by translating the growth of the flows generated.

To do so, considering all the variables as significant and the data collection process as efficient, and based on the neo-technological theory (Posner, 1961; Vernon, 1966) which states that it is innovation that is the source of competitiveness, and therefore only the most competitive destinations can see their flows grow and be maintained, we propose a two-step approach to calculate the weight of each of the variables. Unlike the one proposed by Pulido-Fernández and Rodríguez-Díaz, (2016), which uses a multi-objective method with a double reference point and results in a new indicator, we proceed to an improvement of the TTCI by conducting a correlation analysis. We use the information provided in the reports published by the WEF, and compare the results of the new index with those presented by the WEF, to draw some conclusions. This methodology opens up the possibility of obtaining weights for the different pillars that are not the result of an arbitrary will.

The rest of this paper is organised as follows: Section 2 presents the theoretical framework of our work. Section 3 describes the methodology used. Finally, Section 4 presents the results and implications of the study.

2. Theoretical framework

Competitiveness is a broad and multidimensional concept which has led to multiple definitions and models of analysis since the 17th century (Cho and Moon, 2013). In the case of tourism

destinations, competitiveness is understood as the role played by stakeholders in creating and integrating value-added products to sustain resources while maintaining their market position relative to their competitors (Hassan, 2000, p. 239). However, this definition seems to be linked exclusively to the relative position of destinations in tourism markets. For example, Dwyer and Kim (2003) defineed competitiveness as the relative ability of a destination to meet the needs of visitors in different aspects of the tourism experience or to offer products and services that outperform other destinations in those aspects of the tourism experience considered important by tourists. Other authors examine competitiveness by analysing temporary fluctuations in tourist flows (Li *et al.*, 2010), demand satisfaction (Caber *et al.*, 2012), economic globalisation (Namhyun, 2012), tourism prices (Craigwell and Worrell, 2008; Song and Witt, 2000), sustainability and efficiency (Cracolici *et al.*, 2008; Pulido-Fernández *et al.*, 2015), which they consider to be variables that positively influence tourism demand decisions.

These analyses show that the degree of competitiveness of a destination may not be a significant indicator of the efficiency of its economy or the level of well-being of its population. Indeed, a tourist destination may base its competitiveness not only on low wages and few benefits but also on the availability of natural resources that are unique in the world (Juan Ignacio and Rodriguez-Díaz, 2016). This competitiveness can also be based on the existence of high productivity, which allows higher wages and excellent benefits or on an improvement in the quality of services but also of the tourist experience. This conceptual debate has given rise to various attempts to identify and systematise the factors determining the competitiveness of tourist destinations. In fact, there are several approaches in the literature that explain the competitiveness of tourist destinations. But it was under the impetus of Crouch and Ritchie (1999) that the theory was developed at the end of the 1990s. Their model forms the basis of the debate on the competitiveness of tourist destinations by integrating all the relevant explanatory factors that can influence this competitiveness.

Numerous empirical studies have used this analytical framework to explain the competitiveness of destinations (Dwyer and Kim, 2003; Dwyer *et al.*, 2003, 2014) but also to measure the competitiveness of tourist destinations in several countries (Bahar and Kozak, 2007; Lee and King, 2009; Crouch, 2011; Dwyer *et al.*, 2012). The main criticism of these analyses is that they could lead to less accurate results on the one hand and, on the other, do not take into account other factors and attributes that can also affect the competitiveness of destinations (Crouch, 2011). For example, Enright and Newton (2005) determine the relative importance of the attributes of tourism destination competitiveness by surveying tourism industry professionals. Based on island destinations, Croes (2011) proposes a more precise competitiveness index for tourist destinations, demonstrating that current measures of competitiveness do not meet the needs of all destinations and that there are regions with heterogeneous characteristics. Based on the aforementioned work, Croes and Kubickova (2013) propose an alternative tourism competitiveness index (TCI), which they apply to the Central American region. The same is true of Dwyer *et al.* (2014), who apply the integrated destination competitiveness model to data available for a set of 139 countries over the period 2007–2011. Their research involved testing the 83 competitiveness attributes of this model and the results validated the appropriateness of the model's structure, the validity of the groups of destination competitiveness attributes and the appropriateness of the different indicators used to measure destination attributes.

Of all the indicators and measures developed, the WEF's TTCI is widely used due to its methodological superiority and comprehensiveness in terms of the range of issues considered and geographical coverage (Hanafiah and Zulkifly, 2019; Martins *et al.*, 2017). However, like most synthetic indices, the TTCI has been criticised, particularly on methodological grounds. These criticisms focus mainly on the following points:

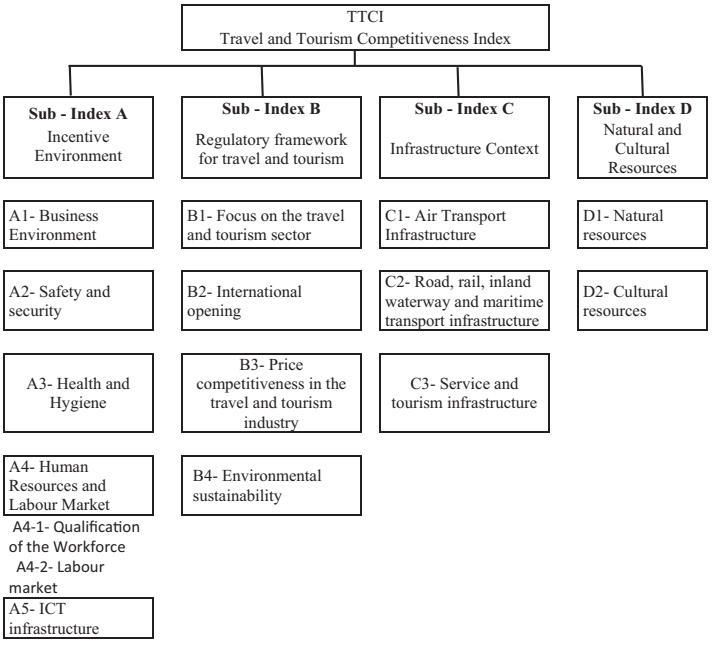
- the composition of the index, in particular, the combination of raw data and survey data;

- the use of non-weak theoretical data;
- the comparability of countries with different levels of development;
- the arbitrary weighting of variables; and
- the reliability and validity of the index and of the statistical methods used to demonstrate the usefulness of the index.

To address these issues, new approaches are being used to calculate the TTCI. The first approach is based on a different standardisation and aggregation of the pillars, which makes it possible, on the one hand, to adjust the weighting and, on the other, to assess the state of all the other countries in relation to each pillar (Luque *et al.*, 2009, 2016; Salinas Fernándeza *et al.*, 2020). The second approach constructs the indicator by calculating the weight of its component on the basis of two reference points, using a piecewise linear realisation function for each pillar; this makes it possible to normalise the value of each country by means of reference values (Pulido-Fernández and Rodríguez-Díaz, 2016). Incidentally, although these approaches solve the main problem related to the weighting of variables in the TTCI, they still do not meet the objective of competitiveness analysis, which is to explain the growth in tourist flows. This aspect of the problem is one of our concerns in the present study.

The TTCI is constructed as the result of four sub-indicators, themselves composed of 14 pillars grouping 75 (90) variables, 47 of which are quantitative and 28 qualitative. Its basic model, inspired by Porter's (1985) general model, Figure 1 below shows the basic TTCI model.

All the pillars that make up the sub-indicators of the TTCI are calculated on the basis of primary data drawn from the "Executive Opinion Survey" [1] conducted by the WEF on the



Source: WEF (2019)

Figure 1.
Basic model structure

tourism sectors of 124 countries at the outset and 140 countries in 2021, and secondary data collected from various sources [2]. The data from the survey have a varying weighting between 1 and 7, while the indicators from the secondary data are standardised to a scale of 1–7. The standard formula for converting each quantitative variable obtained from the secondary data to the 1–7 scale is as follows:

$$X'_{ij} = 6 * \frac{X_{ij} - X_j\,min}{X_j\,max - X_j\,min} + 1$$

where i represents the country and j the index variables;
$X_j\,max$ the maximum observed score of the variable j;
$X_j\,min$ the minimum observed score of the destination competitiveness variables;
X_{ij} the observed value of country i's score for variable j;
X'_{ij} the estimated value of country i's score for variable j; and
N the number of variables.

By taking into account the grouping of certain variables, it can be seen that all the criteria will ultimately have the weight of 1 in the calculation of the value of the variable. The Defense Trade Cooperation Treaties is then presented as a simple arithmetic average of the pillars and therefore of the variables that make them up. Hence, the following general formula:

$$TTCI_i = \frac{1}{N}\sum_{j=1}^{n} X'_{ij}$$

where X'_{ij} represents the standardised values of the quantitative variables and the read value for the qualitative variables.

The construction of an indicator of tourism competitiveness must respect three basic principles, which we have identified as being: national and international comparability, productivity (growth at the best price) and dynamics (taking into account the time effect and sustainability). An improved critique of the TTCI and the taking into account of these basic principles will allow us to propose an indicator capable of improving the correlation between tourism competitiveness and the growth of flows.

3. Methodology framework

The reconfiguration of the index that we propose is in the wake of the neo-technological theory developed by Posner (1961) and Vernon (1966). It is based on the idea that the greater the demand, the greater the need for innovation and the more the product offered will incorporate the best of the available technology as well as reflecting the current and future needs of consumers. These two theories explain how, over the course of a product's life cycle, the places where the goods are produced shift geographically, stimulating international trade. Similarly, Porter (1990) drew on the theory of comparative advantage and the notion of economies of scale to propose the concept of competitiveness clusters, which bring together, in a single geographical area and in a specific branch of activity, a critical mass of resources and skills giving this area (cluster) a key position in global economic competition. The concept of economies of scale also plays a key role in the development of clusters.

This section first presents the data used in the article before presenting the updated methodology for calculating the TCI.

3.1 Data

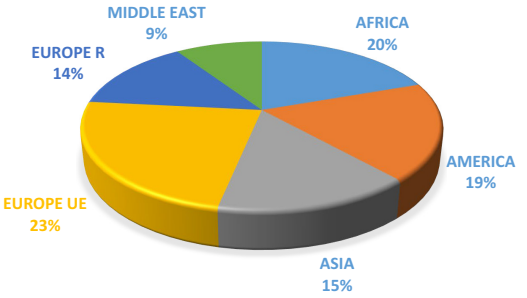
The choice of the components of our panel is based on two basic principles all linked to the notion of market size. Indeed, production and innovation are intimately linked to the size of the market and to the prospects it offers. In this work, we take into account the effects of economies of scale in relation to Parkinson's law and the threshold effects with the principle of critical size (Lehu, 2012). This allows us to eliminate not only island destinations of less than 1,000 km in diameter but also destinations that have not been able to welcome at least 100,000 tourists per year over the past three years. In addition, for greater significance, certain countries whose political instability may lead to a poor assessment of their tourism value were also excluded from our panel; this led us to a panel of 107 countries. The data used are essentially secondary data from the databases of the WEF, the World Tourism Organisation, the Central Intelligence Agency, the World Travel and Tourism Council, the International Union for Conservation of Nature, the IMF and the World Bank. All the data sources are available in Appendix 1 of the document. The global sample, summarised in Figure 2, thus includes: 21 African countries south of the Sahara, 20 American countries, 16 Asia-Pacific countries, 10 Middle Eastern countries including the 4 North African countries and 40 European countries including 25 members of the European Union.

3.2 Process of calculating the adjusted index

The calculation of the TCI is done in three steps: the classification of destinations in the life cycle, the calculation of the correlation coefficients between the factors, and the levels of international tourist inflows, and finally the calculation of the TCI itself.

3.2.1 Destination classification. The destinations are grouped into five phases according to their classification obtained from the theory of the life cycle of tourist destinations developed by Butler (1980). The author shows that a tourist area, i.e. a given space quantified by tourist numbers, undergoes a life cycle. He specifies that any tourist destination undergoes a phase of exploration or discovery, involvement and local training, development, consolidation and stagnation. In this study, the classification of tourist destinations is made over the whole period on the basis of the calculation of quintiles of growth rates of tourist arrivals. These quintiles thus make it possible to group the countries into five phases: exploration (EXP), involvement (INV), development (DEV), consolidation (CON) and stagnation (STA).

3.2.2 Calculation of correlation coefficients. We calculate two types of correlation coefficients: the correlation coefficients of the factors by categories k P_k, and the correlation coefficients of variables j for country i α_{ij}. The variables are grouped into four categories called sub-indices: $k = 1, 2, 3$ and 4. Subsequently, the coefficients P_k and α_{ij} are calculated as correlation coefficients ρ of Spearman rank denoted:



Source: Authors

Figure 2.
Distribution of the sample by area

$$\rho = 1 - 6^{*}\frac{\sum_{i=1}^{n}\left[R(DDET_i) - R\left(X_{ij}^{'}\right)\right]^2}{n^3 - n} \quad (1)$$

With n representing the number of destinations in the relevant "s" phase ($n = 43$ for the exploration phase (EXP), 16 for the involvement phase (INV), 27 for the development phase (DEV), 03 for the consolidation phase (CON) and 18 for the stagnation phase (STA); R ($DDET_i$) the ranking of destination i for tourism demand and $R\left(X_{ij}^{'}\right)$ the rank of the destination for the variable or factor $X_{ij}^{'}$.

Because the correlation coefficient has a value between −1 and 1, this would lead to a competitiveness index between −7 and 7. In order to allow the value of the index to remain within the range of 0 to 7, we use the $(Y = (X + 7)/2)$ transformation. We will then proceed with the following transformation to obtain the corrected correlation coefficient between 0 and 1:

$$\rho^{'} = \frac{1}{2}(1 + \rho) \quad (2)$$

With $\rho' = P_k$ for the correlation coefficients of the factors and $\rho' = \alpha_{ij}$ for the correlation coefficients of the variables.

3.2.3 Calculation of the improved tourism competitiveness index. The fundamental difference that this index introduces is in the extremes. The minimum and maximum become those of the class to which the country belongs. This is justified by the fact that, according to the neo-technological theory, innovations will be more integrated the more significant the demand and the market growth prospects are. The formula for calculating the scores of the different pillars (variables) of the index is thus formulated as follows: If we assume: $i =$ the country (107); $j =$ the pillars of the index (15); $s =$ the phases of the life cycle (5) and $t =$ the years (2005–2019).

For each year, we have:

$$X_{ij}^{'} = 6^{*}\frac{X_{ij} - X_j^s\, min}{X_j^s\, max - X_j^s\, min} + 1 \quad (3)$$

With, respectively, $X_j^s\, min$ and $X_j^s\, max$ the observed minimum and maximum of the score of variable j in phase s; X_{ij} and $X_{ij}^{'}$ the observed and calculated value of the score of country i for variable j.

If we now consider S_{ikt} as the scores of the countries i for the criterion Global (sub-index) k (with $k = 1, 2, 3, 4$) at date t, we will have the following formulation for the first aggregation of the variables:

$$S_{ik} = \frac{1}{m_k}\sum_{j=1}^{m_k} \propto_j^{'} * X_{ij}^{'} \quad (4)$$

where m_k represents the variables of sub-indicator k. m_k is the number of variables included in the overall criterion k ($m_k = 5$ for the basic factors, $m_k = 5$ for the development factors and $m_k = 4$ for the expansion factors). We then ranked the destinations according to the volume of demand. On this basis, we identified three strata: destinations with less than 5 million tourist arrivals, those with between 5 and 10 million and those with more than 10 million.

This reorganisation according to the volume of demand makes it possible to give weights to the various factors (S_{ik}) of the competitiveness of destinations. These factors represent a number of homogeneous variables in terms of their impact on the development of the destination. If we consider that P_k represents the correlation coefficient of the factor k at the level of tourist flows, we arrive at the following formulation of the calculation of the TCI:

$$ICT_{it} = \sum_{k=1}^{4} P_k S_{ikt} \tag{5}$$

The combination of equations (1)–(5) allows us to arrive at the following formulation of the TCI:

$$ICT_i = \frac{1}{2}\sum_{k=1}^{4} P_k \sum_{j=1}^{m_k} \frac{1}{m_k}\left[\left(2 - 6*\frac{\sum_{i=1}^{n}\left[R(DDET_i) - R\left(X'_{ij}\right)\right]^2}{n^3 - n}\right)*\left(6*\frac{X_{ij} - X_j^s\, min}{X_j^s\, max - X_j^s\, min} + 1\right)\right] \tag{6}$$

This formulation of the TCI allows us, in the end, to obtain an index which integrates both cycle and size effects and then, as a consequence, the real contribution of the variables and factors to the growth of tourist flows.

4. Results

Our results are grouped into two subsets. Firstly, we present the calculations of the correlation coefficients of the factors and variables. Secondly, we calculate the values of the TCI.

4.1 Correlation coefficients

4.1.1 Correlation coefficients of variables. Table 1 presents the correlation coefficients of the variables at different stages of the life cycle of tourist destinations.

It can be seen from this table that the contribution of the factors to the value of a tourist offer varies greatly according to the phase of the life cycle in which the destination is located.

Phase	A1	A2	A3	A4	A5	B1	B2	B3
Global	0.7325	0.6745	0.7190	0.6275	0.7585	0.6880	0.5175	0.3575
DEV	0.6640	0.5815	0.6540	0.6910	0.7280	0.7025	0.4745	0.4480
CON	0.8580	0.7000	0.8095	0.8265	0.8605	0.8280	0.4565	0.6895
EXP	0.7350	0.7195	0.7815	0.7845	0.8170	0.7055	0.5925	0.2630
INV	0.7930	0.7385	0.8245	0.8420	0.9130	0.7455	0.8805	0.0800
STA	0.5875	0.5995	0.7010	0.7230	0.6935	0.6525	0.4645	0.2630
	B4	C1	C2	C3	D1	D2		
Global	0.6915	0.7005	0.7120	0.7115	0.6380	0.6535		
DEV	0.5885	0.7910	0.7080	0.7615	0.6630	0.7265		
CON	0.7200	0.9290	0.7815	0.8365	0.7265	0.6745		
EXP	0.7120	0.8235	0.8370	0.8380	0.6530	0.7930		
INV	0.8655	0.8710	0.8710	0.8675	0.6465	0.5475		
STA	0.6305	0.7200	0.6870	0.7320	0.5965	0.8320		

Source: Authors' own work

Table 1. Coefficient values of the variables

4.1.2 The coefficients of the competitiveness factors. To calculate the contribution of the competitiveness factors of destinations, we have considered access to the internet as an indicator of innovation. Indeed, the greater the number of internet users, the greater the possibilities of choice of destinations for consumers and the greater the constraints of differentiation for destinations. Thus, demand is all the stronger when the tourist destination presents the latest innovations in the sector. Subsequently, considering that the basic factors for tourism development are essentially linked to the availability of infrastructure, we have chosen hotel capacity as an indicator of the maturity of infrastructure in a destination. To this end, for all the destinations in our panel, we calculated the total accommodation available. Then for each of the groups thus identified, we estimated the average bed requirement necessary to cover a substantial increase in their market share. The bed requirement rate allows us to obtain an estimate of the infrastructure requirement needed to meet the current demand from international tourism.

Finally, to obtain the weighting of the development factors, we have taken the complement to one of the two previous components. This allows us to obtain all the weights of the different factors of the competitiveness of the destinations; this leads us to Table 2 below, which presents the contribution of the three factors thus identified to the competitiveness of international tourism destinations.

Table 2 shows that priorities vary according to the volume of arrivals. While for destinations with less than 5 million tourists, infrastructure is the priority; for destinations with between 5 and 10 million tourists, it is the development of natural resources that is the priority for making their offer more competitive; and for destinations with an established reputation, it is the implementation of an appropriate regulatory framework and an incentive environment that are their priorities.

4.2 Calculation of the tourism competitiveness index of destinations

In presenting the results here, we will limit ourselves to the top and bottom ten destinations in our ranking. For more details, see the complete ranking in Appendix 2. The TCI represents the TCI calculated over the years 2005 (05) to 2019 (19). Table 3 below gives a ranking of the ten best and worst destinations by information communication technology, while Table 4 below shows the WEF's ranking compared with that of the authors. The full list of authors is available in Appendix 3 of the paper.

From the ranking that results from this reformulation of the index, it is clear that young destinations such as Israel, the Republic of Korea and Ireland hold the top spot, which they share with countries such as Switzerland, Denmark, Canada and some Central European countries. These results show not only the loss of competitiveness of established destinations such as Spain, France, Germany, the USA and Japan, whose offer, although still competitive, is tending to become more popular, but also, and above all, the growing

Table 2.
Coefficients of the factors (sub-indices) of competitiveness

Tourist arrivals	Travel and tourism regulatory framework	Infrastructure context	Natural and cultural resources	Incentive environment
0–5 million	0.09	0.60	0.04	0.16
5–10 million	0.27	0.32	0.62	0.26
More than 10 million	0.64	0.08	0.34	0.58
Total	100	100	100	100

Source: Authors' own work

Rank	Country	TIC 05	Country	ICT 07	Country	ICT 09	Country	ICT 11
Ranking of the ten most competitive destination offers								
1	Israel	5.4756	Israel	5.3371	Israel	5.3371	Israel	4.6658
2	Korea (Rep)	4.2072	Korea (Rep)	4.1899	Korea (Rep)	4.1273	Korea (Rep)	4.3192
3	Sweden	4.1212	Thailand	4.0255	Thailand	3.9975	Sweden	4.2408
4	Latvia	4.0844	Sweden	4.0229	Latvia	3.9655	Denmark	4.1774
5	Thailand	4.0324	Latvia	3.9693	Denmark	3.8821	Canada	4.0813
6	Denmark	3.9817	Denmark	3.9364	Canada	3.7620	Ireland	3.9827
7	Canada	3.7281	Canada	3.7669	Sweden	3.7203	Spain	3.8810
8	Switzerland	3.6589	Ireland	3.6671	Ireland	3.6559	UK	3.8771
9	Ireland	3.6529	Switzerland	3.6431	Switzerland	3.6425	Finland	3.8719
10	Jordan	3.6358	UK	3.6198	UK	3.6111	France	3.8517
Ranking of the ten least competitive destination offers								
1	Malawi	0.430606	Malawi	0.401284	Mozambique	0.416815	Burundi	0.451207
2	Zimbabwe	0.392344	Zimbabwe	0.358658	Malawi	0.403765	Arabia S	0.410973
3	Burkina F	0.383329	Burkina F	0.347913	Zimbabwe	0.358597	Lesotho	0.407133
4	Paraguay	0.374072	Paraguay	0.327912	Burkina F	0.347504	Zimbabwe	0.385204
5	Kazakhstan	0.338943	Kazakhstan	0.305264	Paraguay	0.327912	Kazakhstan	0.3308
6	Arabia S	0.140927	Arabia S	0.140816	Arabia S	0.07719	Montenegro	0.316654
7	Oman	0.007216	Oman	0.007262	Oman	0.007308	Oman	0.316548
8	Montenegro	0.006215	Montenegro	0.006221	Montenegro	0.006226	Paraguay	0.308587
9	Ghana	0.004755	Ghana	0.004804	Ghana	0.004854	Senegal	0.287634
10	Senegal	0.004017	Senegal	0.003986	Senegal	0.00397	Ghana	0.23092

(*continued*)

Source: Authors' own work

Table 3.
Ranking of the ten best and worst destinations by TIC

Table 3.

Rank	Country	ICT 13	Country	ICT 15	Country	ICT 17	Country	ICT 19
Ranking of the ten most competitive destination offers								
1	Israel	4.7092	Israel	4.3048	Korea (Rep)	4.2858	Korea, Rep)	4.0194
2	Korea (Rep)	4.0632	Korea (Rep)	4.1741	Israel	4.1821	Ireland	3.9490
3	Denmark	3.8980	Denmark	3.8756	Sweden	4.0636	Sweden	3.8750
4	Colombia	3.8219	Sweden	3.8575	Denmark	3.8361	Denmark	3.8649
5	Switzerland	3.8154	Ireland	3.7988	Ireland	3.8341	Switzerland	3.8456
6	Sweden	3.7909	Switzerland	3.7744	Switzerland	3.7195	Israel	3.7784
7	Ireland	3.7399	Canada	3.6355	Colombia	3.6483	Latvia	3.6939
8	Finland	3.6738	Finland	3.6282	Canada	3.6207	Portugal	3.6563
9	Canada	3.6273	Colombia	3.5916	Portugal	3.5764	Canada	3.6363
10	Spain	3.4847	Spain	3.5149	Latvia	3.5739	Spain	3.6345
Ranking of the ten least competitive destination offers								
1	Guyana	0.437745	Bosnia-H.	0.455413	Malawi	0.500162	Nigeria	0.480194
2	Albania	0.434615	Algeria	0.453976	Algeria	0.493279	Malawi	0.465138
3	Malawi	0.43068	Mozambique	0.453692	Burundi	0.464195	Bangladesh	0.45578
4	Burkina F	0.428223	Malawi	0.449066	Bangladesh	0.459544	Burundi	0.453967
5	Mozambique	0.422707	Bangladesh	0.427774	Lesotho	0.459376	Lesotho	0.450702
6	Bangladesh	0.421469	Lesotho	0.426752	Madagascar	0.453979	Madagascar	0.435322
7	Lesotho	0.413322	Burkina F	0.399835	Zimbabwe	0.403288	Algeria	0.424317
8	Zimbabwe	0.385239	Zimbabwe	0.387016	Kazakhstan	0.391195	Burkina F	0.396805
9	Kazakhstan	0.359802	Kazakhstan	0.367371	Burkina F	0.377852	Paraguay	0.374895
10	Paraguay	0.310292	Paraguay	0.307228	Paraguay	0.374966	Tunisia	0.274377

Rank	2005		2007		2009		2011	
	Authors	FEM	Authors	FEM	Authors	FEM	Authors	FEM
Ranking of the ten most competitive destination offers								
1	Israel	Switzerland	Israel	Switzerland	Israel	Switzerland	Israel	Switzerland
2	Korea (Rep)	Austria	Korea (Rep)	Austria	Korea (Rep)	Austria	Korea (Rep)	Germany
3	Sweden	Germany	Thailand	Germany	Thailand	Germany	Sweden	Austria
4	Latvia	Iceland	Sweden	Iceland	Latvia	France	Denmark	France
5	Thailand	USA	Latvia	USA	Denmark	Canada	Canada	Suede
6	Denmark	Canada	Denmark	Canada	Canada	Spain	Ireland	USA
7	Canada	Luxemburg	Canada	Luxemburg	Sweden	Sweden	Spain	UK
8	Switzerland	UK	Ireland	UK	Ireland	USA	UK	Canada
9	Ireland	Denmark	Switzerland	Denmark	Switzerland	Australia	Finland	Spain
10	Germany	France	UK	France	UK	Slovaquie	France	Iceland
Ranking of the ten least competitive destination offers								
1	Malawi	Burundi	Malawi	Guyana	Mozambique	Lesotho	Burundi	Burundi
2	Zimbabwe	Lesotho	Zimbabwe	Burundi	Malawi	Burundi	Arabia S	Lesotho
3	Burkina F	Bangladesh	Burkina F	Lesotho	Zimbabwe	Nigeria	Lesotho	Mali
4	Paraguay	Cameroon	Paraguay	Bangladesh	Burkina F	Bangladesh	Zimbabwe	Burkina F
5	Kazakhstan	Ethiopia	Kazakhstan	Mozambique	Paraguay	Burkina F	Kazakhstan	Nigeria
6	Arabia S	Benin	Arabia S	Cameroon	Arabia S	Cameroon	Montenegro	Bangladesh
7	Oman	Nigeria	Oman	Ethiopia	Oman	Mozambique	Oman	Cameroon
8	Montenegro	Malawi	Montenegro	Benin	Montenegro	Ethiopia	Paraguay	Madagascar
9	Ghana	Burkina F	Ghana	Nigeria	Ghana	Paraguay	Senegal	Mozambique
10	Senegal	Madagascar	Senegal	Malawi	Senegal	Zimbabwe	Ghana	Pakistan

(*continued*)

Note: FEM = forum economique mondiale
Source: Authors' own work

Table 4.
Comparative table of WEF and authors' rankings

Rank	2013		2015		2017		2019	
	Authors	FEM	Authors	FEM	Authors	FEM	Authors	FEM
Ranking of the ten most competitive destination offers								
1	Israel	Switzerland	Israel	Spain	Korea (Rep)	Spain	Korea (Rep)	Spain
2	Korea (Rep)	Germany	Korea (Rep)	France	Israel	France	Ireland	France
3	Denmark	Austria	Denmark	Germany	Sweden	Germany	Sweden	Germany
4	Colombia	Spain	Sweden	USA	Denmark	Japan	Denmark	Japan
5	Switzerland	UK	Ireland	UK	Ireland	UK	Switzerland	UK
6	Sweden	USA	Switzerland	Switzerland	Switzerland	USA	Israel	USA
7	Ireland	France	Canada	Australia	Colombia	Australia	Latvia	Australia
8	Finland	Canada	Finland	Italia	Canada	Italia	Portugal	Italia
9	Canada	Suede	Colombia	Japan	Portugal	Canada	Canada	Canada
10	Spain	Australia	Spain	Canada	Latvia	Switzerland	Spain	Switzerland
Ranking of the ten least competitive destination offers								
1	Guyana	Burundi	Bosnia-H.	Burkina F	Malawi	Burundi	Nigeria	Burundi
2	Albania	Lesotho	Algeria	Burundi	Algeria	Mali	Malawi	Burkina F
3	Malawi	Algeria	Mozambique	Nigeria	Burundi	Nigeria	Bangladesh	Mali
4	Burkina F	Benin	Malawi	Mozambique	Bangladesh	Lesotho	Burundi	Nigeria
5	Mozambique	Madagascar	Bangladesh	Lesotho	Lesotho	Benin	Lesotho	Cameroon
6	Bangladesh	Mali	Lesotho	Mali	Madagascar	Cameroon	Madagascar	Mozambique
7	Lesotho	Burkina F	Burkina F	Bangladesh	Zimbabwe	Bangladesh	Algeria	Malawi
8	Zimbabwe	Nigeria	Zimbabwe	Malawi	Kazakhstan	Pakistan	Burkina F	Lesotho
9	Kazakhstan	Mozambique	Kazakhstan	Pakistan	Burkina F	Malawi	Paraguay	Benin
10	Paraguay	Malawi	Paraguay	Algeria	Paraguay	Mozambique	Tunisia	Ethiopia

Table 4.

importance of young destinations in the international tourism market. Furthermore, it can be seen that the least competitive destinations are more concentrated in sub-Saharan Africa. This could be justified by the fact that generally, these countries have an important infrastructure deficit in the tourism sector and a very low visibility on the international market.

As for the index values, the results obtained show that the value of the index is no longer very high. Indeed, out of the 107 countries in our panel, the number of destinations that have reached a score of at least 3.5 (i.e. 50% of the maximum expected score of 7) hardly exceeds 10. This can be explained by the nature of the tourist activity, which mixes both the qualitative and the quantitative, the emotional and the real. The other observation that can be made is that the differences between the values of the indicators of the different destinations are not high enough for a destination to really stand out and benefit from a significant comparative advantage. Under these conditions, the behaviour of agents, the availability of an attraction or a service can impact the competitiveness of a destination. Furthermore, for the period 2005–2019, the value of the index has been eroded significantly. The maximum value has fallen from 5.4756 in 2005 to 4.0194 in 2019. This could be the consequence of a reorientation of flows due to the crisis experienced by the main sources and destinations of international tourism.

To highlight the relevance of the results thus obtained, we proceeded to compare the average growth rates for the first 30 destinations to see if they confirm the expected growth effects. This gave us Table 5 below:

Overall, Table 5 shows that the TCI of destinations significantly explains the growth of international tourism flows. Indeed, the average growth rate of the top ten destinations is significantly better than that of the second ten destinations, which is also better than that of the bottom ten destinations (4.83, 2.78 and 1.61, respectively). The same analysis based on the results of the Approche Par Compétences yields Table 6 below:

The comparison of Tables 5 and 6 shows that the TIC explains the evolution of international tourism flows better than the TTCI; this confirms the option taken with regard to the methodology for calculating the TCI. The comparison can also be extended to the correlation with the volume of arrivals. Table 7 comparing the correlations is as follows:

This table allows us to confirm that the application of an appropriate weighting makes it possible to significantly improve the correlation of the index with the volume of arrivals.

Range	2005	2007	2009	2011	2013	2015	2017	2019	Means
1–10	5.39	7.86	5.85	7.53	−2.9	3.88	4.56	6.95	*4.83*
11–20	4.61	7.78	5.7	−0.85	−5.69	3.11	4.49	3.11	*2.78*
21–30	3.79	2.31	1.22	3.23	−10.98	3.95	3.57	5.75	*1.61*

Source: Authors' own work

Table 5. Average growth rates of the TIC ranking destinations

Rang	2005	2007	2009	2011	2013	2015	2017	2019	Mean
1–10	4.08	5.94	3.18	0.56	−5.98	−1.91	20.72	5.18	*3.97*
10–20	4.08	6.07	0.14	−3.70	−1.83	6.92	12.93	10.15	*4.35*
20–30	13.99	9.32	3.40	6.99	−6.18	2.76	−0.64	6.33	*4.50*

Source: Authors' own work

Table 6. Average growth rate of destinations in the TTCI ranking

However, it can be noted that for destinations in a stagnation phase, this improvement is rather mixed. This result could be explained by the volatility of the flows and above all by the threshold effects which may arise for destinations in a stagnation phase. In any case, it confirms the overall vision of this indicator.

5. Conclusion

Competitiveness is a concept that has taken on a central position in today's globalised economy. The search for competitiveness has become a survival issue for both economies and products. In this case, it is very important that the process of assessing competitiveness is as coherent and explicit as possible. Throughout this production, we have shown that a coherent process for measuring the competitiveness of destinations in tourism must take into account at least two concerns. The first is the expected volume of tourists and its spatial concentration, as this has an influence on output and factor productivity. The second concern that needs to be incorporated into the measurement of competitiveness is the evolution of demand that we have captured through the phases of Butler's destination life cycle. Indeed, if the volume reflects the capacity of the infrastructure, its growth reflects the updating of the offer in relation to the state of demand on the market and vice versa. These concerns, which originate in the theories of international trade, particularly the neo-technological theory developed by Posner (1961) and Vernon (1966), make the level of demand and its evolution perfect indicators of product value. This has enabled us to propose a synthetic index, the "TCI", which is able to give a value to the destinations' offer by relying on the real criteria revealed by the evolution of demand.

The calculation of the index and the resulting ranking thus enabled us to show that the best perception of the offer is towards Asia. Israel and Korea have emerged as the leading destinations in our ranking. On the other hand, it can be noted that Northern Europe is taking the lead over Central Europe with the offer of countries new to international tourism, such as Denmark, Sweden and Finland. But Central Europe remains the region of the world where the best-rated offers are concentrated. This is mainly the case for Ireland and Switzerland. In America, the Canadian offer is by far the best, followed by Colombia and the USA. In Asia, other new destinations, such as Thailand and Malaysia, stood out. In the Middle East, however, Israel is almost the only competitive destination in the ranking, followed by Saudi Arabia and Jordan. In Africa, the ranking is dominated by the SADEC countries (South Africa, Zambia, Namibia and Botswana).

This ranking reflects an undeniable reality, that of the obsolescence or standardisation of the offer of traditional destinations in Central Europe and America. This leads to their stagnation or even their decline in the ranking to the benefit of new destinations such as Korea, Canada, China, Sweden and Thailand. Only the African destinations do not seem to succeed in positioning themselves in this new redistribution of international tourism flows. Taking into account this ranking, policy orientations have been set out to make the market

Table 7.
Comparison of the correlation coefficients of the two indices with international tourism flows

Step	No.	Correlations with TTCI	Correlations with TIC
Global	107	0.279**	0.750**
DEV	43	0.553**	0.663**
CON	27	0.469**	0.838**
EXP	16	0.651**	0.707**
INV	3	0.590**	0.719**
STA	18	0.740**	0.524**

Note: **$p < 1\%$
Source: Authors' own work

approach of the main destinations more effective. If, on the whole, destinations in a growth phase must act on infrastructures by improving their quality and territorial coverage, destinations in a discovery phase, as is the case in sub-Saharan Africa, must focus their development actions on the coverage of the sector by TIC and, above all, highlight their resources.

Notes

1. The executive opinion survey is a perception survey conducted among 15,000 executives and business leaders in 139 countries, with an average of about 100 respondents per country. It is a comprehensive annual survey conducted by the WEF in collaboration with its network of partner institutes located in the countries surveyed.
2. The data used comes mainly from the following sources: WEF, United Nations World Tourism Organization, World Trade Organization, Organisation de l'aviation civile internationale, International Air Transport Association, International Union for Conservation of Nature, World Bank, International Finance Corporation Doing Business, World Health Organization, World Travel and Tourism Council, Booz and Company, Virtual Instrument Software Architecture, International Telecommunication Union, Center for International Earth Science Information Network Yale University, United Nations Conference on Trade and Development and the International Congress and Convention Association.

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Appendix 1. Data sources

- World Bank
- CIA World Facts Book
- Economic Intelligence Unit
- International Monetary Fund
- IATA; International Airline Transport Association
- IUCN and UNEP-WCMC (2011) The World Database on Protected Areas
- OCDE, Organisation for Economic Co-operation and Development
- World Tourism Organisation
- UNEP United Nation Environment Programme
- WDPA World Data Base on Protected Area
- World Travel and Tourism Council

Appendix 2

Table A1.
Summary of factor contributions to flow growth

Arrivals (millions)		A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	D1	D2
DEV	0–5	0.503	0.598	0.893	0.731	0.804	0.670	0.298	0.781	0.560	0.619	0.603	0.509	0.811	−0.111
	5–10	0.417	0.743	0.41	0.756	0.734	0.806	0.191	0.551	0.623	0.650	0.668	0.199	0.661	−0.771
	>10	0.310	0.334	0.404	0.842	0.327	0.761	0.467	0.837	0.781	0.188	0.852	0.344	0.633	0.030
EXP	0–5	0.640	0.610	0.882	0.470	0.671	0.768	0.038	0.703	0.543	0.670	0.421	0.536	0.828	0.197
	5–10	0.259	0.127	0.259	A	0.111	0.039	−0.612	−0.037	0.631	0.541	−0.036	−0.334	A	0.259
	>10	−0.703	0.050	−0.848	0.865	−0.865	0.848	0.025	0.661	0.895	0.915	0.898	−0.134	−0.367	0.610
CON	0–5	0.486	0.815	0.710	0.719	0.870	0.900	0.241	0.684	0.587	0.815	0.612	0.295	0.922	−0.128
	5–10	−0.030	0.675	0.705	0.758	0.533	0.922	−0.141	0.742	0.941	0.439	0.845	0.171	0.924	−0.701
	>10	0.798	0.656	0.858	0.840	0.522	0.811	0.344	0.804	0.686	0.198	0.792	0.617	0.785	−0.307
STA	0–5	0.597	0.612	0.684	0.762	0.785	0.654	0.244	0.774	0.838	0.377	0.892	0.698	0.871	−0.150
	5–10	0.142	0.680	0.579	0.773	0.773	0.886	0.614	0.891	0.925	0.831	0.898	0.314	0.821	−0.556
	>10	0.199	0.474	0.447	0.705	0.528	0.621	0.676	0.461	0.926	0.481	0.876	0.422	0.657	0.028
INV		0.716	0.818	0.964	0.883	0.95	0.901	0.866	0.868	0.418	0.911	0.9	0.548	0.936	−0.869
ASS		0.656	0.478	0.582	0.540	0.495	0.439	0.518	0.535	0.386	0.560	0.565	0.518	0.677	0.565

Source: Authors' own work

Appendix 3

Table A2.
Ranking of destinations by TIC

Country	2005 ICT	RANK	RATE	Mean	Country	2007 TIC	RANK	RATE	Mean	Country	2009 TIC	RANK	RATE	Mean	Country	2011 TIC	RANK	RATE	Mean
Israel	1.825199	1	16.9		Israel	1.779039	1	−5.3		Israel	1.779039	1	4.4		Israel	1.555264	1	14.5	
Korea (Rep)	1.402395	2	10.5		Korea (Rep)	1.396635	2	−4.2		Korea (Rep)	1.375761	2	3.9		Korea (Rep)	1.439749	2	66.8	
Sweden	1.37372	3	8.2		Thailand	1.341842	3	22.6		Thailand	1.332502	3	12		Sweden	1.413601	3	−1	
Latvia	1.361466	4	23.6		Sweden	1.34096	4	17.7		Latvia	1.321839	4	7.5		Denmark	1.392479	4	−4.2	
Thailand	1.344127	5	−11.2		Latvia	1.3231	5	24.2		Denmark	1.294021	5	−2.8		Canada	1.360424	5	−4.6	
Denmark	1.327238	6	−7.5		Denmark	1.312131	6	2.9		Canada	1.254007	6	−3.4		Ireland	1.327569	6	3.4	
Canada	1.2427	7	−5.9		Canada	1.255642	7	−4.7		Sweden	1.240103	7	16.7		Spain	1.293672	7	−1.4	
Switzerland	1.219626	8	4.5		Ireland	1.222368	8	8.3		Ireland	1.218634	8	10.2		UK	1.292351	8	1.1	
Ireland	1.21763	9	8.3		Switzerland	1.214373	9	6		Switzerland	1.214163	9	7.1		Finland	1.290649	9	2.8	
Jordan	1.211948	10	6.5	5.39	UK	1.20659	10	6.1	7.36	UK	1.203711	10	2.9	5.85	France	1.283908	10	−2.1	7.53
Serbia	1.191345	11	13.6		Finland	1.183197	11	13		Finland	1.195757	11	8.9		Portugal	1.277888	11	0	
UK	1.191202	12	4.1		Jordan	1.173663	12	7.3		Malaysia	1.172946	12	10.8		Thailand	1.277615	12	7.3	
Finland	1.187799	13	2.4		Malaysia	1.169769	13	9.7		Jordan	1.172129	13	9.5		R. Czech	1.26685	13	−5.5	
Malaysia	1.172259	14	7.6		Spain	1.15372	14	3.1		France	1.155095	14	4.5		Switzerland	1.257063	14	4.8	
Cyprus	1.164649	15	−0.3		Serbia	1.153031	15	10.2		Serbia	1.152045	15	17.1		Greece	1.24514	15	−3.8	
Spain	1.144611	16	1.9		Portugal	1.150538	16	11.9		Spain	1.150686	16	0.2		Latvia	1.239578	16	6.6	
Portugal	1.14086	17	−0.7		France	1.150329	17	2.1		Portugal	1.150411	17	4.7		Germany	1.226435	17	1.5	
Austria	1.14005	18	4.9		Austria	1.136506	18	−0.6		Germany	1.141114	18	−1.7		Malaysia	1.215289	18	−9.4	
Germany	1.138417	19	13.5		Germany	1.135317	19	12.5		Austria	1.136325	19	0.2		Colombia	1.18509	19	−2.7	
Iceland	1.135194	20	−0.9	4.61	R. Czech	1.133699	20	8.6	7.78	Cyprus	1.133744	20	2.8	5.7	Cyprus	1.171432	20	−7.3	−0.85
France	1.129404	21	−2.3		Cyprus	1.131548	21	−2.7		R. Czech	1.127065	21	0.4		USA	1.165371	21	12.4	
R. Czech	1.127743	22	9.5		USA	1.112105	22	1.5		USA	1.119191	22	8.9		Austria	1.147849	22	5.6	
USA	1.115161	23	6.7		Iceland	1.108326	23	12.9		Iceland	1.113296	23	4.8		Bulgaria	1.117134	23	−0.1	
Greece	1.096494	24	6.8		Greece	1.102767	24	4.1		Greece	1.101663	24	4		Belgium	1.105392	24	−3.3	
Norway	1.083702	25	0		Belgium	1.062526	25	3.3		Luxemburg	1.071728	25	0		Croatia	1.101947	25	5.5	
N. Zealand	1.070152	26	−2.4		Norway	1.052347	26	−3.3		Belgium	1.0712	26	−3.9		Jordan	1.082141	26	8	
Luxemburg	1.061261	27	0		Luxemburg	1.050686	27	0		N. Zealand	1.059639	27	−2.3		Poland	1.07754	27	−7.1	
Belgium	1.058895	28	5		N. Zealand	1.048082	28	2.3		Norway	1.053139	28	6.4		Norway	1.076075	28	−0.5	
Slovakia	1.03716	29	15		Australia	1.035496	29	−0.8		Australia	1.037793	29	−11.5		Iceland	1.072597	29	7.5	
Australia	1.036562	30	−0.4	3.79	Tunisia	1.029916	30	5.8	2.31	Tunisia	1.029881	30	5.4	1.22	Tunisia	1.065935	30	4.3	3.23
Tunisia	1.034992	31	15.8		Croatia	1.018006	31	2.5		Croatia	1.018107	31	2.1		South A.	1.061501	31	−2.9	
Croatia	1.022629	32	4.7		Slovakia	1.002045	32	25		Slovakia	1.001794	32	29.2		Luxemburg	1.052831	32	0	
Japan	0.990754	33	11.4		Japan	0.987534	33	−22.1		Japan	0.989146	33	8.5		Australia	1.043462	33	−10.2	
The Netherlands	0.954423	34	−2.7		The Netherlands	0.951972	34	2.5		The Netherlands	0.952787	34	2.2		Egypt	1.035381	34	0.9	
Morocco	0.945383	35	17.9		Bulgaria	0.948655	35	0.3		Morocco	0.948647	35	7.9		Morocco	1.012114	35	−4.3	
Bulgaria	0.938842	36	2.1		Morocco	0.941298	36	24.4		Bulgaria	0.936777	36	5.2		Ukraine	1.004303	36	2.9	
Colombia	0.913396	37	−3.8		South A.	0.915375	37	6.7		Egypt	0.926047	37	11.1		Slovakia	1.000851	37	14.8	
Ecuador	0.909543	38	−1.7		Egypt	0.897601	38	4.4		South A.	0.905303	38	7.1		The Netherlands	0.996619	38	−5.8	
Egypt	0.902525	39	0.4		Poland	0.888533	39	7.5		Poland	0.883575	39	23.7		Japan	0.987348	39	−0.2	

(*continued*)

Table A2.

2005					2007				2009				2011			
Country	ICT	RANK	RATE	Mean	Country	TIC	RANK	RATE	Mean	Country	TIC	RANK	RATE	Mean	Country	TIC	RANK	RATE	Mean
South A.	0.902208	40	6.8		Ecuador	0.871256	40	−6.4		Ecuador	0.87088	40	18.9		N. Zealand	0.984951	40	−3.5	
Philippines	0.896274	41	7.3		Colombia	0.867086	41	22.7		Colombia	0.867025	41	−5.6		Turkey	0.968735	41	7.5	
Nicaragua	0.891248	42	2.7		Philippines	0.858471	42	29.7		Turkey	0.860157	42	−4.4		China	0.954569	42	−9.3	
Chile	0.889118	43	−7		Chile	0.857751	43	−4.6		Chile	0.858475	43	9.7		Ecuador	0.901924	43	7.1	
Poland	0.881461	44	−5.1		Turkey	0.855656	44	−7.4		Philippines	0.858467	44	20.1		Serbia	0.896391	44	−4.9	
Turkey	0.857864	45	2.1		Nicaragua	0.849167	45	9		Nicaragua	0.844526	45	5.9		Costa Rica	0.881524	45	3.2	
Costa Rica	0.85701	46	13		Costa Rica	0.825737	46	−0.5		Costa Rica	0.826261	46	10.2		Russia	0.87269	46	4.2	
Zambia	0.845924	47	−5.9		China	0.808486	47	9.6		Indonesia	0.820686	47	6.7		Qatar	0.871018	47	−23.6	
Qatar	0.836472	48	35.3		Zambia	0.807678	48	−22		China	0.817226	48	−1.5		Philippines	0.866123	48	−50.9	
Lithuania	0.835831	49	9.5		Qatar	0.805113	49	15.2		Zambia	0.80689	49	19.2		Romania	0.853058	49	9.6	
Indonesia	0.823749	50	−7.4		Lithuania	0.80444	50	2.4		Qatar	0.805559	50	−24		Chile	0.849264	50	11.6	
China	0.810657	51	9.6		Ukraine	0.781591	51	−2.8		Lithuania	0.805141	51	−7		Uruguay	0.840116	51	6.4	
Argentina	0.795152	52	10.4		Argentina	0.763779	52	12.6		Ukraine	0.776886	52	7.8		Venezuela	0.839774	52	−13	
Ukraine	0.779863	53	−3.6		Italia	0.757024	53	5.7		Argentina	0.764264	53	13.7		Argentina	0.831172	53	−9	
Venezuela	0.775067	54	10.6		Mexico	0.743961	54	−2.3		Italia	0.756966	54	−0.2		Lithuania	0.817821	54	−6.7	
Hungary	0.765094	55	13.4		Venezuela	0.737101	55	1.3		Mexico	0.744134	55	0.2		Zambia	0.809462	55	−9.7	
Italia	0.760444	56	−1.4		Hungary	0.731507	56	5.2		Venezuela	0.734644	56	−0.3		Italia	0.794268	56	−3.9	
Mexico	0.74715	57	1.7		Brazil	0.72647	57	−7.5		Hungary	0.731546	57	−6.7		Nicaragua	0.782983	57	7.9	
Romania	0.744151	58	72.7		Russia	0.721604	58	4.2		Russia	0.727579	58	8		Mexico	0.768474	58	0.2	
Uruguay	0.74346	59	0.2		Uruguay	0.708212	59	−6.1		Brazil	0.726835	59	−2.4		Honduras	0.767885	59	5.4	
Slovénie	0.736002	60	7.6		Roumania	0.707271	60	10.1		Uruguay	0.707776	60	16.2		Kenya	0.766721	60	−16.2	
Brazil	0.731147	61	−4.5		Slovénie	0.702335	61	−3.6		Romania	0.706717	61	−4.7		Brazil	0.763413	61	0.5	
Russia	0.725049	62	−11.5		Jamaica	0.690033	62	13.8		Slovénie	0.702294	62	13.5		Indonesia	0.758377	62	25.7	
Jamaica	0.719669	63	−6		Namibia	0.681636	63	10.9		Jamaica	0.691927	63	−3.3		Pakistan	0.750625	63	9.6	
Namibia	0.712947	64	8.1		Botswana	0.662084	64	19.3		India	0.690444	64	8.7		Slovénie	0.745059	64	7.7	
Botswana	0.693463	65	0.6		Panama	0.65799	65	25.9		Namibia	0.681832	65	7.9		Jamaica	0.739388	65	−4.7	
Panama	0.691604	66	20.5		Kuwait	0.651081	66	5.9		Botswana	0.662408	66	6.6		Peru	0.739253	66	10.3	
Nepal	0.684413	67	−43.7		Guatemala	0.649157	67	9.7		Panama	0.658002	67	23		Namibia	0.738585	67	−7.5	
Kuwait	0.682086	68	−14.3		Nepal	0.646147	68	−7.2		Kuwait	0.652337	68	−1.1		Hungary	0.737021	68	12.9	
Guatemala	0.678442	69	14.2		India	0.61987	69	13		Guatemala	0.651887	69	5.7		Guatemala	0.733737	69	−10.4	
Mali	0.656024	70	0.9		Mali	0.617822	70	10.6		Nepal	0.646281	70	26.6		Botswana	0.71919	70	−12.2	
India	0.653497	71	13.4		Peru	0.615195	71	14.7		Mali	0.617008	71	16.1		Panama	0.703093	71	15.8	
Peru	0.6483	72	9.1		Mongolia	0.608981	72	2.2		Peru	0.614222	72	5.6		Kuwait	0.694151	72	−6.4	
Mongolia	0.647151	73	−17		Benin	0.58267	73	8.5		Mongolia	0.608385	73	20.6		India	0.686667	73	7	
Benin	0.620924	74	−14.9		Pakistan	0.565374	74	1.5		Kazakhstan	0.60657	74	6.7		Madagascar	0.653759	74	2.4	
Pakistan	0.601481	75	4.5		Kenya	0.556251	75	7.8		Benin	0.582015	75	52		Nepal	0.648048	75	50	
Kenya	0.591367	76	10.4		Honduras	0.546558	76	5.6		Pakistan	0.5646	76	−6.5		Vietnam	0.627728	76	−6.4	
Honduras	0.582591	77	6.9		Algeria	0.545797	77	−28.1		Kenya	0.555372	77	13.2		Azerbaijan	0.623195	77	−14.7	
Algeria	0.57712	78	−6.8		Georgia	0.527241	78	14.2		Algeria	0.54671	78	−25.3		Bolivia	0.621349	78	−22.6	
Georgia	0.558638	79	20.5		Indonesia	0.519506	79	−20.6		Honduras	0.545757	79	−0.6		Uganda	0.6108	79	17.6	

(*continued*)

Table A2.

2005					2007				2009				2011			
Country	ICT	RANK	RATE	Mean	Country	TIC	RANK	RATE	Mean	Country	TIC	RANK	RATE	Mean	Country	TIC	RANK	RATE	Mean
Azerbaijan	0.544769	80	3.8		Azerbaijan	0.513387	80	78.2		Georgia	0.527318	80	4.5		Mongolia	0.608955	80	−37.1	
Armenia	0.543878	81	7.5		Armenia	0.512463	81	10.8		Azerbaijan	0.513967	81	28.8		Benin	0.605371	81	−0.4	
Cambodge	0.525963	82	32.4		Viet Nam	0.492764	82	60		Armenia	0.512913	82	−12.3		Georgia	0.60416	82	−6.3	
Vietnam	0.524114	83	2.9		Cambodge	0.491066	83	11.4		Vietnam	0.493269	83	−0.1		Mali	0.603057	83	7.7	
Uganda	0.519343	84	38.8		Uganda	0.487957	84	−15.9		Cambodge	0.488569	84	10.3		Gambia	0.594124	84	−21.2	
Ethiopia	0.510343	85	6.3		Ethiopia	0.478949	85	7.7		Uganda	0.488153	85	4.3		Algeria	0.590527	85	16.6	
Cameroon	0.505382	86	5.1		Madagascar	0.468683	86	27.7		Ethiopia	0.479675	86	8.8		Cambodge	0.589953	86	−3	
Madagascar	0.504297	87	9.9		Bolivia	0.467812	87	−16.2		Bolivia	0.468693	87	−9.8		Burkina F	0.58332	87	16.1	
Bolivia	0.499166	88	16.8		Cameroon	0.467168	88	−3.4		Madagascar	0.467906	88	4.6		Ethiopia	0.582276	88	23	
Gambia	0.494356	89	9.3		Gambia	0.463037	89	15.2		Cameroon	0.466599	89	−0.5		Armenia	0.570457	89	−7.4	
Lesotho	0.484074	90	−2.5		Lesotho	0.445739	90	7.3		Gambia	0.463397	90	6.5		Bosnia-H.	0.555121	90	−0.6	
Bosnie-H	0.469191	91	4.8		Bosnie-H	0.437782	91	10.5		Lesotho	0.445159	91	−0.4		Guyana	0.55099	91	8.2	
Guyana	0.461635	92	19.5		Guyana	0.430221	92	2.6		Bosnie-H	0.438581	92	5.8		Nigeria	0.548711	92	140.7	
Burundi	0.459251	93	−5.4		Albania	0.423618	93	14.8		Guyana	0.430802	93	24.2		Cameroon	0.542098	93	−41.1	
Albania	0.454916	94	10.3		Burundi	0.420851	94	−15.6		Albania	0.423827	94	24.4		Mozambique	0.535628	94	0.8	
Bangladesh	0.449965	95	7		Bangladesh	0.418624	95	0.9		Burundi	0.420427	95	−2.8		Albania	0.534849	95	11	
Nigeria	0.449642	96	137.9		Nigeria	0.418321	96	22.5		Bangladesh	0.419567	96	−8.9		Malawi	0.529272	96	−3	
Mozambique	0.448254	97	34.7		Mozambique	0.416629	97	5.6		Nigeria	0.419198	97	49.8		Bangladesh	0.518288	97	−12.4	
Malawi	0.430606	98	14.5		Malawi	0.401284	98	−5.7		Mozambique	0.416815	98	20		Burundi	0.451207	98	−11.7	
Zimbabwe	0.392344	99	−32.8		Zimbabwe	0.358658	99	13.9		Malawi	0.403765	99	−12.8		Arabia S	0.410973	99	−10	
Burkina F	0.383329	100	−13.8		Burkina F	0.347913	100	20.9		Zimbabwe	0.358597	100	−9.6		Lesotho	0.407133	100	−0.1	
Paraguay	0.374072	101	5.9		Paraguay	0.327912	101	−1.8		Burkina F	0.347504	101	−0.3		Zimbabwe	0.385204	101	11.4	
Kazakhstan	0.338943	102	−16.7		Kazakhstan	0.305264	102	−5.2		Paraguay	0.327912	102	−12.5		Kazakhstan	0.3308	102	−18.5	
Arabia S	0.140927	103	−28		Arabia S	0.140816	103	−7.2		Arabia S	0.07719	103	22.9		Montenegro	0.316654	103	1.3	
Oman	0.007216	104	−13.3		Oman	0.007262	104	5.8		Oman	0.007308	104	13.3		Oman	0.316548	104	−4.7	
Montenegro	0.006215	105	24.5		Montenegro	0.006221	105	11.1		Montenegro	0.006226	105	41.8		Paraguay	0.308587	105	−18.5	
Ghana	0.004755	106	53.6		Ghana	0.004804	106	−5.9		Ghana	0.004854	106	−4.7		Senegal	0.287634	106	−10.5	
Senegal	0.004017	107	13.9		Senegal	0.003986	107	−6.2		Senegal	0.00397	107	64.8		Ghana	0.23092	107	−7.8	

Table A3.
Ranking of destinations by TIC (follow)

Country	2013 ICT	RANK	RATE	T moy	Moy	Country	2015 ICT	RANK	RATE	T moy	Moy	Country	2017 ICT	RANK	RATE	T moy	Moy	Country	2019 ICT	RANK	RATE	T moy	Moy
Israel	1.569719	1	−10			Israel	1.43494	1	20.4			Korea (Rep)	1.428611	1	12.7			Korea (Rep)	1.339791	1	21.4		
Korea (Rep)	1.354396	2	10.9			Korea (Rep)	1.391366	2	5.4			Israel	1.394046	2	−5.1			Ireland	1.316342	2	5.9		
Denmark	1.299319	3	−6.9			Denmark	1.291873	3	1.9			Sweden	1.354523	3	9.3			Sweden	1.291674	3	12.2		
Colombia	1.273958	4	13.3			Sweden	1.285835	4	2.5			Denmark	1.278712	4	2.7			Denmark	1.288308	4	0.8		
Switzerland	1.271784	5	−4.4			Ireland	1.266255	5	3.5			Ireland	1.278022	5	13.4			Switzerland	1.281855	5	−0.2		
Sweden	1.263622	6	8.5			Switzerland	1.258149	6	2.1			Switzerland	1.239838	6	0.2			Israel	1.259465	6	13.7		
Ireland	1.246644	7	−6.7			Canada	1.211818	7	2.1			Colombia	1.216103	7	0.3			Latvia	1.231306	7	2.3		
Finland	1.2246	8	−12.2			Finland	1.209402	8	9.1			Canada	1.206902	8	2			Portugal	1.218765	8	6.8		
Canada	1.209105	9	−10.6			Colombia	1.197195	9	−11			Portugal	1.192121	9	8.6			Canada	1.212112	9	4.6		
Spain	1.161559	10	−10.9	−2.9		Spain	1.171622	10	2.8	3.88		Latvia	1.191297	10	1.5	4.56		Spain	1.211492	10	2	6.95	4.8275
R. Czech	1.153667	11	−2.3			Latvia	1.17034	11	1.7			France	1.180377	11	12.1			UK	1.201448	11	1.7		
Latvia	1.15157	12	−5			France	1.164908	12	−1.7			UK	1.172684	12	7.3			Austria	1.190823	12	1.2		
France	1.146774	13	−9.8			Portugal	1.143988	13	9.4			Spain	1.164917	13	7.9			Belgium	1.175722	13	2.3		
Austria	1.137673	14	−9.9			UK	1.139436	14	0.8			Thailand	1.164451	14	18			France	1.174447	14	2.6		
Portugal	1.136075	15	−8.3			R. Czech	1.132963	15	2.2			Germany	1.13728	15	2.2			Thailand	1.158428	15	8.6		
Belgium	1.134183	16	−8.5			Germany	1.132115	16	6.8			Austria	1.121415	16	−0.7			Australia	1.154861	16	0.6		
Malaysia	1.13161	17	4.5			Austria	1.125165	17	1.4			R. Czech	1.103726	17	0.3			Germany	1.150222	17	3.8		
The Netherlands	1.131323	18	−8.8			Thailand	1.111326	18	7			Malaysia	1.068851	18	−11.6			The Netherlands	1.143694	18	6.1		
Germany	1.130867	19	−7.2			Malaysia	1.10269	19	−0.2			Belgium	1.062779	19	2.4			R. Czech	1.130434	19	6.5		
UK	1.10969	20	−1.6	−5.69		Belgium	1.096095	20	3.7	3.11		Cyprus	1.045078	20	7	4.49		Colombia	1.121765	20	−2.3	3.11	2.7825
Greece	1.090169	21	−23			Tunisia	1.057795	21	0.4			Australia	1.044884	21	−6.6			Japan	1.111842	21	31.6		
Tunisia	1.089578	22	−3.1			Greece	1.049415	22	9.4			USA	1.033776	22	10.9			Malaysia	1.09373	22	6.9		
Thailand	1.074257	23	−10.2			Cyprus	1.043879	23	−1			Luxemburg	1.031927	23	0			USA	1.067952	23	7.5		
Cyprus	1.032159	24	−19.2			USA	1.018502	24	9.7			Iceland	1.025449	24	16.6			Cyprus	1.056999	24	4.5		
Australia	1.030284	25	3.7			The Netherlands	1.008695	25	8.3			Finland	1.011966	25	13.7			Hungary	1.037653	25	−2.7		
Croatia	1.017243	26	−17.1			Croatia	0.993245	26	11.2			Norway	1.008265	26	−2.5			N. Zealand	1.03534	26	−1.6		
USA	1.012769	27	−15.6			Luxemburg	0.983725	27	0			Slovakia	1.001097	27	0.8			Finland	1.030499	27	−0.7		
Jordan	0.986321	28	−4.1			Bulgaria	0.979931	28	−3.3			The Netherlands	0.994312	28	6.1			Slovakia	1.018907	28	1.1		
Norway	0.977796	29	−10.5			Australia	0.978862	29	3.6			Greece	0.991261	29	−5.1			Iceland	1.01862	29	10.9		
Egypt	0.974736	30	−10.7	−10.98		Norway	0.978499	30	1.2	3.95		Bulgaria	0.982869	30	1.8	3.57		Luxemburg	1.011759	30	0	5.75	1.605
Bulgaria	0.974166	31	−11.8			Iceland	0.97462	31	−5.9			Arabia S	0.974059	31	−0.3			Ecuador	1.006047	31	5.5		
Japan	0.973561	32	−17.3			Jordan	0.965958	32	17			Croatia	0.968516	32	0			Bulgaria	1.000446	32	0.3		
Iceland	0.945022	33	11.3			Japan	0.943401	33	17.2			Romania	0.967096	33	−5.3			Arabia S	0.998804	33	−2.2		
Luxemburg	0.943908	34	0			Egypt	0.937443	34	6.8			Ecuador	0.954715	34	−1.2			Greece	0.996686	34	6.9		
N. Zealand	0.904369	35	−2.5			N. Zealand	0.912759	35	−13			Jordan	0.954191	35	−15.7			Norway	0.99658	35	2.2		
South A.	0.888649	36	−10.5			Ecuador	0.91003	36	8.3			Poland	0.946945	36	10.8			Jordan	0.988805	36	12		
Morocco	0.884338	37	−8			Arabia S	0.903411	37	0			N. Zealand	0.926218	37	0			Poland	0.98717	37	10.1		
Ecuador	0.881122	38	−5.3			Poland	0.902047	38	−4			Japan	0.925342	38	−24.6			Mexico	0.970014	38	6.9		
China	0.872345	39	−4.4			Argentina	0.895522	39	14.2			Argentina	0.914652	39	−3.1			Croatia	0.954635	39	7.8		
Poland	0.864515	40	−4.5			South A.	0.887922	40	−3.7			China	0.911899	40	−5.8			Italia	0.952465	40	−0.1		

(*continued*)

Table A3.

2013					2015				2017				2019				
Country	ICT	RANK	RATE	T moy	Country	ICT	RANK	RATE	T moy	Country	ICT	RANK	RATE	T moy	Country	ICT	RANK	RATE	T moy	Moy Moy
Brazil	0.862876	41	−6.1		China	0.887335	41	9.2		Hungary	0.891415	41	2.3		Romania	0.940696	41	19.2		
Kuwait	0.841028	42	34.5		Morocco	0.881566	42	6.2		South A.	0.884069	42	−2.8		Slovénie	0.921754	42	−0.6		
Arabia S	0.840368	43	17.1		Turkey	0.842033	43	−7.4		Morocco	0.880343	43	5.7		Brazil	0.918731	43	17.1		
Turkey	0.837331	44	11.1		Kuwait	0.834014	44	−28.9		Costa Rica	0.8695	44	−0.2		Argentina	0.915459	44	−3.8		
Italia	0.833072	45	−11.1		Slovakia	0.831783	45	−5.3		Turkey	0.850693	45	17.7		Morocco	0.911899	45	−2.8		
Zambia	0.829409	46	−8		Costa Rica	0.819769	46	−7.7		Nicaragua	0.848557	46	18.7		China	0.908194	46	−3.8		
Philippines	0.817423	47	−1.8		Qatar	0.809117	47	32.6		Qatar	0.848211	47	102.3		South A.	0.898105	47	13.6		
R.slovaque	0.807346	48	−11.1		Philippines	0.805873	48	2.7		Egypt	0.842291	48	−27.5		Egypt	0.892796	48	1.8		
Costa Rica	0.804584	49	−21.4		Slovénie	0.803706	49	6.3		Slovénie	0.825557	49	0.4		Philippines	0.880556	49	10.6		
Qatar	0.790073	50	−24		Zambia	0.798986	50	13.1		Montenegro	0.824432	50	11.3		Panama	0.879262	50	6.7		
Slovénie	0.787934	51	−5.4		Nicaragua	0.791639	51	−9.2		Vietnam	0.81789	51	26.6		Turkey	0.870214	51	−0.3		
Mexico	0.787931	52	−0.6		Viet Nam	0.784626	52	4		Philippines	0.809482	52	8.4		Indonesia	0.863281	52	9.2		
Ukraine	0.78172	53	−15.8		Italia	0.782248	53	−0.1		Serbia	0.800041	53	2.1		Nicaragua	0.849981	53	5.1		
Russia	0.749715	54	−3.4		Russia	0.766	54	−8.8		Russia	0.797009	54	7.3		Costa Rica	0.846201	54	6.5		
Nicaragua	0.749648	55	12.2		Serbia	0.763952	55	3.6		Zambia	0.788389	55	16		Qatar	0.845315	55	36.6		
Hungary	0.738815	56	7.5		Brazil	0.759202	56	−10.7		Peru	0.78685	56	10.5		Vietnam	0.82812	56	11.5		
Serbia	0.738223	57	1.7		Mexico	0.758193	57	−9.3		Oman	0.783065	57	8.6		Serbia	0.809159	57	0.6		
Argentina	0.717331	58	−9.4		Ukraine	0.753865	58	−4		Mexico	0.774581	58	−10		Montenegro	0.803856	58	12.8		
Panama	0.715407	59	2.4		Hungary	0.748238	59	−6		Italia	0.774396	59	6.3		Russia	0.797277	59	13.8		
Chile	0.711784	60	−4.4		Chile	0.729887	60	−12.5		Chile	0.772387	60	3.2		Lithuania	0.78495	60	1.9		
Indonesia	0.704491	61	−26.4		Lithuania	0.722446	61	1.8		Lithuania	0.753974	61	16.5		Ukraine	0.779153	61	7.4		
Lithuania	0.703894	62	−9.3		Panama	0.718971	62	8.5		Brazil	0.749223	62	1.4		Oman	0.777581	62	5.9		
Roumania	0.688743	63	−25.8		Oman	0.717997	63	−3		Namibia	0.733253	63	7.6		Zambia	0.776967	63	−10.4		
Venezuela	0.68504	64	−11.7		Montenegro	0.717633	64	3		Ukraine	0.73204	64	0		Chile	0.76749	64	14.4		
Oman	0.674624	65	32.2		Roumania	0.706852	65	1.6		Panama	0.728424	65	8.4		India	0.756966	65	10.3		
Nepal	0.668559	66	19.3		Peru	0.698617	66	0.7		Uruguay	0.704974	66	28.3		Peru	0.752785	66	5.2		
India	0.667165	67	−1.5		Indonesia	0.690671	67	1.3		Tunisia	0.700814	67	−36.3		Kenya	0.716309	67	−6.2		
Kenya	0.66478	68	−17.6		Venezuela	0.67827	68	3.5		Benin	0.695136	68	18.9		Namibia	0.706094	68	10		
Honduras	0.654752	69	−4.7		Uruguay	0.673577	69	−4.1		Jamaica	0.695018	69	−4.6		Jamaica	0.705258	69	4		
Montenegro	0.648511	70	1.4		Namibia	0.673364	70	9.3		Guatemala	0.691221	70	−10.3		Cameroon	0.702141	70	8.8		
Peru	0.647654	71	3.3		Kenya	0.673347	71	37		Indonesia	0.689561	71	5.3		Uruguay	0.694383	71	−1.3		
Uruguay	0.64346	72	23.7		Honduras	0.668239	72	0.1		Nepal	0.684729	72	0.3		Nepal	0.685074	72	9.6		
Jamaica	0.640628	73	1.5		Nepal	0.665943	73	−29.4		Honduras	0.682115	73	−1		Mongolia	0.678134	73	−0.9		
Namibia	0.636514	74	−9.9		Jamaica	0.661309	74	−8.9		Kenya	0.67892	74	17.2		Honduras	0.675195	74	11.7		
Guatemala	0.635147	75	15		Benin	0.655852	75	16.9		Venezuela	0.671631	75	−16.1		Venezuela	0.652051	75	23.4		
Benin	0.634715	76	−42.3		Guatemala	0.646045	76	9.8		Botswana	0.668397	76	−1.1		Benin	0.634133	76	10.5		
Mongolia	0.622536	77	12.2		Botswana	0.627902	77	−8.9		Cameroon	0.66391	77	1.8		Botswana	0.631672	77	4.6		
Botswana	0.618105	78	0		Cameroon	0.623656	78	−35		Mongolia	0.641116	78	−23.6		Guatemala	0.614568	78	−2.9		
Senegal	0.609748	79	−20.5		Mongolia	0.620355	79	−10		Senegal	0.604773	79	17.2		Senegal	0.59952	79	5.3		
Cameroon	0.604005	80	63.4		India	0.6131	80	10.3		Kuwait	0.601861	80	−13.9		Mali	0.593952	80	5.1		

(*continued*)

Table A3.

Country	2013 ICT	RANK	RATE	T moy	Country	2015 ICT	RANK	RATE	T moy	Country	2017 ICT	RANK	RATE	T moy	Country	2019 ICT	RANK	RATE	T moy	Moy Moy
Mali	0.590828	81	−37.4		Senegal	0.60634	81	1.3		Azerbaijan	0.592192	81	61.7		Georgia	0.581802	81	3.8		
Vietnam	0.561886	82	−14.3		Mali	0.557676	82	10.8		Bolivia	0.591889	82	26.8		Azerbaijan	0.578542	82	56.3		
Pakistan	0.538569	83	−8.3		Azerbaijan	0.551197	83	26		Albania	0.581009	83	−3.9		Bolivia	0.575685	83	7.4		
Uganda	0.538427	84	38.1		Gambia	0.541946	84	−41.3		Gambia	0.580903	84	173.2		Kuwait	0.574733	84	6.7		
Azerbaijan	0.533564	85	66.2		Bolivia	0.540743	85	1.6		Georgia	0.573808	85	24		Albania	0.571066	85	4.1		
Burundi	0.530214	86	−6.6		Pakistan	0.527331	86	−2.8		Ethiopia	0.569373	86	28.3		Gambia	0.56588	86	6.3		
Bolivia	0.529747	87	0.7		Uganda	0.522129	87	19.9		India	0.56557	87	16		Kazakhstan	0.536059	87	15.3		
Gambia	0.525676	88	−11.1		Georgia	0.521154	88	34.9		Ghana	0.560814	88	0		Armenia	0.529605	88	7.6		
Georgia	0.496556	89	21.9		Ethiopia	0.510563	89	54.4		Guyana	0.560768	89	−14		Ethiopia	0.526526	89	0.6		
Madagascar	0.492898	90	−11.8		Ghana	0.509333	90	−27.5		Mali	0.545821	90	22		Zimbabwe	0.518954	90	6.3		
Ghana	0.49231	91	0.2		Albania	0.490631	91	−7.2		Uganda	0.542142	91	18.9		Ghana	0.518852	91	14.3		
Ethiopia	0.487095	92	−6.6		Cambodge	0.487082	92	5.6		Armenia	0.528681	92	1.1		Pakistan	0.517305	92	−9		
Cambodge	0.48289	93	−6.5		Burundi	0.486129	93	0.5		Cambodge	0.525787	93	24		Uganda	0.51319	93	−3.2		
Algeria	0.450828	94	2.8		Guyana	0.481262	94	101.3		Pakistan	0.523834	94	−5.5		Cambodge	0.503892	94	3.5		
Nigeria	0.443818	95	8.3		Madagascar	0.472744	95	20.2		Mozambique	0.523379	95	−4.3		Guyana	0.501378	95	2.3		
Armenia	0.440792	96	15		Armenia	0.467436	96	16.2		Bosnia-H.	0.514426	96	−1.5		Bosnia-H.	0.499973	96	1.7		
Bosnia-H.	0.438792	97	−13.4		Nigeria	0.457782	97	−13.3		Nigeria	0.51232	97	−13.1		Mozambique	0.480614	97	5.1		
Guyana	0.437745	98	−38.9		Bosnia-H.	0.455413	98	−9.4		Malawi	0.500162	98	−4.4		Nigeria	0.480194	98	1.3		
Albania	0.434615	99	20.9		Algeria	0.453976	99	−26.9		Algeria	0.493279	99	15.4		Malawi	0.465138	99	6.4		
Malawi	0.43068	100	−5.8		Mozambique	0.453692	100	19		Burundi	0.464195	100	142		Bangladesh	0.45578	100	13.4		
Burkina F	0.428223	101	25.5		Malawi	0.449066	101	−2.7		Bangladesh	0.459544	101	−5.3		Burundi	0.453967	101	−3.1		
Mozambique	0.422707	102	10.4		Bangladesh	0.427774	102	31.4		Lesotho	0.459376	102	−14.2		Lesotho	0.450702	102	−2.3		
Bangladesh	0.421469	103	−12.5		Lesotho	0.426752	103	−6		Madagascar	0.453979	103	−1.2		Madagascar	0.435322	103	11.5		
Lesotho	0.413322	104	−4.1		Burkina F	0.399835	104	8.9		Zimbabwe	0.403288	104	−1.4		Algeria	0.424317	104	5.6		
Zimbabwe	0.385239	105	−0.2		Zimbabwe	0.387016	105	−9.5		Kazakhstan	0.391195	105	2.3		Burkina F	0.396805	105	−1.6		
Kazakhstan	0.359802	106	16		Kazakhstan	0.367371	106	−11.7		Burkina F	0.377852	106	1.7		Paraguay	0.374895	106	6.5		
Paraguay	0.310292	107	10.5		Paraguay	0.307228	107	−3.2		Paraguay	0.374966	107	−7.3		Tunisia	0.274377	107	22.9		

Source: Authors' own work

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