

## Analyzing Seasonality and Forecasting the Number of Tourists' Overnight Stays in Constanta Municipality

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### Abstract

*Constanta is perceived as the country's largest port-city, but also as the most visited tourist city on the Romanian Black Sea coast. For many generations, Constanta has been the place where many beautiful summer holidays memories are made, being associated especially with the sea and the sun. These aspects highlight the seasonality in tourism activities.*

*Using an important tourist traffic indicator, the "number of overnight stays", the objectives of this study are to analyze the seasonality in the tourism activity in Constanta, between 2010 and 2016, and to predict the evolution of this indicator, per months, for 2017. We appreciate that the results of this research are a relevant basis for various stakeholder debates (which carry out, or are related to, tourism activities), on the choice of a strategy that would contribute to the reduction of seasonality in the tourism activity carried out in Constanta.*

**Key words:** seasonality, number of overnight stays, mobile backgrounds, Gini index, forecast

**J.E.L. Classification:** C10, C15, C38,L83, M21, M31,R11

### 1. Introduction

In the economic literature, the concept of seasonality refers to the evolution of the activity whose specific feature is represented by the annual or intra-annual repeatability and which is manifested by a significant variation or even by the occurrence of discontinuities in the performance of the activity from a field and/ or area. It is noteworthy that not every oscillatory movement may be considered seasonality (Grigorescu, 2003). Mostly, the studies on seasonality focus on its negative impact on the use of natural and anthropic resources, the longer-term recovery of the invested capital, difficulties in ensuring well-qualified workforce, the creation of agglomerations in tourist destinations. This can attract tourists' discontent, disturbance of the inhabitants' normal lifestyle and even difficulties in carrying out the activity of some economic operators (Koenig-Lewis, Bischoff, 2005; Minciu, 2004). This study combines quantitative and qualitative research and the results obtained represent "a radiography" (an image) of the evolution of seasonality in tourism activities, in Constanta city (including the tourism activities from Mamaia resort).

#### 1.1. Seasonality - a feature of the tourism activity in Constanta

The tourism activity from Constanta has always been influenced especially by natural factors, which have imprinted a pronounced seasonality nature, as its basic feature. Thus, on 14<sup>th</sup> August 1887, Delavrancea wrote in *Romanian Newspaper (Ziarul Romanul)* that many Bucharest inhabitants, from higher socio-professional categories, preferred going to Constanta "to end the holiday season. After the mountain air, there followed the salty air of the sea" (Ștefănescu

Delavrancea, 1972;in: Păuleanu, 2006,p.147). Considerations on the natural factors were also formulated in the summer of 1894: "a large and distinguished audience came from different corners of the country to visit our city, to breathe the fresh, refreshing and health and life giving air, as well as to take sea baths" (Aurora, 1894,p.4; in:Păuleanu, 2006). Later, in 1928, Constanta became a known resort in Europe, precisely due to its natural resources (Dacia.1924, p.1, in: Păuleanu, 2006). The resort's activity was recognized in 1928, when the city hall was awarded the gold medal at the Balneological and Climate Exhibition. In the same year, Constanta hosted the 5<sup>th</sup> International Congress of Thalassotherapy, which was attended by many foreign scholars (DJAN, 1928, in Păuleanu, 2006).

The qualitative research highlights that, in Constanta, the seasonality in tourism activities has been an old concern for more than 135 years. Thus, *Farul Constanta* newspaper wrote on 14<sup>th</sup> June 1882 that: "The sea bathing season has come close". Then, in a meeting of the Communal Council (Constanta) on 26<sup>th</sup> March 1887, upon discussing the issue of city illumination, it was stated that it had to be solved "before the 15<sup>th</sup> of June, when the sea bathing season begins" (DJAN .1887, f.9-13, in: Păuleanu 2006, p.144). Clear issues about seasonality are also mentioned in the Regulations of Constanta Spa Resort, elaborated by the Mayor's Office, in 1892, which states that: "The sea bathing season starts on 15<sup>th</sup> June and it lasts until 15<sup>th</sup> September" (DJAN .1892, f.2-6, in: Păuleanu 2006, p.188). After a few years, the tourist season began earlier: "It is brought to your attention that the sea bath season began on 1<sup>st</sup> June this year (1899 n.n.) in Constanta" (DJAN .1899, f.3-5, in: Păuleanu 2006, p.145). It seems that the expansion of the season was a concern for tourism entrepreneurs, but also for local administration authorities, in order to ensure revenue growth, investment recovery, better capitalization of natural resources and the general development of the city.

In order to explain seasonality, as a way of evolution of tourism activities, it is necessary to identify the factors that can determine seasonality and understand their action. Thus, a grouping of factors can be made by their nature. Thus, it is considered that seasonality is determined by the geographical environment (represented by climatic conditions, thermal regime, relief, positioning, natural resources), sociological factors (referring to people, lifestyle, social groups, customs, traditions, culture) and economic factors (expressing the level of development and the structure of the economy by branches, employment rate, free time, income level, consumption level and structure etc.) (Grigorescu, 2003). These numerous and diverse factors, in their separate action, but also combined, can determine both the seasonality in production/ supply and the seasonality in demand/consumption.

When defining seasonality, some specialists have in mind only the tourist demand. Thus, Biedermann considers that seasonality's permanent feature is represented by the sudden change in demand, according to a certain period of the year. In his turn, Allcock points out that the tourist flows (representing tourist demand) tend to focus on a short period of the year (Biedermann, 2008; Allcock, 1989). We consider that, in order to study tourism seasonality, as a mode of activity evolution, it is appropriate to take into account the action of all the factors that can act on demand and supply, but also other specific aspects, such as the rigidity of the offer and the unstorable nature of tourism services (Minciu, 2004).

### **3. Research methodology**

Our study, which is focused on the seasonality in the tourism activity from Constanta, is based on a series of statistical data on the number of overnight stays, in calendar months, between 2010 and 2016, provided by NIS. In order to highlight the seasonality nature, but also in order to analyze the evolution of the indicator for the period 2010-2016, we used the 12-monthly moving averages method, and for the trend projection and the seasonal forecast, we used the extrapolation by analytical methods (linear function).

We consider that the original aspect of this study consists in the way in which we analyzed the seasonality, by combining quantitative and qualitative research, but also by comparing the real, actual evolution with the one resulting from the adjustment and forecasting calculations performed for the indicator "number overnight stays".

#### 4. Data, results and discussions

In order to characterize the seasonality in the tourism activities from Constanta, we have selected one of the most used indicators of tourist traffic, i.e. the number of overnight stays (Table 1). The database represents the registered values of this indicator in Constanta County Statistics Department, per each month, between 2010 and 2016.

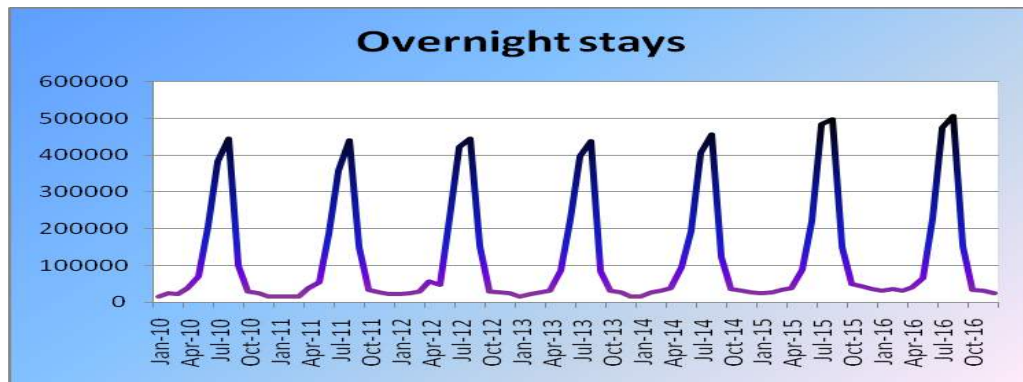
Table no. 1 Number of overnight stays in Constanta municipality, 2010-2016

Month	2010	2011	2012	2013	2014	2015	2016
January	20240	15920	22813	21056	21012	26129	32221
February	24786	18989	24378	22270	27577	26984	37372
March	23821	20322	29831	26759	31192	33955	32830
April	38496	37875	57255	32848	39245	39040	39921
May	70417	55227	48084	86430	94803	88844	66200
June	207847	188299	229681	226356	194745	221013	227716
July	383317	358732	421697	397119	405834	485207	475752
August	445265	441421	445671	438786	456783	499090	508437
September	101257	151004	151864	85105	123268	150092	154000
October	29398	34211	29578	31206	36853	49460	34527
November	24472	26672	27135	27630	31615	42838	32710
December	17217	21755	24591	20838	26658	36938	25016

Source: NIS

Figure 1 highlights the evolution of the number of overnight stays in Constanta. The analyzed phenomenon shows a pronounced seasonal evolution, with a peak in August and a minimum point in February.

Figure no. 1. Evolution of the number of overnight stays in Constanta municipality, per months, between 2010 and 2016



Source: Authors' own processing of NIS data

Also, in order to take into account the objective trend of the evolution of this phenomenon, independent of the seasonal wave, in statistical theory and practice, first, there are adjusted the terms based on mobile environments or on regression equations. This procedure is used especially where the variation of terms has a cyclical nature. By calculating the moving averages, this cyclic variation is removed and the data series with a smooth, continuous variation is presented. Since the analyzed data series (number of overnight stays) has a monthly periodicity, the mobile environments have been calculated based on 12 terms.

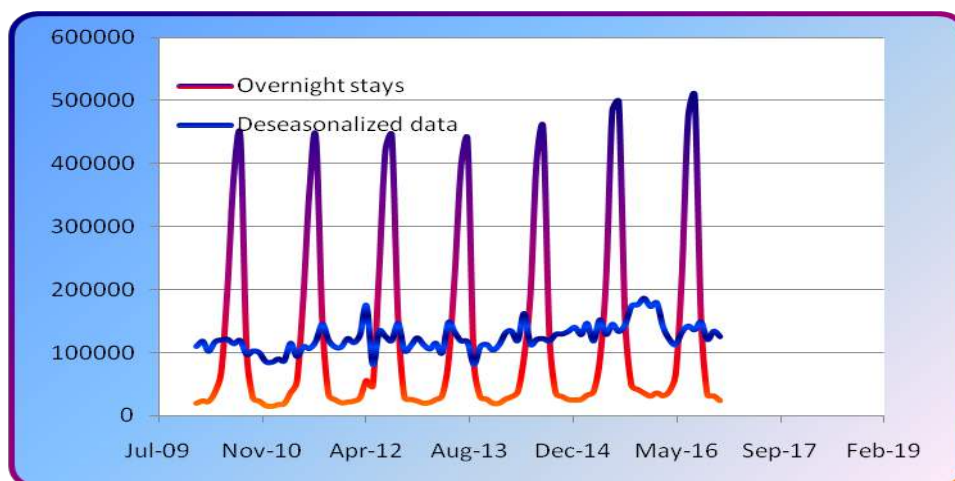
Table no.2 Monthly seasonality indices are calculated as the ratio between the monthly and the annual average.

MONTH	Seasonality indices (coefficients)
January	0.184224235
February	0.207274778
March	0.229325493
April	0.3246211
May	0.578509645
June	1.693570744
July	3.308568798
August	3.688944652
September	1.025883828
October	0.281828195
November	0.24097967
December	0.196731821

Source: Authors' own processing of NIS data

The closer the value of these coefficients is to 1(100), the more attenuated the seasonality is and vice versa, i.e. the more it deviates from 1(100), the more pronounced the seasonal nature of the number of overnight stays is.

Figure no. 2 Comparative evolution of the number of overnight stays in Constanta municipality and of deseasonalized data, in the period 2010-2016



Source: Authors' own processing of NIS data

One of the objectives of our study is to find out, based on the interpretation of the recorded data, the level of overnight stays for the next 12 months. The problem of extrapolating statistical data series is difficult because the social and the economic phenomena are particularly dynamic and they are influenced by a large number of causes; this influence may vary depending on the conditions in which they occur. The extrapolation is based on the methods and procedures used in the adjustment process. In the following lines, we opted for an analytical procedure, using the linear function. Table 3 shows the projected trend values using the straight-line equation, without taking into account the seasonal variations (column 2) and the projected values, having in view the seasonal variations (column 3) for 2017.

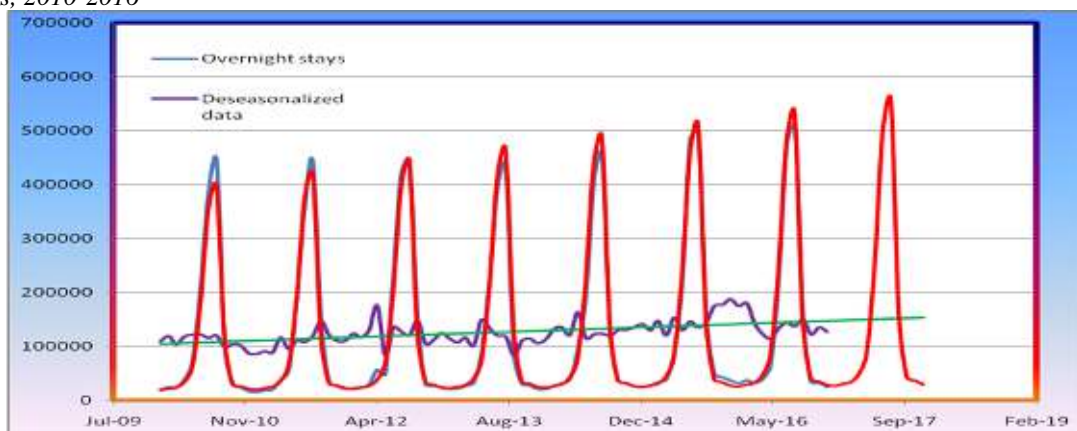
Table no. 3 Trend projection and seasonal forecast, per months, for 2017

Date	Trend projection	Seasonal forecast
Jan-17	147337.6624	27143.16819
Feb-17	147851.2504	30645.83511
Mar-17	148364.8384	34023.83974
Apr-17	148878.4265	48329.07852
May-17	149392.0145	86424.72131
Jun-17	149905.6025	253875.7427
Jul-17	150419.1905	497672.2404
Aug-17	150932.7786	556782.6662
Sep-17	151446.3666	155366.3783
Oct-17	151959.9546	42826.59965
Nov-17	152473.5426	36743.02398
Dec-17	152987.1307	30097.43674

Source: Authors' own processing of NIS data

By analyzing Figure 3, there is revealed a slow increase in the number of overnight stays in the studied period, the trend indicating a very small inclination, as the indicator is strongly affected by seasonality (the series of deseasonalized data is very different from the real data). In fact, only 2 months, i.e. July and August, account for about 60% of the number of overnight stays.

Figure no. 3 Projection of the trend and of seasonal data and seasonal forecast of the number of overnight stays, 2010-2016



Source: Authors' own processing of NIS data

## 5. Conclusions

The quantitative research carried out in this study (by processing the database on the number of overnight stays registered in the period 2010-2016, using the most popular statistical-mathematical tools recommended by the literature) allowed us to:

- demonstrate that seasonality is a specific feature of the tourism activity from Constanta;
- establish/ measure/ quantify the length of the tourist season;
- analyze the evolution of the season length over the analyzed period;
- predict the evolution of the number of overnight stays, per months, for 2017.

The qualitative marketing research highlights the fact that seasonality is not at all a new phenomenon. In this study, we used this type of research precisely because it is considered the most appropriate method in order to acquire objective knowledge of a situation or reality. The analysis of some texts and documents from the end of the nineteenth century and the beginning of the twentieth

century provided us with some interesting information, and by processing it, we obtained the following main aspects in terms of seasonality:

- the season and the length of the tourist season;
- concluding that natural factors were of the highest importance, both in terms of tourist demand and offer;
- spending a summer holiday on the beach, in Constanta, started to become "fashionable", which shows that other factors (especially sociological and economic factors) were acting on seasonality;
- manifesting concerns about increasing season length (promotion actions, but also the adoption of decisions/ normative acts in this respect).

The results obtained in this study point out that seasonality (analyzed in terms of the "number of overnight stays") had a constant evolution over the period 2010-2016 and this feature will be maintained in 2017 (according to the predicted values).

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