

CLUSTERING OF THE LEAST DEVELOPED COUNTRIES BY THE TOURISM ECONOMIC IMPACT ANALYSIS

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Abstract

Tourism in general is one of the most important socio-economic sectors of our time. From the leisure activity reserved for the privileged few, tourism became the global movement participated in by billions of people across the world, including the developing world. This paper aims to analyze the impact of tourism in the group of the least developed countries with focus on the specific data components, as contribution of tourism to the gross domestic product, visitor exports, domestic spending, government spending, internal tourism consumption, business and leisure spending or capital investments. For this purpose, we use the hierarchical cluster analysis and we analyze the countries by the different indicators from the supply and demand point of view. The article concludes that for many of the least developed countries tourism has become a relevant sector of the national economy.

Key words: cluster analyses, least developed countries, growth, development

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Introduction

The case of the least developed countries (LDC) and their further growth and development is currently a discussed topic at the international level and it is closely related to tourism as one of the sources of potential sustainable growth and development. Tourism is an important economic activity in most countries around the world as well as in many developing and the least developed countries. Regarding the overall importance of tourism, the figures speak for themselves. From 25 million international arrivals in 1950 to 700 million in 2000 and 1.133 million in 2014 (UNWTO, 2014). UNWTO (2014) forecasts indicate that the sector will continue growing to reach 1.8 billion tourists by the year 2030. Tourism creates one in eleven jobs directly or indirectly and accounts for as much as 10 per cent of the world's GDP. Six per cent of the global exports are generated by international tourism. There is no doubt that tourism has a unique potential to become a driver of a sustainable economic development, chosen during the RIO+20 conference as one of the initial five priority sectors to accelerate the shift towards more sustainable consumption and production patterns (UNEP, 2015).

One half of all the least developed countries already consider tourism as a main driver of their development. Participation of the least developed countries in the international trade, including trade in services, is an important prerequisite for their economic growth. Tourism is the first or second source of exports earnings for almost the half of the world's 48 least developed countries. In some of the developing countries (notably small island developing states), tourism account for over 25% of GDP. Tourism in many developing and some of the least developed countries is one of the most viable and sustainable economic development options. If tourism is managed with a strong focus on poverty alleviation, it might directly benefit specific groups through employment of local people in tourism enterprises, goods and services provided to tourists, running of small and community-based enterprises, etc. (UNWTO STEP, 2015).

The aim of this paper is to introduce the overview and analyze the economic impact of tourism in the least developed countries. For this purpose, we use the hierarchical cluster analysis and we analyze the countries by the different indicators from the supply and demand point of view, as the contribution of tourism to the gross domestic product, visitor exports, domestic spending, government spending, internal tourism consumption, business and leisure spending or capital investments. The paper proceeds as follows: firstly, the theoretical discussion, following the method. The next part presents the characteristics, following the empirical results and conclusion in the last section.

1 Theoretical framework

Until relatively recently, tourism was not considered to be a vehicle for economic development. The attitude changed in the late '80 and the beginning of '90. Several studies prove the role of tourism in the development of regions with genuine tourism attractions. The first Lome conference for ACP countries in 1975 rejected tourism as a sector to be supported in the developing process of less developed countries (Vanhove, 2011). At that time, the attitude towards tourism was rather negative, as it provoked leakages, lack of foreign exchange, inflation, and more. However, fifteen years later, during the fourth Lome Conference, it has completely changed. Tourism had become a very important vehicle for development. In 1980s, many researchers and publications proved the benefits of tourism and the attitude of the international organizations changed gradually. But the strategic role of tourism in the development of a region or a destination is not „black or white“. It cannot be denied that negative factors of tourism exist to some degree in many destinations. Anyway,

from the economic point of view, it is not realistic to deny positive factors either (Vanhove, 2011). To answer the question if tourism can be a vehicle for development, we have to take into account a distinction between developed and developing countries (De Brabander, 1992; Sharpley and Telfer, 2002). In case of the developing countries, the advantages of tourism development as income generation, employment generation, tax revenue generation, encouragement of entrepreneurial activity, balance of payment effects and improvement of the economic structure, are applied (Vanhove, 2011, 1999; Williams and Shaw, 1995).

Topic from a broader perspective addresses the agenda of many international organizations, particularly the papers and publications by the United Nations organizations and the World Bank Group, considering tourism as a fundamental sector with the potential to contribute to the poverty alleviation. Classification of the developing countries through international organizations differs. Forty-eight countries are currently designated by the United Nations (The UN Committee for Development Policy - CDP) as the least developed countries. Following three criteria are used by the CDP: “1. a per capita income criterion, based on a three-year average estimate of the gross national income (GNI) per capita, with a threshold of 992 USD for possible cases of addition to the list, and a threshold of 1,190 USD for graduation from LDC status. 2. a human assets criterion, involving a composite index (The Human Assets Index). 3. an economic vulnerability criterion, involving a composite index (The Economic Vulnerability Index).” According to UNCTAD (2012), different thresholds are used for all three criteria to identify cases of addition to the list of the least developed countries and cases of graduation from it. The methodology of the World Bank - International Bank for Reconstruction and Development (World Bank, 2013) ranks countries into four income groups. The World Bank’s main criterion for classifying economies is gross national income (GNI) per capita. Based on its GNI per capita, every economy is classified as low income, middle income (subdivided into lower middle and upper middle), or high income. The third of the developing countries classification concept, The United Nations Development Programme (UNDP, 2013) methodology, is based on the Human Development Index (HDI), composite statistic of life expectancy, education, and income indices.

2 Method

To create clusters of similar least developed countries we used multivariate statistical technique - hierarchical cluster analysis. Based on the evaluation of different methods in different situations (Löster, 2013 and Löster, 2014), for clustering we used Ward method

(Ward-Wishart method) in conjunction with the square of the Euclidean distance measure. In case of non-identical measurement units we used standardization of variables (see e.g. Řezanková, 2009).

Ward method (Ward-Wishart method) solves clustering principle by minimalizes of heterogeneity of the clusters. By the other words the method creates cluster by maximization intragroup homogeneity (Řezanková, 2009). The Ward criterion indicated by G1 measures homogeneity of the clusters by the intragroup square sum of deviations from cluster average. G1 is defined by relationship:

$$G_1 = \sum_{h=1}^k \sum_{i=1}^{n_h} \sum_{t=1}^m (x_{hit} - \bar{x}_{ht})^2, \quad (1)$$

where x_{hit} is the average value of i-th object, t-th variable in h-th cluster,
 \bar{x}_{ht} is the average value of t-th variable in h-th cluster,
 n_h is the number of objects in h-th cluster,
 m is the number of variables characterizing the objects (LDC)
 k is the number of clusters.

The criterion for clustering originates from the idea of minimal increase of G_1 , hence the following term is minimized:

$$\Delta G_1 = \sum_{i=1}^{n_g} \sum_{t=1}^m (x_{git} - \bar{x}_{gt})^2 - \left(\sum_{i=1}^{n_h} \sum_{t=1}^m (x_{hit} - \bar{x}_{ht})^2 + \sum_{i=1}^{n_{h'}} \sum_{t=1}^m (x_{h'it} - \bar{x}_{h't})^2 \right). \quad (2)$$

The calculation of Euclidean distance D between i-th and j-th object is based on Pythagoras:

$$D_E(\mathbf{x}_i, \mathbf{x}_j) = \sqrt{\sum_{t=1}^m (x_{it} - x_{jt})^2}, \quad (3)$$

where x_i represents i-th object a where x_j represents j-th object.

To determine the optimal number of clusters we used several techniques and criteria: the knowledge of the economic theory, the basis of the appropriate criteria and the basis of the dendrogram. We finally set four clusters of the individual countries as optimum based on the evaluating coefficients, namely CHF coefficient, PTS coefficient and Dunn or Davies-

Bouldin coefficient. To determine the allocation of individual countries in the clusters we used IBM SPSS version 20.

3 Characteristics

With the aim to analyze the economic impact of tourism in the least developed countries in 1995 and from 2005 to 2014, we have selected the LDC according to the classification of the designated by the United Nations (2015). We classified those countries according to the Economic Impact Research by the Oxford Economics and the World Travel and Tourism Council (WTTC). The tourism economic impact is currently being measured in 35 of the least developed countries ¹ (OE & WTTC Economic Research, 2015).

As mentioned above, Travel & Tourism² is an important economic activity in most countries around the world as well as in many developing countries. The sector has significant direct, indirect and induced impacts³. The UN Statistics Division-approved Tourism Satellite Accounts methodology (TSA: RMF 2008) quantifies only the direct contribution, whereas WTTC recognizes that the total contribution is wider and aims to capture its indirect and induced impacts. The methodology is based on the information from the national accounts, macroeconomic research, forecasting and modeling and the input-output model. In practical terms, WTTC and Oxford Economics implemented the TSA: RMF (2008) to develop a method for computing the demand- side components of GDP as consumption, government investment and net exports. Besides, by using input-output tables to translate demand-side expenditures into supply-side outputs and also to split the total GDP and employment into direct and indirect components. The aim is to be comprehensive (to ensure that the importance of tourism is not under-estimated) and consistent (to allow cross-country and cross-regional comparisons), so that global estimates of the contribution to the GDP and employment from tourism can be derived. For our own analyses, we are using the following components (WTTC, 2015):

¹With one exception of Lesotho, where data were not available only for the year 2010.

²Travel & Tourism is “the activity of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not remunerated from within the place visited”. The phrase “usual environment” is introduced to exclude from the concept of ‘visitor’ persons commuting every day between their home and place of work or study, or other places frequently visited (TSA: RMF, 2008)

³The economic effects of tourism can be divided into direct, indirect and induced. Direct effects are generated by industries that deal directly with tourists. Indirect effects can be characterized by an increase in sales in supplier industries. It is thus an expenditure, which has been obtained primarily from visitors, but was used to purchase goods and services in the other sectors. Induced effect is created by spending of those who are directly or indirectly employed by tourism. The sum of direct, indirect and induced effects creates the total value and effect of tourism in the economy (WTTC, 2015)

1. **Direct contribution to GDP** – GDP generated by industries that deal directly with tourists, equivalent to total internal Travel & Tourism spending within a country less the purchases made by those industries (including imports).
2. **Total contribution to GDP** – GDP generated directly by the Travel & Tourism sector plus its indirect and induced impacts.
3. **Visitor exports** – spending within the country by international tourists for both business and leisure trips, including spending on transport, excluding international spending on education (total inbound tourism expenditure).
4. **Domestic Travel & Tourism spending** – spending within a country by the country's residents for business and leisure trips. Multi-use consumer durables are not included (they are not purchased solely for tourism purposes).
5. **Government individual spending** – spending by government on Travel & Tourism services directly linked to visitors as cultural and recreational services.
6. **Internal tourism consumption** – total revenue generated within a country by industries dealing directly with tourists including visitor exports, domestic spending and government individual spending. This does not include spending abroad by residents.
7. **Business Travel & Tourism spending** – spending on business travel within a country by residents and international visitors.
8. **Leisure Travel & Tourism spending** – spending on leisure travel within a country by residents and international visitors.
9. **Capital investment** – capital investment spending by all industries directly involved in Travel & Tourism. Also constitutes investment spending by other industries on specific tourism assets as new visitor accommodation and passenger transport equipment, as well as restaurants and leisure facilities for specific tourism use.

4 Results

We analyzed the tourism economic impact in 35 of the least developed countries during the years 1995 - 2014. The aim was to compare the countries from the point of view of the different components mentioned above and find out the differences within the clusters composition. As a result, we finally set four clusters of the individual countries as optimum based on the evaluating coefficients (CHF, PTS and Dunn / Davies-Bouldin coefficients). The structure of the clusters is slightly changing during the observed years, marked with the different color for each group of countries, as the detail of the composition shown in Table 1.

Tab. 1: Composition of clusters

Case	1995	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1:Angola	1	1	1	1	1	1	1	1	1	1	1
2:Bangladesh	2	2	2	2	2	2	2	2	2	2	2
3:Benin	3	3	3	3	3	3	3	3	3	3	3
4:Burkina Faso	3	3	3	3	3	3	3	3	3	3	3
5:Burundi	3	3	3	3	3	3	3	3	3	3	3
6:Cambodia	3	1	4	1	1	1	1	1	1	1	4
7:Central African Republic	3	3	3	3	3	3	3	3	3	3	3
8:Chad	3	3	3	3	3	3	3	3	3	3	3
9:Comoros	3	3	3	3	3	3	3	3	3	3	3
10:Dem. Rep of the Congo	3	3	3	3	3	3	3	4	3	3	3
11:Ethiopia	1	1	4	1	1	1	1	1	1	1	4
12:Gambia	3	3	3	3	3	3	3	3	3	3	3
13:Guinea	3	3	3	3	3	3	3	3	3	3	3
14:Haiti	4	3	3	4	3	3	3	3	3	3	3
15:Kiribati	3	3	3	3	3	3	3	3	3	3	3
16:Lesotho	3	3	3	3	3	3		3	3	3	3
17:Madagasc	4	3	1	4	4	4	4	4	4	4	3
18:Malawi	3	3	3	3	3	3	3	4	3	3	3
19:Mali	4	3	1	4	4	4	4	4	4	4	3
20:Mozambiq	3	3	1	4	3	3	3	4	4	3	3
21:Myanmar	3	3	1	4	4	4	4	4	4	4	4
22:Nepal	4	3	1	4	4	4	4	4	4	4	3
23:Niger	3	3	3	3	3	3	3	3	3	3	3
24:Rwanda	3	3	3	3	3	3	3	3	3	3	3
25:Sao Tome and Principe	3	3	3	3	3	3	3	3	3	3	3
26:Senegal	4	1	1	1	4	4	4	4	4	4	3
27:Sierra Leone	3	3	3	3	3	3	3	3	3	3	3
28:Solomon Islands	3	3	3	3	3	3	3	3	3	3	3
29:Sudan	2	1	1	1	4	4	4	4	4	4	4
30:Togo	3	3	3	3	3	3	3	3	3	3	3
31:Uganda	3	1	1	4	4	4	4	4	4	4	3
32:United Rep. of Tanz.	4	4	4	1	1	1	1	1	1	1	1
33:Vanuatu	3	3	3	3	3	3	3	3	3	3	3
34:Yemen	2	1	1	1	1	1	1	4	4	4	4
35:Zambia	3	3	1	4	4	4	4	4	4	4	3

Source: own calculations

There are certain countries (Angola, Bangladesh, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Dem. Rep of the Congo, Gambia, Guinea, Kiribati, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Sudan, Togo, Uganda, United Rep. of Tanzania, Vanuatu) showing generally more stable development over the years. Nevertheless, the biggest number of countries is included in the cluster number three. Those countries also reached the lowest overall significance from the tourism economic impact point of view.

From the supply side perspective, countries in the cluster number three reached the lowest values regarding the Travel & Tourism direct GDP. However, with the increasing trend: from the mean 0,02US\$ bn in 1995 to 0,09 US\$ bn in 2005 and 0,29 US\$ bn in 2014. On the other hand, the highest values has reached the cluster number two: from the mean 0,51US\$ bn in 1995 to 1,55US\$ bn in 2005 and 3,82US\$ bn in 2014. The demand side perspective, based on the overall spending in the economy on Travel & Tourism activity by households, businesses, overseas visitors or government, reveals different ranking. The example is the component of Visitor exports, where the cluster four achieved the most significant values as of the mean 0,09US\$ bn in 1995 to 0,84US\$ bn in 2005 and 1,77US\$ bn in 2014. In contrast, the worst results showed countries included in the cluster number three. The highest overall significance from the tourism economic impact point of view attained countries in the cluster number two.

Conclusion

The aim of this paper was to introduce the overview and analyze the economic impact of tourism in the group of the least developed countries. We have used the cluster analysis and analyzed the countries by the different indicators, as the contribution of tourism to the gross domestic product, visitor exports, domestic spending, government spending, internal tourism consumption, business and leisure spending or capital investments. As a result, we set four clusters of the countries as optimum based on the evaluating coefficients.

The structure of the clusters is slightly changing during the observed years; however, certain countries are showing generally more stable development. The biggest number of countries is included in the cluster number three and also, those are the countries reaching the lowest overall significance from the tourism economic impact point of view. Yet, with the increasing trend. The highest overall significance attained countries in the cluster number two.

We can conclude that Travel & Tourism is in many of the least developed countries one of the viable and sustainable economic development options and the important sector of the national economy. Tourism has potential to create economic, environmental and social effects in the destination. Because of the multiplier effect, also other related and subsequent industries can benefit from its growth. Therefore, tourism contributes to the destination development and also significantly improves the socio-economic situation of the region. Yet, despite the statistical observation, the links between tourism and development are still subject to debate. Tourism businesses contribute little to the local economies and have negative impacts, possibly causing social environmental or cultural degradation. However, it is a belief that tourism - if managed with a focus on poverty alleviation - can contribute to the improvement of living standards of the local communities and its successful support in the least developed countries can help the growth of the industry in general. It might directly benefit specific groups through employment of local people in tourism enterprises, goods and services provided to tourists, running of small and community-based enterprises.

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