

TOURIST ARRIVALS CONCENTRATION - A CASE STUDY IN ROMANIA'S CENTRAL AREA

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Abstract

The paper analyzed the degree of concentration of tourist arrivals in Romania's Central Area, using the data provided by the National Institute of Statistics for the period 2007-2016. In this purpose, Herfindhal-Hirschman Index, Gini-Struck Coefficient, and Concentration coefficient have been calculated and explained. In 2016, tourist arrivals reached 2,585,938, being almost double than in 2007. For tourist arrivals, the Central Area comes on the 1st position in the country, with a share of 23.5 % of total arrivals. The tourism density in the Centre Region is 1.1 tourists/inhabitant, almost double compared to 0.56 tourists/capita at the country level. Tourist arrivals are mainly concentrated in three counties: Brasov, Mures and Sibiu, which absorb about over two thirds of tourist arrivals in the Centre Region (83%). Harghita, Alba and Covasna counties have receive less tourists. In the analyzed period, it was noticed a slight decline of the values of the indicators characterizing the concentration degree. The Herfindhal-Hirschman Index varied between 0.2923 and 0.2742, the values of Gini-Struck Coefficient ranged between 0.3902 and 0.3590 and the Concentration coefficient varied between 0.4682 and 0.4308. All these figures reflect a relatively high concentration of tourism demand in terms of tourist arrivals in the Centre Region.

Key words: *tourist arrivals, Herfindhal-Hirschman Index, Gini-Struck Coefficient, Concentration coefficient, Centre Region, Romania*

INTRODUCTION

Tourism development in a sustainable way involves as the efforts of all the decision makers to be focused on the establishment of a long-term strategy destined to preserve, develop and promote Romania's beautiful landscapes, historical and cultural heritage [8].

Romania's tourism is continuously developing year by year as the country attracts more and more visitors. This is due to its geographical position on the map of Europe, the variety of its relief including one third mountains, one third hills areas and one third plains, but also the Black Sea coastal area, the Danube river and Delta. The whole country is full of interesting historical and cultural places representing by archaeological sites reflecting the old Dacian, Greek and Roman civilizations, medieval cities, fortresses, castles, palaces, museums, memorial houses, traditional villages where customs are well preserved. [6].

In 2016, Romania registered more than 11 million tourist arrivals in the accommodation structures of which about 23 % belonged to foreign visitors [14, 15].

The intensification of tourist traffic should be under control, tourist settlements should be prepared to be good hosts and the offer of tourism products should more diversified to meet tourism demand. All these aspects involves the development of new forms of tourism deeply integrated in the environment like rural tourism. [9].

Rural tourism in Romania has started in the central part of Romania, more exactly in the Brasov area, mainly in Bran and Moeciu communes, for which tourist demand was higher and higher due to the attractiveness of the landscapes, the large range of facilities in terms of housing, boarding, cultural events, the presence of Barn Castle (nicknamed Dracula Castle), the local gastronomy and hospitality of the local hosts. [7].

Besides eco-tourism, agro-tourism has become more and more important for the local

communities and farmers who are interested to offer accommodation in farm houses and their fresh products achieved in the farm to tourists, who in their turn are keen to discover rural life, to eat healthy meals and spend a wonderful time in the middle of nature. [10].

The Central Region of Romania has a high importance in Romania's tourism because of its marvelous sceneries in the mountain and hilly areas, the rich and diverse patrimony of cultural and historical attractions (medieval cities, fortified churches, fortresses, museums, authentic folk traditions), the large variety of tourism forms which could be practiced. This is why it is situated on the top position regarding the number of tourists arrivals [1].

About 54 % of the tourism resources of Romania are in Transylvania's counties. The natural and man-made resources have the highest quota in this part of the country [2].

The Central Region offers a large variety of tourism forms such as: cultural, religious, mountainous, sport, spa, rural, agro-tourism, eco-tourism, which are of high attraction for various types of visitors. Traditions are well preserved reflecting the harmonious combination between the spirituality of the Romanian, German and Hungarian communities. Folk traditions in terms of music, dance, costumes, habits and customs, architectural style of the houses have increased the importance of rural areas in the tourism practiced in this part of Romania [5].

The Central region is the highest number of arrivals and night stays [16]. The density of tourism is also the highest [3].

Approximately 30.8 % of accommodation units are situated in the Central part of Romania. And this a reason to note the strong connection between tourist arrivals and accommodation capacity in terms of units. From this point of view, the Central Area has the highest correlation coefficient, 0.966 [13]. But, concerning the number of places, the Central Area is situated on 2nd position after the South Eastern Region of Romania [16].

The most preferred period by tourists to visit the Central Region is summer season, except Brasov county which is visited both in summer and winter time. Therefore, the region is facing the tourism seasonality which

affects the coverage degree of the accommodation capacity [10].

In the industry economics, it is used a large variety of methods to analyze tourism activity. Among them, Gini-Struck coefficient and also Herfindhal and Hirschman Index is largely used for assessing the degree of market concentration [18].

Despite that there are many aspects which could be approached, in this study it was analyzed only the concentration degree of arrivals in the Central Area of Romania for the reference interval 2007-2016 using Herfindhal-Hirschman Index, Gini-Struck Coefficient and Concentration Coefficient.

MATERIALS AND METHODS

In order to set up this study, there were used the official data for the last decade provided by Tempo online Data Base.

The data refer both to the Centre Region as a whole and to each component county: Alba County (AB), Brasov County (BV), Covasna County (CV), Harghita County (HR), Mures County (MS) and Sibiu County (SB).

The following methods have been used in order to process the data:

Index Method, based on Fixed basis index having the formula $I_{FB} = (X_n / X_1) * 100$, where: X = the variable taken into consideration, namely tourist arrivals in the years $n = 1, 2, 3, \dots, i$, of the chronological series. The year 2007 was considered the reference term (2007=100).

Structural Index = $S\% = X_{ij} / \sum X_{ij}$, or X_{ij} / X_j where X_{ij} represents arrivals in the county i of the central part of the country j , $\sum X_{ij}$ or X_j represents arrivals in the area j . The index of structure reflects the arrivals weight in each county in the Central Area arrivals.

Herfindhal-Hirschman Index (HHI) is a measure of the concentration degree of the market in a specific economic industry. In this case, it is used to measure the tourist market, more exactly the tourism demand in terms of tourist arrivals in the Central Region of Romania, a region which is situated in the top from this point of view.

The calculation formula is simple and consists of the squared sum of the share of each county

in the total arrivals in the Centre Region, according to the formula:

$$HHI_j = \sum_{i=1}^n (g_{ij})^2 \quad (1)$$

where: HHI_j = HHI of the arrivals geographical concentration in the central part j, g_{ij} is the share of the county i in the region j, where i= 6, respectively: AB, BV, CV, HR, MS and SB.

g_{ij} was determined with the formula:

$$g_{ij} = X_{ij}/X_j. \quad (2)$$

The values of the $HHI \in [0,1]$. The HHI may be interpreted as follows: $H < 0.01$ reflects a high uniformity among the counties concerning tourist arrivals; $HHI < 0.15$ shows an unconcentrated status of tourist arrivals; $0.15 > HHI < 0.25$ indicates a moderate concentration; $HHI > 0.25$ reflects a relative high concentration and $HHI > 0.50$ shows a high concentration of tourist arrivals in a few counties, and $HHI = 1$ indicates that all the tourist arrivals are concentrated in only one county, or, in other words, a perfect concentration. $HHI = 0$ indicates a perfect uniformity of tourist arrivals among counties [4].

Taking into account that practically it is impossible as in each county to be the same number of tourists, it is considered that $1/n$ represents the lowest level of concentration of tourism demand, in this case $1/n=1/6=0.16$. Therefore, HHI_j could vary between 0.16 and 1.

The Normalized Herfindhal-Hirschman Index (HHI^N) is also used in order to enlarge the HHI variation between 0 and 1. The formula for HHI^N is the following one:

$$HHI^N = \frac{HHI_j - \frac{1}{n}}{1 - \frac{1}{n}} \quad (3)$$

Gini-Struck Coefficient (GSC) was used to measure the disparities regarding tourist arrivals in the Centre Region, based on the

formula which takes into account the values of HHI_j and the number of counties, n.

$$GSC_j = \sqrt{\frac{\sum_{i=1}^n (g_{ij})^2 - 1}{n-1}} = \sqrt{\frac{n \cdot HHI_j - 1}{n-1}} \quad (4)$$

The values of $GSC \in [0,1]$. $GSC = 0$ reflects a perfect equity among counties regarding tourist arrivals. $GSC > 0.3$ means a relative concentration degree, $GSC > 0.5$ reflects a high concentration and $GSC = 1$ means a perfect inequity or a huge inequality among counties [11, 17].

Concentration Coefficient (CC) has the purpose to use GSC in an adjusted alternative taken into consideration the number of counties. The specific formula for this coefficient is:

$$CC_j = \frac{n}{n-1} GSC_j \quad (4)$$

The obtained results were included in tables, illustrated in graphics and interpreted. Finally, the corresponding conclusions were drawn regarding the analysis of the concentration degree of the tourism demand in the Centre Region of Romania.

RESULTS AND DISCUSSIONS

The dynamics of arrivals in the Central Area. In the studied interval, the number of arrivals grew up accounting for 2,585,938 in 2016, by 94.34% more than in 2007.

This growth rate was more dynamic than the growth rate achieved at the country level, which accounted for 57.81 %. In the same year, Romania carried out 11,002,522 tourists in comparison with 6,971,925 in the 1st year. Consequently, the weight of arrivals in the Central Area went up reaching 23.50 % in the last year of the research period compared to 19.07 % in the 1st one (Table 1).

Within the tourist arrivals, the highest weight belongs to Romanian tourists. The Central Area registered 8,521,698 visitors in 2016 by 57.19 % more than in 2007. As a consequence, the weight of visitors of the central part in the total number of arrivals in the country raised from 18.96 % to 24.58 % in the last decade.

Table 1. The tourist arrivals in the Centre Region and component counties in Romania in the period 2007-2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2016/2007 %
AB	54,054	51,264	44,271	47,838	78,496	95,918	101,869	107,271	154,210	167,970	310.74
BV	556,816	581,983	451,683	510,196	642,829	737,810	834,979	865,689	997,601	1,114,395	200.13
CV	52,458	62,642	62,406	60,937	91,365	79,135	83,468	89,236	88,800	99,117	188.94
HR	85,285	76,984	69,405	76,871	100,276	103,398	114,717	124,224	157,659	183,725	215.42
MS	253,454	231,538	200,312	202,850	259,121	353,459	394,834	410,904	495,481	517,111	204.02
SB	327,925	287,103	244,708	228,195	263,684	285,136	329,986	355,698	438,611	503,620	153.57
Centre Region	1,329,992	1,291,514	1,072,785	1,126,887	1,435,771	1,654,856	1,859,853	1,953,022	2,332,362	2,585,938	194.43
Romania	6,971,925	7,125,307	6,141,135	6,072,757	7,031,606	7,686,489	7,943,153	8,465,909	9,921,874	11,002,522	157.81
Share of Centre Region %	19.07	18.12	17.46	18.55	20.41	21.52	23.41	23.06	23.50	23.50	-

Source: Own calculation based on the data provided by [12].

The evolution of tourist arrivals by county in the Centre Region.

Brasov is on the 1st position recording the most numerous visitors whose number was doubled in the studied interval (1,114,395 tourists in 2016 vs. 556,816 in 2007).

Mures is ranked the 2nd with 517,111 tourists in 2016, a double figure than in 2007.

The 3rd position belongs to Sibiu where 503,620 arrivals were noticed in 2016 (+53.57 %).

The 4th rank is occupied by Harghita which achieved 85,285 tourists in 2016 (+115.42 %) in comparison with 2007

With 167,970 arrivals in 2016, Alba County is situated on the 5th position. Compared to 2007, it achieved 3.1 times more visitors than at the beginning of the interval, reflecting the highest growth rate in the period taken into consideration.

Covasna received 99,117 tourists (+88.94 %) compared to 2007, being situated on the 6th rank (Table 1).

The structure of tourist arrivals in the Centre Region.

In 2016, the results were the following ones in the decreasing order: Brasov 43 %, Mures 19.9 %, Sibiu 19.8 %, Harghita 7.1 %, Alba 6.4 % and Covasna 3.8 %.

The fluctuation of arrivals had a deep impact on each county market share. While the weight of visitors in Brasov, Mures, Harghita and Alba counties raised, in Covasna and especially in Sibiu decreased (Fig.1.)

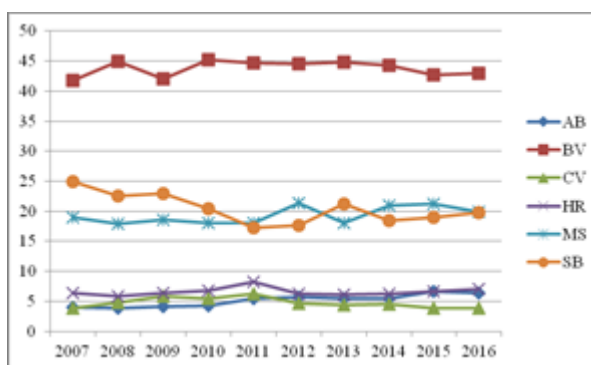


Fig.1. The market share of visitors by county in the Central Area, 2007-2016 (%)

Source: Own design using the data from [12].

The number of tourist arrivals per inhabitant or tourism density also reflects the concentration of tourism demand.

Table 2. Tourism density by county in the Centre Region of Romania in the year 2016 (tourist arrivals/inhabitant)

	Tourism density (tourist arrivals/inhabitant)	Position of the county
AB	0.50	5
BV	2.02	1
CV	0.48	6
HR	0.60	4
MS	0.95	3
SB	1.26	2
Centre Region	1.10	-
Romania	0.56	-

Source: Own calculation using the empirical data from [12].

In 2016, the highest number of tourist arrivals/inhabitant was in Brasov county (2.02), Sibiu (1.26), Mures (0.95), Harghita (0.6), Alba (0.5) and Covasna (0.48).

The average level of density in the Centre Region is 1.1 tourist arrivals/inhabitant. It is double than 0.56 arrivals/capita at the country level. In case of the Centre Region, four counties: Brasov, Sibiu, Mures and Harghita exceed the average arrivals density in the country (Table 2).

The Index of concentration (HHI) in the Central Area varied between 0.2936 in the year 2007, the maximum value, and 0.2734, the minimum value in 2015. The values reflect a relatively high visitors concentration in the counties ($HHI > 0.25$). It was noticed a descending trend from the year to another in the research period (Table 3).

Table 3. The calculation of HHI in the Centre Region of Romania based on the sum of squared shares of the counties for tourist arrivals (g_{ij})²

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AB	0.0016	0.0015	0.0016	0.0017	0.0029	0.0032	0.0029	0.0030	0.0043	0.0040
BV	0.1746	0.2025	0.1772	0.2043	0.1998	0.1980	0.2007	0.1962	0.1823	0.1849
CV	0.0152	0.0023	0.0033	0.0029	0.0039	0.0022	0.0019	0.0020	0.0014	0.0014
HR	0.0040	0.0034	0.0040	0.0046	0.0068	0.0038	0.0037	0.0034	0.0044	0.0050
MS	0.0361	0.0320	0.0345	0.0324	0.0324	0.0453	0.0327	0.0441	0.0449	0.0396
SB	0.0620	0.0506	0.0529	0.0299	0.0299	0.0309	0.0449	0.0338	0.0361	0.0392
HHI _i	0.2936	0.2923	0.2735	0.2875	0.2757	0.2834	0.2868	0.2825	0.2734	0.2741

Source: Own calculation utilizing the data collected from [12].

The evolution of Herfindhal-Hirschman Index is also graphically illustrated in Fig.2.

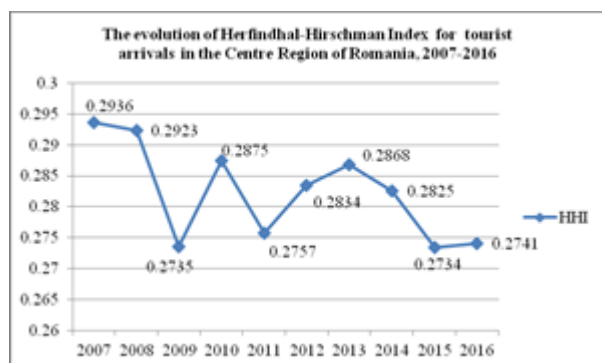


Fig.2. The dynamics of Herfindhal-Hirschman Index for arrivals in the Central Romania, 2007-2016 (%)
 Source: Own design using the data achieved from [12].

The dynamics of the values of Herfindhal-Hirschman Normalized Index.

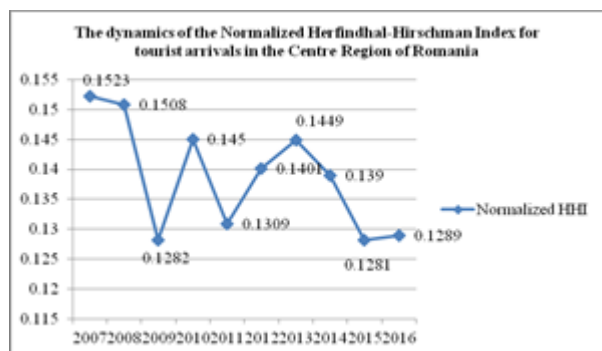


Fig.3. The dynamics of the Normalized Herfindhal-Hirschman Index for arrivals in the Central part of Romania, 2007-2016 (%)
 Source: Own design, the data were offered by [12].

The highest value was 0.1523 (2007) and the lowest one 0.1281 (2015).

This index had the same decreasing trend like the classic HHI (Fig.3).

The Coefficient Gini-Struck slightly declined in this interval from 0.3902 in 2007 to 0.3590 in 2016.

The maximum level of GSC was noticed in 2007, and the minimum level 0.3578 in 2015. $GSC > 0.3$ shows a relative high concentration degree of tourist arrivals. It is true, as the empirical data showed that in Brasov, Mures and Sibiu it was registered the highest number of tourists accounting for 83.5 % in total arrivals in the Central Area. Therefore, tourist demand in relatively concentrated in these three counties of the Central Romania (Fig.4.).



Fig.4. Gini-Struck Coefficient for arrivals in the Central Romania, 2007-2016 (%)
 Source: Own design, data source [12].

The concentration coefficient

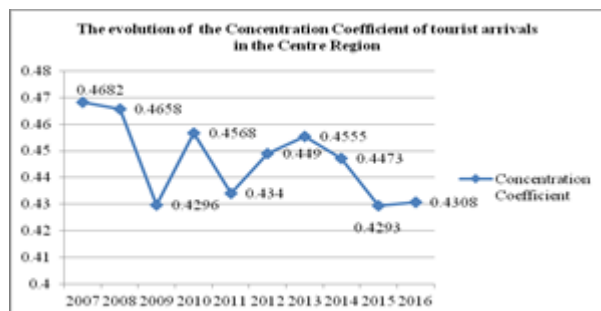


Fig.5. Coefficient of concentration for tourist arrivals in the Central Region of Romania, 2007-2016 (%)

Source: Own design, using the data taken from [12].

The coefficient of concentration reflected a trend of diminishing the concentration degree from 0.4682, the highest level recorded in 2007 to 0.4308 in 2016. The year 2015 registered the minimum value as shown in Fig.5.

The evolution of Herfindhal-Hirschman Index, Normalized Herfindhal-Hirschman Index, Gini-Struck Coefficient and Concentration Coefficient is comparatively presented in Fig.6.

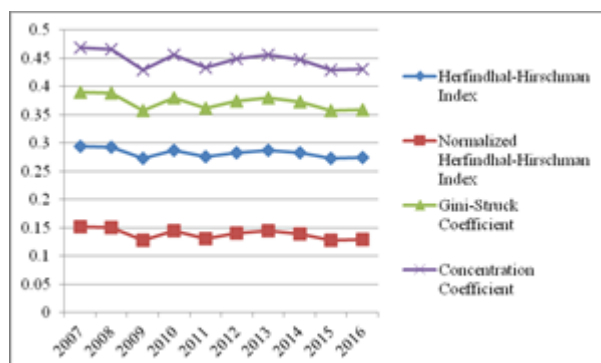


Fig.6. The comparative illustration of the main concentration indicators of tourist arrivals, Romania, 2007-2016 (%)

Source: Own design, the data were picked up from [12].

CONCLUSIONS

The study of arrivals concentration in Romania in its central part in the last decade has emphasized the following aspects:

The central part of Romania benefits of the highest tourism demand, being on the top for tourist arrivals.

The counties Brasov, Mures and Sibiu are the most visited areas of the region, while

Harghita, Alba and Covasna absorb just about 17 % of tourist arrivals.

Therefore, it is a relatively high concentration of arrivals in Brasov, Mures and Sibiu counties than in the other counties.

The average tourists/capita in the Central Area is 1.1, almost double compared to 0.56 the mean in Romania. Four counties Brasov, Sibiu, Mures and Harghita exceed the average tourism density in the country.

In the analyzed period, it was noticed a relatively descending trend of all the indicators reflecting the concentration degree of tourist arrivals: Herfindhal-Hirschman Index, Normalized Herfindhal-Hirschman Index, Gini-Struck coefficient and Concentration coefficient from the year 2007 to the year 2016.

The values of Herfindhal-Hirschman Index varied between 0.2923 and 0.2742, the values of the normalized Herfindhal-Hirschman Index ranged between 0.1523 and 0.1289, the levels of Gini-Struck Coefficient varied between 0.3902 and 0.3590 and of CC between 0.4682 and 0.4308.

As a conclusion, the Centre Region of Romania is facing a high tourism demand concentration degree in terms of tourist arrivals, all the counties being visited by more and more tourists year by year, but the most visited counties remain Brasov, Mures, Sibiu and Harghita.

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