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SEASONALITY AND DEGREE OF CONCENTRATION OF NIGHTS IN TOURIST RECEIVING STRUCTURES, IN TULCEA COUNTY, IN THE PERIOD 2010-2018

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Abstract

Tourism represents in Romania one of the economic sectors with real possibilities for long-term development, also being a means of creating and improving the image of our country abroad. A dominant feature of tourism activity is seasonality, which must be taken into account when proposing and formulating marketing policies. This is also one of the difficulties faced by tourism companies. In order to be able to make forecasts but also lay the foundations for strategies of evolution and sustainable development of a tourist area, it is necessary to take into account all the environmental characteristics of the area in which it is desired to carry out a tourist activity, but also the evolution of its components. Seasonality in tourism can be influenced by various factors such as: the natural ones (the change of seasons or climate), the periodicity of cultural activities and manifestations, but also the organizational factors related to the periods of holidays, holidays, holidays. The main purpose of this paper was to determine the seasonality of the tourist demand and implicitly its degree of concentration throughout Tulcea County, taking into consideration the period 2010-2018. The study of the phenomenon of concentrating the tourist activity in certain months and implicitly the need to attenuate the seasonality curve in the tourist reception structures is a way to understand the evolution of the tourist activity over a period of time. The identification of the tendency of this curve for the following periods can lead to the elaboration of solutions that can eliminate the factors that influence the seasonality of the tourist activity.

Key words**:** *tourist seasonality, seasonality indices, coefficient of concentration*

INTRODUCTION

Tourism is characterized as an economic-social phenomenon, which is influenced by the evolution of modern society, it addresses large social segments, trying to meet their needs. Through this sector, both material and human potential are trained. Tourism can be of several forms: for recreation, rest, entertainment, religious, cultural, sports, treatment and balneoclimatic, hunting and fishing and so on [3].

Analysing the tourism behaviour in the tourism sector, different factors were identified such as: climate and weather (Scott, Mc Boyle, 2004, H. Song & Li, 2017) cited by [6, 8] but also institutional factors such as working and vacation periods, all having an important role in determining the seasons of the tourist seasons [5].

An important aspect that can affect tourism is the seasonality. Analysing and measuring the seasonality in tourism represents a complex and difficult task that involves both the determination of the causes and the consequences. An imbalance of the phenomenon of tourism that manifests temporarily can be considered the seasonality, this being expressed by the volume of tourists or visitors, the available work places, the traffic, etc. [2].

By counting the departures and arrivals of tourists from a certain tourist area, a quantitative measurement of the demand is made, while the expenses incurred during the stay represent the economic value of the demand for a certain tourist area [1].

By unequal distribution of tourist demand and consumption (seasonal variations), were identified three periods throughout a calendar year:

-The first period - the peak season (characterized by the maximum intensity registered of the tourist activity)
- The second period - beginning and ending of the season (intermediate season) - period in which there is an increase in the volume of activity and respectively a gradual decrease
- Third period - the extra season, a period that is characterized by the reduction or even the cessation of the tourist services [7].
For the tourism in Romania, the overlapping of seasonal variation curves, indicates a stronger concentration in the hot season, which is valid for all forms of tourism [9].

MATERIALS AND METHODS

The seasonality of the tourist activity can be quantified with the help of specific statistical-mathematical methods such as: seasonality indices, concentration coefficients, traffic intensity coefficients, etc.
The analysis includes data series comprising the accommodation capacity and the number of tourist nights, for the period 2010-2018 in Tulcea County, the data being taken from the Statistical Yearbooks of Romania, time series and NIS, TEMPO-online databases and processed using seasonality-specific indicators.
Specific seasonality indices can be determined by using the method of arithmetic means, based on dynamic series regarding the distribution by months, quarters of tourist arrivals [11, 12] The arithmetic mean method will be used for the calculation of the seasonality coefficients. Seasonality indices will be calculated according to the relationship below:

$$I_s = \frac{\bar{y}_l}{\bar{\bar{y}}} \cdot 100$$

Where:
$\bar{y}_l$ - represents the monthly average
$\bar{\bar{y}}$ - represents the general monthly average

The more the value of the seasonality coefficient tends to 100, the lower the seasonality, while the removal of 100 reveals an accentuated seasonality [7].

The intensity of the seasonality (or the form of the concentration degree) can be evaluated by calculating the Struck concentration coefficient (Cs). By calculating the Struck concentration coefficient (Cs), one can characterize both the intensity and the tendency of the seasonality*:*

$$C_s = \sqrt{\frac{n\sum g_i^2 - 1}{n-1}}$$

where:
g_i – weight of each category in total
n - number of moments / categories

The Struck concentration coefficient (C_S) can take values in the range [0; 1]. If the value of the Struck concentration coefficient is closer to the zero value, it indicates that the concentration degree is lower, giving the possibility of an easy and comparable interpretation of it. If the coefficient value is closer to 1, the concentration level and the seasonality level tends to the maximum [8].

RESULTS AND DISCUSSIONS

The Danube Delta Biosphere Reserve, located in Tulcea County, represents an important tourist attraction for both tourists in our country and for those from abroad, transforming this area into an important tourist area on the territory of the country. By practicing tourism in the Danube Delta, will be exploited both the natural and cultural values of the area. the territory of the reservation can be practiced various forms of tourism such as: rural tourism, leisure and recreation tourism, knowledge, specialized, rural, tourism for practicing sports specific to the area (fishing, boating, sports hunting) etc.
According to the statistical data at the level of 2018, 136 thousand tourists of Romanian nationality and 25.3 thousand foreign tourists were accommodated between January and October, compared with 68.6 thousand Romanian tourists and 22.4 thousand foreign tourists of the same period of the year. 2017, with an increase of 97% and 13% respectively. During the period June-October, the occupancy rate of the tourist structures in Tulcea County is maximum, permanently

occupying about 9,800 places of accommodation.

The large number of tourists as well as the increase of accommodation places in Tulcea County is due to a series of measures and promotional actions that took place at national and international level.

The tourist accommodation capacity in operation represents the number of accommodation places that are made available to tourists by the tourist reception structures that provide accommodation, taking into account the time period (number of days) in which the structures are open for tourist reception [4].

In order to measure the efficiency of the accommodation services, one of the most representative indicators of the supply-demand relationship will be used, the degree of capacity in operation. The evolution of the net use index (accommodation capacity in operation) in Tulcea County, for months of a year in the period 2010-2018 is presented in Fig.1.

Analysing the evolution of this index it can be observed that in the period 2017-2018, its volume was higher than in previous years, this fact being possible both due to the increase in the number of tourists and the implementation of policies aimed at developing tourism in the area and accessing measures of financing specific to the ITI Danube Delta area. Following the analysis of this dynamic, it can be observed that during the summer period, from June to August, the volume of accommodation capacity in operation is maximum, in the last year 2018, this doubling.

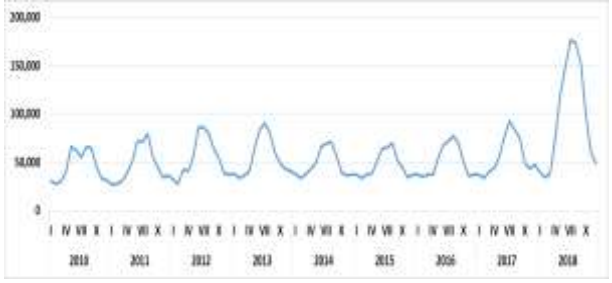

Fig.1. Evolution of accommodation capacity in operation, in the accommodation structures of Tulcea County, on Monday, for the period 2010-2018
Source: processed data.

The real demand is represented by the indicators of the tourist circulation. One of the indicators to be analysed is the number of overnight stays of tourists. The evolution of this indicator is presented in Fig. 2, this registering a growth trend.

By implementing various development programs but also promoting tourism areas in Tulcea County, with a main attraction of the Danube Delta Reservation, over the last two years there has been an increase in accommodation requests which has led to the creation of new tourist structures as well as extending them, thus increasing the accommodation capacity and this time and increasing the number of overnight stays.

The dynamics of the indicator shows a seasonal evolution, the month with the maximum number of nights registered being August of each year taken in the study, and the month with minimum nights recorded being February.

The duration of the tourist season in Tulcea County is determined primarily by the climatic and meteorological factors, thus the prolongation of the tourist season is conditioned by the policy instruments used in the tourism industry.

Throughout the analysed period, there was an oscillation in the number of overnight stays, with a minimum in 2010 of 108.7 thousand overnight stays, reaching in 2018 1,377.9 thousand nights.

If, until 2016, the number of nights was higher in May - September, this will change starting with 2017, when the number of nights increased during the off-season, up to 5 times higher than in previous years of the same period.

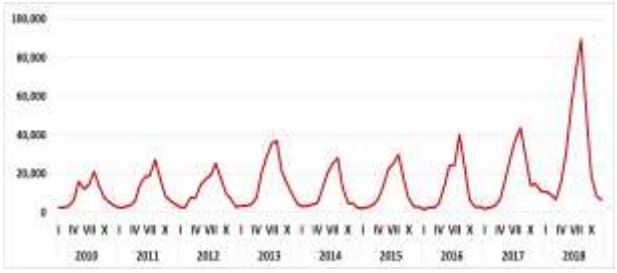

Fig. 2. Analysis of the dynamics of the number of tourist nights in 2010-2018, in Tulcea County
Source: NIS, [10].

Specific seasonality indicators are calculated by directly applying the arithmetic mean method. By comparing the specific average of each month to the general monthly average, the seasonality indices result. These indices characterize the average deviation of each month from the general monthly average for the entire analysed period, respectively, 10 years.

In Table 1, it can be observed that the number of nights spent in the tourism structures in Tulcea County registered a maximum in August with 162% compared to the general monthly average and the number of nights minimum in January with a weight of 23.7 %.

Table 1. Evolution of the number of overnight stays, by months, by total reception structures, for the period 2010-2018 (Number)

Month/ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	Monthly average	Seasonality index (%)
January	2,521	2,513	2,853	3,464	3,023	2,183	1,684	2,010	10,650	3,433	23.7
February	2,644	2,794	2,609	3,339	3,521	2,937	2,428	2,456	9,292	3,558	24.5
March	3,482	3,446	7,687	4,275	4,237	4,048	2,711	3,618	6,723	4,470	30.8
April	6,118	5,487	7,486	7,373	5,020	6,950	4,677	6,967	15,904	7,331	50.5
May	15,893	14,242	14,370	20,983	12,372	13,977	13,946	16,609	30,791	17,020	117.3
June	12,302	18,346	17,175	28,658	20,541	22,319	24,381	28,096	55,632	25,272	174.1
July	14,214	19,090	19,206	35,818	25,154	25,345	24,542	37,391	74,496	30,584	210.7
August	21,256	27,407	25,427	37,034	28,134	29,925	40,050	43,617	89,535	38,043	262.1
September	13,815	17,556	17,438	21,549	12,755	17,358	22,957	29,614	50,729	22,641	156.0
October	7,719	8,803	10,098	14,640	5,023	7,097	6,562	14,124	18,990	10,340	71.2
November	5,219	6,302	6,417	10,019	4,641	3,237	2,921	14,782	8,593	6,903	47.6
December	3,522	4,533	3,001	4,548	2,329	2,801	2,939	11,064	6,582	4,591	31.6
Total	108,705	130,519	133,767	191,700	126,750	138,177	149,798	210,348	377,917	14,516	1,200.0

Source: own calculations.

Following the calculation of the seasonality indexes, we observe the seasonal evolution of tourist nights in Tulcea County, so that from May to September the number of tourists who stayed overnight exceeds the general monthly average, and during the rest of the year their number is below this value environments.

Table 2. Calculation of the coefficient needed for the annual concentration for the period 2010 - 2018

Month	2010	2011	2012	2013	2014	2015	2016	2017	2018
I	0.0232	0.0193	0.0213	0.0181	0.0239	0.0158	0.0112	0.0096	0.0282
	0.0005	0.0004	0.0005	0.0003	0.0006	0.0002	0.0001	0.0001	0.0008
II	0.0243	0.0214	0.0195	0.0174	0.0278	0.0213	0.0162	0.0117	0.0246
	0.0006	0.0005	0.0004	0.0003	0.0008	0.0005	0.0003	0.0001	0.0006
III	0.0320	0.0264	0.0575	0.0223	0.0334	0.0293	0.0181	0.0172	0.0178
	0.0010	0.0007	0.0033	0.0005	0.0011	0.0009	0.0003	0.0003	0.0003
IV	0.0563	0.0420	0.0560	0.0385	0.0396	0.0503	0.0312	0.0331	0.0421
	0.0032	0.0018	0.0031	0.0015	0.0016	0.0025	0.0010	0.0011	0.0018
V	0.1462	0.1091	0.1074	0.1095	0.0976	0.1012	0.0931	0.0790	0.0815
	0.0214	0.0119	0.0115	0.0120	0.0095	0.0102	0.0087	0.0062	0.0066
VI	0.1132	0.1406	0.1284	0.1495	0.1621	0.1615	0.1628	0.1336	0.1472
	0.0128	0.0198	0.0165	0.0223	0.0263	0.0261	0.0265	0.0178	0.0217
VII	0.1308	0.1463	0.1436	0.1868	0.1985	0.1834	0.1638	0.1778	0.1971
	0.0171	0.0214	0.0206	0.0349	0.0394	0.0336	0.0268	0.0316	0.0389
VIII	0.1955	0.2100	0.1901	0.1932	0.2220	0.2166	0.2674	0.2074	0.2369
	0.0382	0.0441	0.0361	0.0373	0.0493	0.0469	0.0715	0.0430	0.0561
IX	0.1271	0.1345	0.1304	0.1124	0.1006	0.1256	0.1533	0.1408	0.1342
	0.0162	0.0181	0.0170	0.0126	0.0101	0.0158	0.0235	0.0198	0.0180
X	0.0710	0.0674	0.0755	0.0764	0.0396	0.0514	0.0438	0.0671	0.0502
	0.0050	0.0045	0.0057	0.0058	0.0016	0.0026	0.0019	0.0045	0.0025
XI	0.0480	0.0483	0.0480	0.0523	0.0366	0.0234	0.0195	0.0703	0.0227
	0.0023	0.0023	0.0023	0.0027	0.0013	0.0005	0.0004	0.0049	0.0005
XII	0.0324	0.0347	0.0224	0.0237	0.0184	0.0203	0.0196	0.0526	0.0174
	0.0010	0.0012	0.0005	0.0006	0.0003	0.0004	0.0004	0.0028	0.0003
∑pi^2	0.1194	0.1266	0.1175	0.1309	0.1418	0.1403	0.1613	0.1323	0.1481

Source: own calculations.

In Table 2 there are centralized the calculations made to determine the Struck concentration coefficient for each year, measuring the degree of seasonal concentration.

Table 3. The annual concentration coefficient (%)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Media	St dev	Coef. of variation
The coefficient of annual concentration	0.20	0.22	0.19	0.23	0.25	0.25	0.29	0.23	0.27	0.24	0.031	13.49

Source: own calculations.

The calculation of the concentration coefficient shows a relatively uniform distribution of the number of tourists with overnight stays in the accommodation structures in Tulcea County, observing in the graph below (Fig. 3) an increase of the seasonality until 2016 when the coefficient of concentration was 29%, with a slight decrease in the following years.

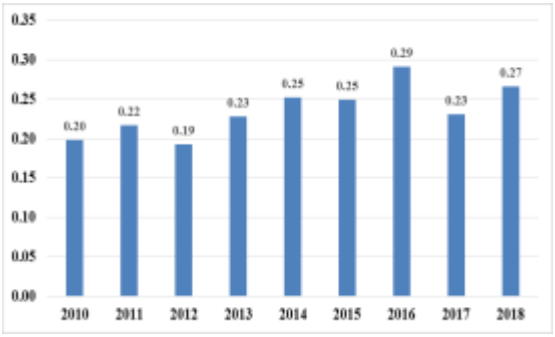

Fig. 3. Evolution of the annual concentration coefficient
Source: own calculations.

At Tulcea County is an increase in the seasonal variation of the touristic demand, as can be seen in the figure above. The intensification of the tourist concentration can cause a number of phenomena such as: increase of the number of stays; agglomeration of transport networks; the number of places of insufficient accommodation, not meeting the demand of tourists; the divergences between the applicants for tourist services and their supply units that can cause tensions; even the insufficiency of public services, as they are not sized and prepared to cope with the high demands level found in the peak season

CONCLUSIONS

The study shows a clear seasonality for the analysed period 2010-2018 of the nights in the tourist accommodation structures in Tulcea County.

The seasonal variations of the tourist demand in this area are due to the period of granting the holidays, as well as the natural factors, as it is observed the number of tourists is concentrated during the period May-September, as indicated by the calculated seasonal coefficient.

There is a tendency to increase the number of tourists in the last years of the analysed period, in the cold season, this being due to the promotion of advantageous tourist packages during the winter holidays.

The study shows that the phenomenon of seasonality must be taken into account both during the incipient phase of the tourist activity and throughout the entire activity, being used in the decisions regarding the development of this sector by maximizing the results based on the use of a given volume of resources.

In order to diminish the effects of the seasonality, a series of measures are required such as: the formulation of marketing policies of the tourist enterprise, of adapting the tourist offer to the specific needs of the tourists; diversifying the offer by offering some benefits that may attract tourists during the off-season; improving actions to promote tourism in the cold season; the involvement of decision-makers in the development of this economic sector.

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