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ANALYSIS OF TOURISM OFFER AND DEMAND SYNERGY IN BUCHAREST-ILFOV, ROMANIA, IN THE PERIOD 2008-2015

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Abstract

The paper aimed to analyze the synergy between the development of tourism offer and demand in the Bucharest-Ilfov area, Romania, based on the empirical data provided by the National Institute of Statistics for the period 2008-2015 and using modern methods such as: fixed index, correlation coefficient, regression function. The results emphasized a growth in the number of accommodation units for tourists, in close relationship with the development of inbound and domestic tourism. In 2015, the Bucharest-Ilfov area had 182 establishments for tourists' accommodation, and 21,600 places and recorded 1.85 million tourist arrivals of which 56.7 % foreigners, and 3 million overnight stays, of which 58 % belonging to the international tourists. While the Romanian tourists' overnight stays in tourist accommodation units increased by 24.75 %, the overnight stays belonging to the foreign tourist increased by 58 %. Hotels are the most preferred type of accommodation units both by foreigners and Romanians in this area. The number of accommodation units is strongly and positively influenced by tourists arrivals and overnight stays as proved by the correlation coefficients (r_{xy} = 0.859 and, respectively, r_{xy} = 0.930). This was also proved by the regression models between the number of accommodation units and tourist arrivals, Y = 27.42325X + 129.6964, and the number of accommodation units and overnight stays Y = 22.8486X + 113.537. The variation of the number of accommodation units is determined 93.08 % by the variation of overnight stays and 73.85 % by the variation in tourist arrivals. As a final conclusion, it was proved the synergy between the tourism offer and demand in the Bucharest-Ilfov area, an aspect which has to represent the fundamental of the development strategy of accommodation capacity in terms of establishments.

Key words: *demand, tourism, Bucharest-Ilfov, Romania, synergy*

INTRODUCTION

The number of persons who travels for various purposes in a different location away from their residence place and use tourist facilities and services defines the concept of tourism demand [5].

Tourism demand has three forms: inbound tourism including the international tourists arriving in a special destination, domestic tourist demand including the local tourists visiting their country of origin and outbound tourism including the travels of the residents abroad.

Tourism demand is frequently measured by international tourist arrivals in accommodation establishments [15,16, 18], international tourist expenditure [23], the overnights spent at destination [10, 21], the length of stay at destination, tourist consumption [17], tourism density, tourism intensity, and tourism function [17]. Tourism demand is influenced by a large variety of economic, demographic, technical, psychological, and dummy factors, which must not be ignored and should be included in the econometric models, besides tourist arrivals and overnight stays which are commonly used [2, 3].

Tourism flows have a deep impact of tourism offer and tourism offer stimulate the development of tourism flows among other factors. Obviously, between tourism offer and demand is and must be a close relationship.

Tourism is an important economic branch of the economy and in a continuous development in Romania. In 2016, the direct contribution of Romania's tourism to GDP accounted for USD 2.5 billion, representing 1.3 % of GDP, and its total contribution reached USD 39.3 billion, representing 5.2 % of GDP. Also, tourism has directly contributed by 197,500 jobs, representing 2.4 % of total employment in the

country, and the total contribution accounted for 513,500 jobs, i.e. 6.2 % of the total employment. Visitors' exports were USD 2,177 million, representing 2.8 % of Romania's exports, and investments in tourism were USD 3.6 billion, representing 8.1 5 of total investments in the country [24].

This was a result of the growth recorded in tourism flows mainly in the last decade. In the period 2008-2013, the number of Romanian tourist arrivals increased by 12.89 % from 5.5 million to 6.2 million, due to the growth in of household income resulting an increase in spending on tourism activities. More than 70 % arrivals were registered in hotels in 2013. In the same period, the foreign tourist arrivals in Romania increased from 1.4 million in 2008 to 1.7 million in 2013, meaning by 17.15 % more than in 2008. About 88 % of the foreign tourists preferred accommodation in hotels and 8.8 % preferred motels. This increase was stimulated by the rationale tourism strategy, a good relationship between the tourism offer quality and price, the alignment of tourism offer to the international standards to delivery high quality services at affordable prices, diversification of leisure-entertainment services [1, 3].

The touristic demand in Romania has followed a similar trend with the GDP curve as the touristic demand is strongly correlated with the level of population disposable income [19].

This has confirmed that the modernization of tourism infrastructure including: accommodation, transportation, treatment and leisure facilities is deeply influenced by the tourist traffic [9].

The evolution of tourism in a country has proved a flexible adaptation of accommodation capacity in different areas in close relationship with the potential number of tourists and their preferences for the comfort categories of various accommodation units. Foreign tourists' preferences are more oriented to hotels of high comfort category compared to those of the Romanian tourists [22].

Accommodation has the highest share among the tourism services in a perceived destination by visitors. In Romania, the highest quality of accommodation services is in hotels. The most numerous hotels are in Constanţa, Ilfov, Bucharest, Braşov and Prahova counties. In Bucharest there are 22 % of the total number of hotels existing in the county residencies [4]. In terms of overnight stays, Romanians preferred mainly Bucharest and county capitals, spas and health resorts, and the seaside, while foreigners preferred Bucharest and county capitals, other localities and mountain resorts. About 70 % of the accommodated tourists came from the EU countries such as Germany, Italy, France, United Kingdom and Hungary, but also from Turkey, and in a small measure from Asia, and USA. The net use index of the accommodation capacity was 25.9% in 2012, dropping from 33.4% in 2005 [20].

In most cases, European funds have financially supported the growth of the structures of reception with functions of tourist accommodation. Not only the old accommodation units have been modernized, but also new units have been built, especially hotels and rural hostels [3].

In this context, the paper aimed to analyze the dynamics of tourism offer and demand in Bucharest-Ilfov area in the period 2008-2015 and to establish the relationships between tourist arrivals and overnights stays as independent variables on tourism accommodation establishments and places as dependent variables. For this reason, besides the fixed indices characterizing the evolution of these indicators, the paper was focused on the correlation coefficients, the determination coefficients as well as on the regression econometric models.

MATERIALS AND METHODS

The study area.

Bucharest is the capital of Romania, the most important industrial and commercial center, and also the core of the educational, artistic, cultural and entertainment institutions, mass-media and transport nods of the country. It is the 10th position based on its population (1,883,425 inhabitants) in the EU-28, but the metropolitan area of Bucharest totalizes 2.2 million inhabitants [13].

The Bucharest-Ilfov area consists of Bucharest and the Ilfov County, being situated in the South-Eastern part of Romania, having the following geographical coordinates: 25°49'50" - 26°27'15" East longitude and 44°44'30" - 44°46' 5" Nordic latitude. The relief is characteristic to the Vlasia Field, situated at 100 km distance from the Carpathians, 200 km from the Black Sea and 60 km from the Danube River.

The surface of the Bucharest-Ilfov area is 1,821 square kilometers, of which 87.5 % represents the territory of the Ilfov County and 12.5 % the area of the capital.

The capital has an important international role linking Europe to Asia, and also it is a nodal point between the Central and South Eastern Europe by means of its highroads, and railway routes, as well as by the two most important international "Henri Coanda" Otopeni and "Aurel Vlaicu" airports.

The climate is specific temperate-continental, characterized by four seasons, and large temperature differences among winter and summer seasons.

Bucharest is situate along the Dambovitza river, and has many lakes and parks, of which the most important is the Herastrau Park, Cismigiu Garden and the Botanical Garden [11].

In 2010, Bucharest and the Ilfov County contributed by 25.3 % to Romania's GDP, and the GDP/inhabitant is by 240 % higher in this area than the national average. The most important economic branches developed in this area are: electronics, electrotechnique industry, chemical industry, buildings, services, etc.

In Bucharest there are the seats of Romania's Parliament, Government and Presidency, as well as of various education, cultural and research institutions.

Among the most important tourist attractions in Bucharest, there are: The Parliament House considered the 2nd building in the world as volume after the Pentagon, The Cotroceni Royal Palace and Museum, the Village Museum, the Museum of the Romanian Peasant, the historical Center of the city, the Old Court Complex and the Manuc Inn, the National Museum of History, the "Grigore Antipa" National Museum of Natural History, the National Military Museum, the National Museum of Art, the Museum of Art Collections, the Triumph Arch, the Romanian Athenaeum, the National Theater, the Opera House, The Romanian Patriarchate Cathedral, the Kretzulescu Church, the Stavropoleos Church, the Victory Avenue etc [2]

In the Ilfov Country there are also a series of important tourist attractions such as: Vlasia, Caldarusani, Snagov Forests, a lot of lakes suitable for fishing, nautical sports, hunting, and the cultural values represented mainly by monasteries such as: Caldarusani, Cernica, Snagov, Samurcasesti, but also by the Ghica Palace, the Stirbei Palace, and Therme, the largest spa in Europe [14]

Data collection. In order to set up this paper, the empirical data have been collected from the National Institute of Statistics, Tempo online Data base for the period 2008-2015.

The main specific indicators taken into consideration to characterize tourism offer and demand in the Bucharest-Ilfov area have been the following ones: (i) the number of establishments for tourist accommodation, of which hotels; (ii) the share of tourist accommodation units in the Bucharest-Ilfov region in the total number of establishments for tourist accommodation existing in Romania; (iii) the share of hotels in the Bucharest-Ilfov region in the total number of hotels existing in Romania; (iv) the number of places (beds) existing in the establishments for tourist accommodation, of which hotels in the Bucharest-Ilfov area; (v) the share of the number of places in tourist accommodation units in the Bucharest-Ilfov region in the total number of places existing in the establishments for tourist accommodation in Romania; (vi) the share of places existing in hotels in the Bucharest-Ilfov region in the total number of places in hotels existing in Romania; (vii) the number of tourist arrivals (total, Romanian and foreign) in the Bucharest-Ilfov region; (viii) the share of the total tourist arrivals in the Bucharest-Ilfov region in the total tourist arrivals in Romania; (ix) the share of the Romanian tourist arrivals in the Bucharest-Ilfov region in the Romanian tourist arrivals in

Romania; (x) the share of the foreign tourist arrivals in the Bucharest-Ilfov region in the foreign tourist arrivals in Romania; (xi) the number of overnight stays (total, Romanian and foreign) in the Bucharest-Ilfov region; (xii) the share of the total overnight stays in the Bucharest-Ilfov area in the total overnight stays in Romania; (xiii) the share of the Romanians' overnight stays in the Bucharest-Ilfov area in the Romanians' overnight stays in Romania; (xiv) the share of the foreigners' overnight stays in the Bucharest-Ilfov area in the foreigners' overnight stays in Romania.

The methods applied in this research work have been different depending on the objectives of the study.

All the indicators mentioned above have been studied in their dynamics using the *Fixed Index Method*, based on the general formula: $I_{FB}= (X_n/ X_1) *100$, where: X = the variable taken into consideration, n= 1,2,3...i, the years of the chronological series. The index was used to reflect the changes of each indicator in the year 2015 compared to the level recorded in the year 2008, considered term of reference.

The linear regression was used to analyze the relationship between: (a) the number of tourist accommodation units, Y, the dependent variable on the number of tourist arrivals, X, the independent variable, (b) the number of tourist accommodation units, Y, the dependent variable on the number of tourist overnight stays, X, the independent variable, (c) the number of places (beds) in tourist accommodation units, Y, the dependent variable on the number of tourist arrivals, X, the independent variable, (b) the number of places (beds) in tourist accommodation units, Y, the dependent variable on the number of tourist overnight stays, X, the independent variable,

The formuala of the linear regression was

$$Y= a+ bX \qquad (1)$$

where: "a" is the constant term and "b" is the regression slope, and X is the vector of the independent variable. The values of the estimators of the regression parameters, a and b were determined using Least Square Method to solve the linear system of equations.

The Fisher's test was used to check the availability of the regression model.

The Pearson correlation coefficient was used to identify the links existing between the pairs of indicators mentioned above at the linear regression, and it was determined using the formula:

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}} \qquad (2)$$

The values of the correlation coefficients were interpreted according to Evans (1996) [8].

Excel/Data analysis facilities were used to process the empirical data, and then the results were tabled and illustrated in graphics and interpreted.

RESULTS AND DISCUSSIONS

Tourism Offer in Bucharest-Ilfov area

(a)The dynamics of the establishments of tourists reception with functions of tourist accommodation.

The number of tourism establishments in Bucharest-Ilfov area increased by 10.97 % from 164 units in the year 2008 to 182 units in the year 2015. At the same time, the number of hotels also followed an ascending trend, but a more dynamic one, increasing by 37.23 % from 94 units in the year 2008 to 129 units in the year 2015 (Fig.1.).

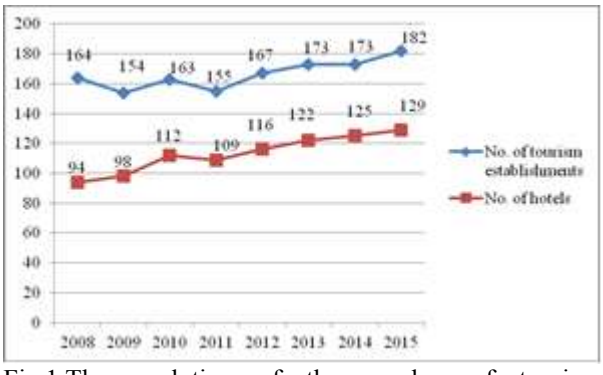

Fig.1.The evolution of the number of tourism establishments, of which hotels in Bucharest-Ilfov area, 2008-2015 (number)

Source: NIS Tempo-online data base, 2017 [12]

The share of the tourism establishments in the Bucharest-Ilfov area in the total number of tourism establishments in Romania is very small, and varied between 3.35 % in 2008 and

2.66 % in 2015, reflecting a continuous decline. This is because in general, the accommodation capacity in terms of the number of units in the country has a more dynamic evolution, as long as more Romanian and foreign tourists are also interested to visit other regions of Romania.

The share of hotels existing in the Bucharest-Ilfov area in the total number of hotels existing in Romania was 8.46 % in 2008 and 8.35 % in 2015.

(b)The dynamics of the number of places (beds) in tourism establishments of tourists reception with functions of tourist accommodation.

The number of places (beds) in tourism establishments in Bucharest-Ilfov area increased by 14.28 % from 18.9 thousands in the year 2008 to 21.6 thousands in the year 2015. At the same time, the number of places (beds) existing in hotels also increased by 14.60 % from 17.8 thousands in the year 2008 to 20.4 thousands in the year 2015 (Fig.2.).

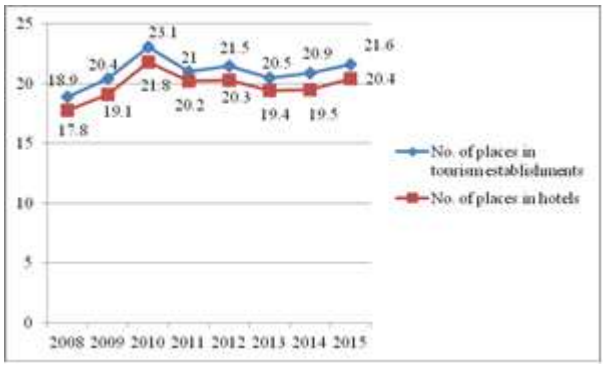

Fig.2.The evolution of the number of places (beds) existing in tourism establishments, of which hotels in Bucharest-Ilfov area, 2008-2015 (thousands)
Source: NIS Tempo-online data base, 2017, [12]

The share of places (beds) existing in tourism establishments in the Bucharest-Ilfov area in the total number of places (beds) existing in tourism establishments in Romania has registered a slight growth from 6.43 % in 2008 to 6.57 % in 2015.

The share of places existing in hotels of the Bucharest-Ilfov area in the total number of places belonging to the hotels existing in Romania was 10.64 % in 2008 and 10.74 % in 2015, reflecting the maintenance of relatively constant situation.

Tourism demand in Bucharest-Ilfov area

(i)The dynamics of the total tourist arrivals (Romanians and foreigners). The number of tourist arrivals, including both the Romanians and foreigners, in tourism establishments of the Bucharest-Ilfov area, increased by 79.61 % from 1.03 million in 2008 to 1.85 million in 2015.

At the same time, the number of tourist arrivals, including both the Romanians and foreigners, in hotels existing in the Bucharest-Ilfov region has grown up by 78.21 % from 1.01 million in 2008 to 1.8 million in 2015 (Fig.3.).

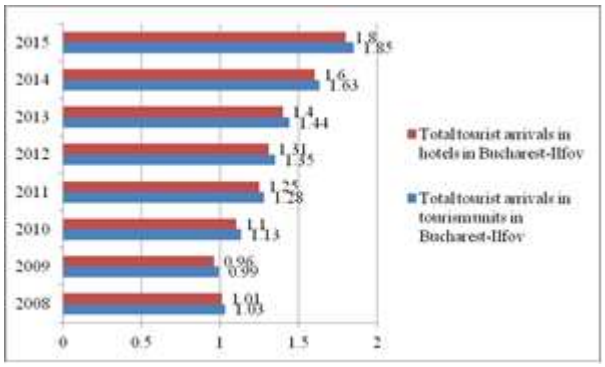

Fig.3.The evolution of the total tourist arrivals (Romanians and foreigners) in tourism accommodation units and in hotels in Bucharest-Ilfov area, 2008-2015 (million)
Source: NIS Tempo-online data base, 2017, [12]

The figures showed that most of tourists preferred accommodation in hotels, as long as the share of tourists arrivals in hotels is very high, 98 % in 2008 and 97.3 % in 2015.

The share of total tourists arrivals in the Bucharest-Ilfov region in the total tourist arrivals in Romania varied between 14.57 % in 2008 and 18.63 % in 2015, while the share of total tourists arrivals in hotels in the Bucharest-Ilfov area in the total tourist arrivals in hotels in Romania varied between 19.30 % in 2008 and 24.72 % in 2015.

(ii)The dynamics of the Romanian tourist arrivals. The number of the Romanian tourist arrivals in tourism establishments of the Bucharest-Ilfov area increased by 77.77 % from 0.45 million in 2008 to 0.8 million in 2015.

At the same time, the number of the Romanian tourist arrivals in the hotels existing in the Bucharest-Ilfov area has grown up by 72.72 %

from 0.44 million in 2008 to 0.76 million in 2015 (Fig.4.).

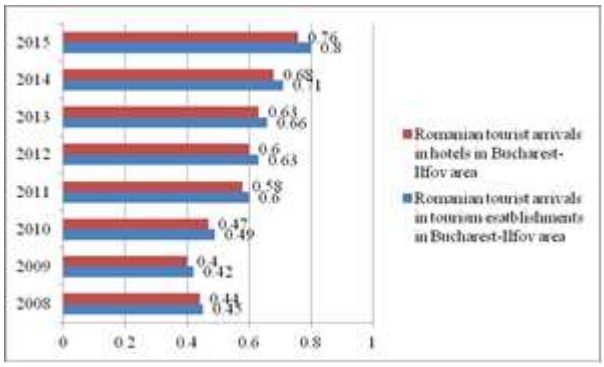

Fig.4.The evolution of the Romanian tourist arrivals in tourism accommodation units and in hotels in Bucharest-Ilfov area, 2008-2015 (million)
Source: NIS Tempo-online data base, 2017, [12]

The share of Romanian tourists accommodated in hotels in the Bucharest-Ilfov area in the Romanian tourist arrivals in tourism establishments in this region was 97.7 % in 2008 and 95 % in 2015, reflecting their preference for a comfortable accommodation and high quality services.

The share of the Romanian tourist arrivals in the Bucharest-Ilfov region in the Romanian tourist arrivals in Romania varied between 8.08 % in 2008 and 10.38 % in 2015, while the share of Romanian tourists arrivals in hotels in the Bucharest-Ilfov area in the Romanian tourist arrivals in hotels in Romania varied between 11.09 % in 2008 and 14.41 % in 2015.

(iii)The dynamics of the Foreign tourist arrivals. The number of the foreign tourist arrivals in tourism establishments of the Bucharest-Ilfov area increased by 81.03 % from 0.58 million in 2008 to 1.05 million in 2015, reflecting a higher growth rate compared to the Romanian tourists.

At the same time, the number of the foreign tourist arrivals in the hotels existing in the Bucharest-Ilfov area has grown up by 82.45 % from 0.57 million in 2008 to 1.04 million in 2015 (Fig.5.).

The share of the foreign tourists accommodated in hotels in the Bucharest-Ilfov area in the foreign tourist arrivals in tourism establishments in this region was 98.2 % in 2008 and 99 % in 2015.

The share of the foreign tourist arrivals in the Bucharest-Ilfov region in the foreign tourist arrivals in tourism establishments in Romania varied between 39.6 % in 2008 and 46.98 % in 2015, while the share of foreign tourists arrivals in hotels in the Bucharest-Ilfov area in the foreign tourist arrivals in hotels in Romania varied between 44.36 % in 2008 and 52.15 % in 2015.

It is obvious that foreign tourists have a few times (4-5 times) higher share tourism establishments and mainly in hotels in Bucharest-Ilfov area, and also in Romania.

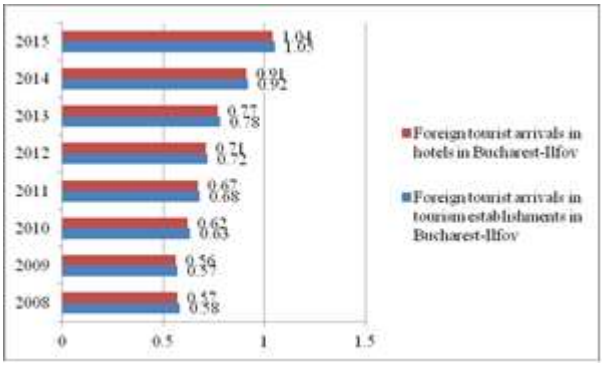

Fig.5.The evolution of the foreign tourist arrivals in tourism accommodation units and in hotels in Bucharest-Ilfov area, 2008-2015 (million)
Source: NIS Tempo-online data base, 2017, [12]

(iv)The dynamics of the total overnight stays (Romanians and foreigners).

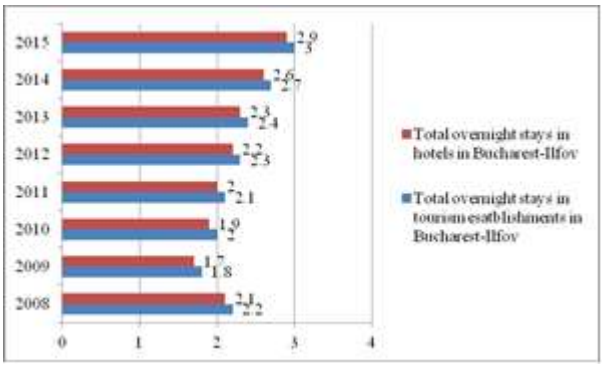

Fig.6.The evolution of the total overnight stays (Romanian and foreign) in tourism accommodation units and in hotels in Bucharest-Ilfov area, 2008-2015 (million)
Source: NIS Tempo-online data base, 2017, [12]

The number of overnight stays, belonging both to the Romanians and foreigners, in tourism establishments of the Bucharest-Ilfov area, increased by 36.36 % from 2.2 million in 2008 to 3 million in 2015.

At the same time, the number of overnight stays, including both the Romanians and foreigners, in hotels existing in the Bucharest-Ilfov region has grown up by 38.09 % from 2.1 million in 2008 to 2.9 million in 2015 (Fig.6.).
The figures showed that most numerous overnight stays were recorded in hotels, 95.4 % in 2008 and 96.6 in 2015.
The share of total overnight stays in tourism establishments in the Bucharest-Ilfov region in the total overnight stays in Romania varied between 10.67 % in 2008 and 12.92 % in 2015, while the share of total overnight stays in hotels in the Bucharest-Ilfov area in the total overnight stays in hotels in Romania varied between 13.01 % in 2008 and 16.38 % in 2015.
(v)The dynamics of the Romanians' overnight stays. The number of overnight stays, belonging to the Romanians in tourism establishments of the Bucharest-Ilfov area, increased by 24.75 % from 1.01 million in 2008 to 1.26 million in 2015.
At the same time, the Romanians' overnight stays in the hotels existing in the Bucharest-Ilfov region has grown up by 26.31 % from 0.95 million in 2008 to 1.2 million in 2015 (Fig.7.).

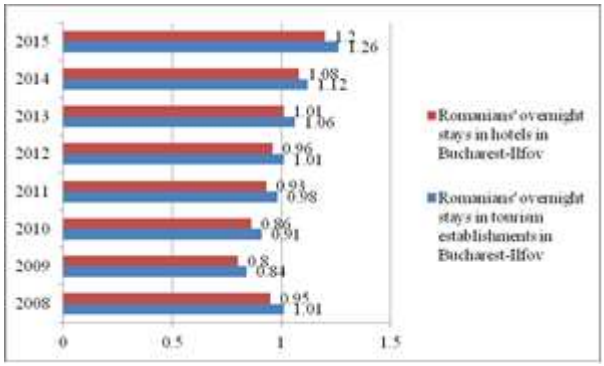

Fig.7.The evolution of the Romanians' overnight stays in tourism accommodation units and in hotels in Bucharest-Ilfov area, 2008-2015 (million)
Source: NIS Tempo-online data base, 2017, [12]

Also, in this case, the figures showed that about 94-95.2 % of overnight stays of the Romanian tourists were registered in hotels in the analyzed period.
The share of the Romanians' overnight stays in tourism establishments in the Bucharest-Ilfov region in the Romanians' overnight stays in Romania varied between 5.8 % in 2008 and 6.61 % in 2015, while the share of the Romanians' overnight stays in hotels in the Bucharest-Ilfov area in the Romanians' overnight stays in hotels in Romania varied between 7.07 % in 2008 and 8.52 % in 2015.
(vi)The dynamics of the foreign tourists' overnight stays. The number of overnight stays belonging to the foreigners in tourism establishments of the Bucharest-Ilfov area, increased by 48.33 % from 1.20 million in 2008 to 1.78 million in 2015.
At the same time, the foreigners' overnight stays in the hotels in the Bucharest-Ilfov area has grown up by 49.57 % from 1.17 million in 2008 to 1.75 million in 2015 (Fig.8.).

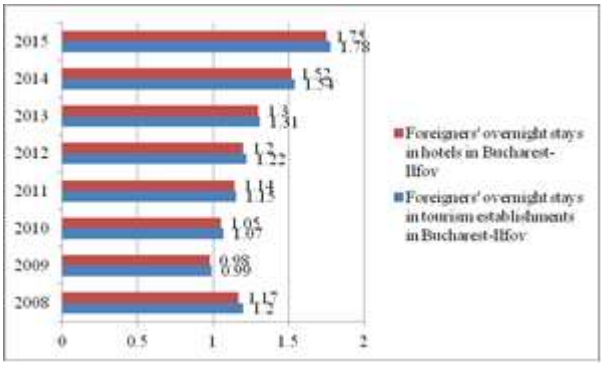

Fig.8.The evolution of the foreigners' overnight stays in tourism accommodation units and in hotels in Bucharest-Ilfov area, 2008-2015 (million)
Source: NIS Tempo-online data base, 2017, [12]

The figures showed that about 97.5 % of overnight stays in 2008 and 98.3 % in 2015 of the foreign tourists were recorded in hotels.
The share of the foreigners' overnight stays in tourism establishments in the Bucharest-Ilfov region in the foreigners' overnight stays in Romania varied between 35.76 % in 2008 and 39.82 % in 2015, while the share of the foreigners' overnight stays in hotels in the Bucharest-Ilfov area in the foreigners' overnight stays in hotels in Romania varied between 40.86 % in 2008 and 44.75 % in 2015.
The coefficients of Pearson correlation between the main indicators taken into consideration. The values of the coefficients of correlations were high for the number of accommodation units and tourist arrivals (r_{xy} = 0.859) and for the number of accommodation units and tourist overnight stays (r_{xy} = 0.930),

reflecting a positive and strong relationship between these two pairs of indicators.

Table 1. The coefficients of correlation between various pairs of indicators

The pair of indicators for which it was determined the coefficient of correlation	Correlation coefficient, r_{xy}
Number of accommodation units(Y) and Tourist arrivals (X)	$r_{xy} = 0.859$
Number of accommodation units(Y) and Tourist overnight stays (X)	$r_{xy} = 0.930$
Number of places in tourist accommodation units (Y) and Tourist arrivals (X)	$r_{xy} = 0.260$
Number of places in tourist accommodation units (Y) and Tourist overnight stays (X)	$r_{xy} = 0.065$

Source: Own calculation based on NIS Tempo-online data base, 2017, [12]

But, it was found a low coefficient of correlation between the number of places in tourist accommodation units and tourist arrivals ($r_{xy} = 0.260$) and a very low correlation coefficient between the number of places in tourist accommodation units and tourist overnight stays ($r_{xy} = 0.065$), reflecting a positive but weak relationship between these two pairs of tourism indicators (Table 1).

The regression functions between the main indicators taken into consideration.

The regression function estimated between the number of accommodation units depending on tourists' arrivals was the following one:

$Y = 27.42325X + 129.6964$

The determination coefficient, $R^2 = 0.738556$ reflected that 73.85 % of the variation in the number of accommodation units for tourists is due to the variation of the number of tourists' arrivals. This confirms the validity of the regression model.

The Standard Error, St Err = 5.2472 reflects how much the observed values deviate from the theoretical value situated on the regression slope (Fig.9).

The availability of the regression model is also confirmed by F-test= 16.949, this statistical value being higher than the tabled value, as also attested by Sign. F= 0.00623.

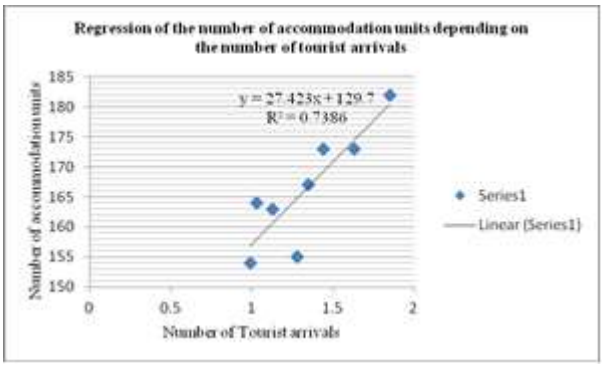

Fig.9.The regression function of the number of tourism accommodation units depending on the number of tourist arrivals in Bucharest-Ilfov area, 2008-2015
Source: INSSE Tempo-online data base, 2017, [12]

Table 2. The estimated regression model for the number of tourist accommodation units depending on the number of tourists' arrivals in the Bucharest-Ilfov area

Regression statistics						
Multiple R	0.859393					
R Square	0.738556					
Adjusted R Square	0.694982					
Standard Error	5.2472					
Observations	8					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	466.6752175	466.6752	16.949	0.00623	
Residual	6	165.1997825	27.5333			
Total	7	631.875				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1296964	9.100218	14.25201	7.46187	107.4289	151.9638
X Variable 1	27.42325	6.661019	4.116375	0.00623736	11.1243	43.7121

Source: Own computation based on National Institute of Statistics, Tempo on line Data Base, 2017, [12]

The parameters of the regression model are situated among the following confidence intervals: $107.4289 < a < 151.9638$ and $11.1243 < b < 43.7121$ (Table 2).

The regression function between the number of accommodation units depending on tourists' overnight stays was the following one:

Y = 22.8486X + 113.537

The determination coefficient, R^2= 0.93085 reflected that 93.08 % of the variation in the number of accommodation units for tourists is due to the variation of the number of tourists' overnight stays. This confirms the validity of the regression model.

The Standard Error, St Err = 0.379 reflects how much the observed values deviate from the theoretical value situated on the regression slope

The availability of the regression model is also confirmed by F-test= 38.938, this statistical value being higher than the tabled value, as also attested by Sign. F= 0.000784.

The parameters of the regression model are situated among the following confidence intervals: 92.5661 < a < 134.509 and 13.88905 < b< 31.8082 (Fig.10, Table 3).

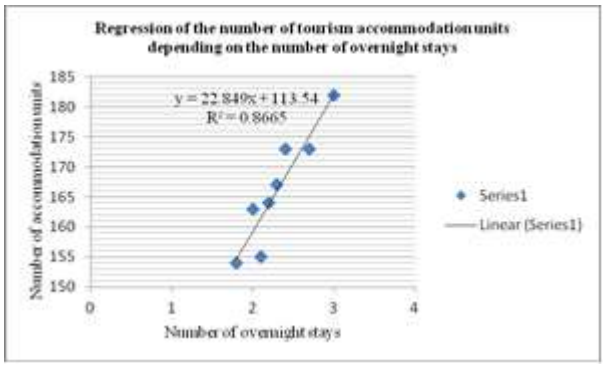

Fig.10.The regression function of the number of tourism accommodation units depending on the number of overnight stays in Bucharest-Ilfov area, 2008-2015
Source: INSSE Tempo-online data base, 2017, [12]

Table 3. The estimated regression model for the number of tourist accommodation units depending on the number of tourists' overnight stays in the Bucharest-Ilfov area

Regression statistics						
Multiple R	0.93085					
R Square	0.8664					
Adjusted R Square	0.844					
Standard Error	0.379					
Observations	8					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	547.5103	547.5103	38.938	0.000784	
Residual	6	84.36472	14.06079			
Total	7	631.875				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	113.537	8.570567	13.24738	1.14336	92.5661	134.509
X Variable 1	22.8486	3.661582	6.240097	0.000784	13.88905	31.8082

Source: Own computation based on National Institute of Statistics, Tempo on line Data Base, 2017, [12]

The regression function between the number of places in tourism accommodation units depending on tourists' arrivals was the following one:

Y = 1.050278X + 19.58275

The determination coefficient, R^2= 0.06812 reflected that only 6.81 % of the variation in the number of places in tourism accommodation units is due to the variation of the number of tourists' arrivals. This does not confirm the validity of the regression model.

The Standard Error, St Err = 1.249282 reflects a relatively high deviation of the observed values deviate from the theoretical value situated on the regression slope

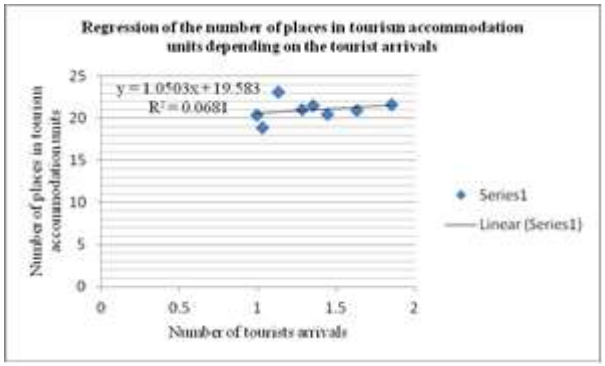

Fig.11.The regression function of the number of places in accommodation units depending on the number of tourist arrivals in Bucharest-Ilfov area, 2008-2015
Source: INSSE Tempo-online data base, 2017, [12]

The invalidity of the regression model is also confirmed by F-test= 0.43859, this statistical

value being lower than the tabled value, and this is also attested by Sign. F= 0.532399.
The parameters of the regression model are situated among the following confidence intervals: 14.28122 < a < 24.88429 and -2.83025 < b< 4.930802 (Fig.11, Table 4).
The regression function between the number of places in tourism accommodation units depending on tourists' overnight stays was the following one:

$$Y = 0.20143X + 20.5214$$

The determination coefficient, R^2= 0.00423 reflected that only 0.42 % of the variation in the number of places in tourism accommodation units is due to the variation of the tourists' overnight stays (Fig.12).
This does not confirm the validity of the regression model.

The Standard Error, St Err = 1.291394 reflects a high deviation of the observed values deviate from the theoretical value situated on the regression line.

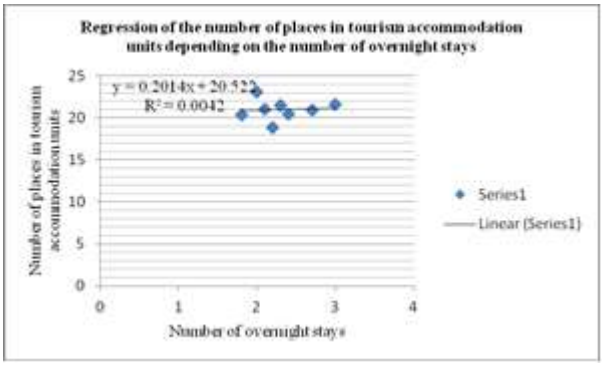

Fig.12.The regression function of the number of places in tourism accommodation units depending on the number of overnight stays in Bucharest-Ilfov area, 2008-2015
Source: INSSE Tempo-online data base, 2017, [12]

Table 4. The estimated regression model for the number of places in tourist accommodation units depending on the number of tourists' arrivals in the Bucharest-Ilfov area

Regression statistics						
Multiple R	0.260998					
R Square	0.06812					
Adjusted R Square	-0.08719					
Standard Error	1.249282					
Observations	8					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	0.68451	0.684519	0.43859	0.532399	
Residual	6	9.36423	1.560705			
Total	7	10.04875				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	19.58275	2.166621	9.03838	0.000102	14.28122	24.88429
X Variable 1	1.050278	1.585886	0.662266	0.53239	-2.83025	4.930802

Source: Own computation based on National Institute of Statistics, Tempo on line Data Base, 2017, [12]

The invalidity of the regression model is also confirmed by F-test= 0.025515, a statistical value lower than the tabled value, and this is also attested by Sign. F= 0.87833.
The parameters of the regression model are situated among the following confidence intervals: 13.2992 < a < 27.7441 and -2.88418 < b< 3.28704 (Table 5).

CONCLUSIONS

The paper analyzed the tourism offer and demand in the Bucharest-Ilfov area in the period 2008-2015.

The results pointed put that the number of establishments of tourists reception with functions of tourist accommodation in this region has increased in the analyzed period by 10.97 %, while the number of hotels increased by 37.23 %. In 2015, in this area there were 182 tourism establishments and 129 hotels.
The number of places in establishments for tourists' accommodation increased by 14.28 %, while the number of places in hotels raised by 14.60 %.
In 2015, in the Bucharest-Ilfov area, there were 21,600 places in tourist accommodation units, of which 20,400 places in hotels.

Table 5. The estimated regression model for the number of places in tourist accommodation units depending on the number of tourists' overnight stays in the Bucharest-Ilfov area

Regression statistics						
Multiple R	0.06507					
R Square	0.00423					
Adjusted R Square	-0.16172					
Standard Error	1.291394					
Observations	8					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	0.042552	0.042552	0.025515	0.87833	
Residual	6	10.0062	1.6677			
Total	7	10.04875				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	20.5214	2.951642	6.952636	0.000439	13.2992	27.7441
X Variable 1	0.20143	1.261023	0.159736	0.878331	-2.88418	3.28704

Source: Own computation based on National Institute of Statistics, Tempo on line Data Base, 2017, [12]

All these reflected that tourism offer in the Bucharest-Ilfov area have been continuously developed in order to satisfy better tourists' requirements.

In the analyzed period, the number of total tourists' arrivals in the establishments for tourists' accommodation increased by 79.61 %, while the number of arrivals in hotels raised by 78.21 %.

Compared to the growth of 77.77 % in Romanian tourists' arrivals in tourism accommodation units and 72.72 % in hotels, the number of foreign tourists' arrivals in tourism accommodation units increased by 81.95 % and in hotels by 82.45 %, reflecting a more dynamics growth rate.

The number of total overnight stays increased by 36.36 % in tourist accommodation units and by 38.09 % in hotels.

However, like in case of tourist arrivals, the foreign tourists recorded a higher number of overnight stays by 48.33 % in tourism accommodation units and by 49.57 % in hotels, while the Romanian tourists registered by 24.75 % more overnight stays in tourism accommodation units and by 26.31 % in hotels.

Therefore, in 2015, it was recorded 1.85 million tourist arrivals, of which 0.8 million, that is 43.24 % belonged to the Romanian tourists and 56.76 % to the foreign tourists.

In the same year, there were recorded 3 million overnight stays in tourism accommodation units, of which 42 % belonged to the Romanian tourists and 58 % to the foreign ones.

Hotels are the most preferred units of accommodation by foreign tourists, and also by the Romanians.

Between the number of accommodation units and the number of overnight stays, as well as between the number of accommodation units and the number of tourist arrivals is a strong positive relationship, as conformed by the correlation coefficients, whose values were: r_{xy} = 0.930 and, respectively, r_{xy} = 0.859. The number of places is not influenced by the number of tourists arrivals and the number of overnight stays, as proved by the weak coefficients of correlation, r_{xy} = 0.260, and respectively, r_{xy} = 0.065.

The same idea was confirmed by regression function between the number of accommodation units depending on tourists' arrivals whole estimated model was Y = 27.42325X + 129.6964, with an R squared = 0.738556, and by the regression function between the number of accommodation units and the number of overnight stays whose estimated model was: Y = 22.8486X + 113.537 with R squared =0.93085. The correct form of these regression models was attested by Fisher's test.

The study proves that the number of places in tourist accommodation units is not influenced by tourists arrivals or overnight stays, but by other factors.

Therefore, the relationship between tourism offer and tourism demand in the Bucharest-Ilfov area has proved the synergy between the development of the accommodation capacity in

terms of accommodation units and the increase of tourists arrivals and overnights stays.

The tourism agents must take into consideration the growth of inbound and domestic tourism in terms of overnight stays and arrivals in setting up the strategy of the development of tourist accommodation establishments.

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