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QUANTITATIVE ASPECTS REGARDING THE TOURIST TRAFFIC INDICATORS IN THE HUMAN SETTLEMENTS LOCATED ON THE BLACK SEA COAST

Case Study

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Tourist locations,
Attractiveness of the locations,
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JEL Classification
C10, C38, L83, M21, J63, Z33

Abstract

The human settlements located on the Black Sea coast, between Navodari and Vama Veche, have developed over time, especially after 1970, both as localities/administrative units, as well as Romanian tourist resorts of national interest. The objective of this study is to statistically process the quantitative aspects of the wide used tourist traffic indicators, to capture the existence of similarities or differences between the 17 analysed tourist resorts and locations. Moreover, based on the results triggered by the application of statistical methods, we also aim at achieving a qualitative analysis, encompassing the interpretations related to the attractiveness, image and perception of each resort/location and the motivation for the choice made by different segments of tourists. The interdisciplinary nature of this work is underlying the presentation and understanding the aspects related to the tourist supply, tourist demand/consumption, consumer/tourist behaviour and effects/ results. Also, the information obtained from processing the available database on the 17 tourist resorts and locations, by means of the selected statistical methods, allows us to express our own views as proposals for local decision makers, to improve the activity and the economic performance and image of the respective tourist location/resort.

INTRODUCTION

It is said that the modern man has more leisure time due to the action of several factors of economic-social, technological, demographic etc. nature. In the same time, it is obvious that tourism tends to become the main form of leisure activity (Minciu, 2005). This trend is explained by the advantages offered by tourism which meet higher level needs in accordance with the classification pyramid (that is, nowadays, the most common classification in the literature), made by Maslow. The American psychologist Abraham Maslow classified the needs structurally, as a pyramid of levels, expressing the five main needs. From the bottom to the top of the pyramid, these are: (1) basic/ physiologic needs; (2) needs related to safety / personal security; (3) social / belonging needs; (4) the need for social recognition/ esteem / self-esteem / self-confidence and (5) the need for personal growth / self-affirmation (Kotler, Kartajaya and Setiawan, 2010; Datculescu, 2006; Dayan and Bouqure, 2008; Juganaru, 1998). Maslow believes that motivations are situated at the origin of human actions and motivations are influenced by needs.

Interestingly, years after the publication of this pyramid, as a hierarchy and expression of needs, even its author, A. Maslow, sensed the changes in people's lives, lifestyle, behaviour, in modern society and the importance that they attached to each category of needs; consequently, he concluded that the pyramid should be turned upside down. In addition, Professor Kotler believes that the inverted pyramid is specific to the contemporary society, where people become more concerned about self-realization, placing the basic needs on a secondary level (Kotler, Kartajaya and Setiawan, 2010). It is noteworthy that these are some of the issues that justify the specialists' assessment that tourism (currently, in developed countries) occupies approximately 30% of the spare time (Minciu, 2005).

INDICATORS SPECIFIC TO THE DOMESTIC AND INTERNATIONAL TOURIST TRAFFIC

The statistical information on tourism accommodation capacity and on the indicators measuring tourist traffic (number of tourists, number of overnight stays, average length of stay etc.), provided by the Romanian National Institute of Statistics, is available both by grouping it by main broad categories of tourist destinations (spa resorts, seaside resorts, exclusively Constanta city, mountain resorts, the Danube Delta, including Tulcea, Bucharest and county seats, other towns and tourist routes), or by each county, respectively by Romania's development regions.

Grouping the information for the destination category "seaside" excludes, however, the data on Constanta municipality, which is the seat of the county bearing the same name. However, it is noteworthy that this municipality is located on the coastline, with its own beaches, at the Black Sea, like all the other Romanian seaside tourist locations and seaside resorts.

In our work, we processed the statistics on tourism in connection to the 17 tourist resorts / locations from Constanta county (the only county in Romania where the seaside tourist resorts are located), including Constanta municipality: Navodari, Mamaia Village, Mamaia, Constanta, Eforie Nord, Techirghiol, Eforie Sud, Costinesti, Neptun, Olimp, Cap Aurora, Jupiter, Venus, Saturn, Mangalia, 2 Mai and Vama Veche (INSE 2015, INSE-DJS Constanta 2016).

On the one hand, the existence of similar natural conditions (due to our location on the Black Sea), and, on the other hand, the presence of different elements (the technical-material base of accommodation, treatment, nutrition, recreation; natural resources: mud, thermal waters, the size of beaches, the natural environment; man-made attractions: historical, cultural, artistic etc.), make these tourist locations record different values in terms of tourist traffic indicators.

To measure the internal and international tourist traffic, the most widely used indicators include: the number of tourists, the number of overnight stays and the average length of stay (Juganaru, 2007). These indicators, together with the accommodation capacity, underlie the analysis of this study. We consider it appropriate to make some clarifications regarding the theoretical content of these indicators, to ensure the correct understanding of the issues that refer to the objectives of our study, to the data resulting from the application of the statistical methods and to the authors' conclusions.

(1) The number of tourists is considered the most representative and the most important indicator in measuring tourist traffic (Minciu, 2005). It is a physical, quantitative indicator, reflecting the size of the real demand registered in accommodation units, but it does not include the number of people / tourists staying with their relatives, friends, in tents or in caravans. Another expression, used in records/ statistics, for this indicator may be the number of arrivals/ departures of tourists, both for domestic and international tourism.

(2) The number of overnight stays or the number of day-tourist is another quantitative indicator calculated as the sum of the products between the number of tourists and tourist activity duration, expressed in days.

(3) The average length of stay is calculated as the ratio between the number of overnight stays (or day-tourist) and the number of tourists. This quantitative indicator expresses the average number of days of tourists' stay. It is noteworthy that these three indicators can be calculated and monitored (depending on interests and concerns) at the level of the accommodation unit, resort (as in our case), region or country. The accommodation capacity is also a physical and specifically quantitative indicator of the tourist supply; it can be determined/ expressed in the same way as the top three indicators mentioned above, at various levels (INSE 2015, INSE-DJS Constanta 2016).

RESEARCH METHODOLOGY

It is well known that qualitative research (aimed, usually at motivational aspects) is more difficult, especially in terms of information gathering; therefore, in this study, we aimed at formulating qualitative interpretations, using quantitative analyses. To this end, we selected as working tools, specific concepts of the theory of tourism economy and marketing, together with statistical methods appropriate to quantitative database processing, which we took from the NSI. The statistical method that we used in our study is the "principal component analysis" (PCA). Data processing, testing the indicators' significance and the graphical representations were performed by SPSS statistical software.

Principal components analysis is a descriptive method that analyses the combinations of numeric variables. The objectives of this analysis are:

- highlighting the statistical connections between the analysed variables;
- identifying similarities/ differences between statistical units (locations, in our case), analysed in accordance with all registered variables (i.e.: selected indicators);
- explaining the similarities/ differences between locations, in terms of the variables analysed.

Principal components analysis can be applied only to the quantitative variables expressed in the same unit of measure. If the variables are expressed in different units of measure, then their standardization is achieved.

DATA, RESULTS, AND DISCUSSION

To perform the correspondence factor analysis of the tourist accommodation capacity and its use in the 17 resorts and locations from Constanta County, in 2015, we will include the following variables in our analysis: the number of arrivals, the number of overnight stays, and length of stay (recorded both for Romanian and foreign tourists) and accommodation capacity (number of beds).

The first image on the analysed variables (calculated as the average of the values recorded at level of the 17 resorts/ locations selected) is drafted by using descriptive statistics indicators. The values from the column "Statistical Mean" in Table no. 1 show the following aspects:

• The average number of Romanian tourist arrivals in 2015 was 55,779, which is 16 times higher than the average number of foreign tourists (i.e.: 3,412);

• The average level of overnight stays of Romanian tourists was 228,308, which indicates a value 14 times higher than the average level of overnight stays of foreign tourists (i.e.: 16,253);

• The average level of Romanian tourists' stay (4.7) does not differ from that of foreign tourists (4.7);

• The analysis of the values from columns "minimum" and "maximum" (Table 1) reveals that there is a high discrepancy/ amplitude in terms of the average values of all the indicators analysed.

The values in Table no. 2 present an overview of each location, in connection to values of the indicators analysed. We retain the following aspects:

• For the variable "Romanian tourist arrivals", only 4 locations/ resorts, i.e. Constanta, Mamaia, Eforie Nord and Neptun, recorded values well above the average of the 17 locations included in the study; from this point of view, the series reveals a pronounced elongation (the kurtosis is 6.536, compared to 3 – the latter being the value of a normal distribution);

• Regarding the variable "foreign tourist arrivals", 3 locations/ resorts, i.e. Constanta, Mamaia and Eforie Nord, recorded values above the average of the 17 locations/ resorts surveyed, the series showing a pronounced elongation (the kurtosis is 8.305).

It is noteworthy that the same three locations/ resorts, i.e. Constanta, Mamaia and Eforie North (in this order), recorded the highest values in terms of the number of "arrivals of Romanian and foreign tourists" and, therefore, we can appreciate that they are the most attractive to/ the most preferred by both Romanian and foreign tourists.

• In terms of the variable "overnight stays of Romanian tourists", 5 locations/ resorts, i.e. Constanta, Mamaia, Eforie Nord, Neptun and Saturn, recorded values above the average of the 17 locations/ resorts included in the study, the series presenting a pronounced elongation (the kurtosis is 7.081).

• As far as the variable "overnight stays of foreign tourists" is concerned, only three locations, i.e. Constanta, Mamaia and Eforie Nord, recorded values above the average of the 17 locations included in the survey series, showing a pronounced elongation (the kurtosis is 5.941).

The same three locations/ resorts, i.e. Constanta,

Mamaia, Eforie Nord, in the same order, recorded the highest values in terms of the indicators "overnight stays of Romanian/ foreign tourists", which confirms/ underscores the assessment mentioned above, namely that they are the most attractive to/ the most preferred by both Romanian and the foreign tourists.

• Regarding the variable "average stay of Romanian tourists", 3 locations/ resorts, i.e. Techirghiol, Neptun and Saturn, rank above the average of the 17 locations/ resorts included in the study series, presenting an elongation close to the normal distribution (the kurtosis is 3.599).

• In terms of the variable "average stay of foreign tourists", 4 locations/ resorts, i.e. Mamaia, Techirghiol, Neptun and Saturn, recorded values above the average of the 17 locations included in the study; this time, the series is flattened (the kurtosis is 0.563).

It is obvious that these three locations, i.e. Techirghiol, Neptun and Saturn, reach the highest values in terms of the indicators "average stay of Romanian tourists" and "average stay of foreign tourists"; the explanation consists in the presence of the treatment facilities.

a. The correlation matrix (Correlation Matrix output)

The correlation matrix (table no. 3) shows the values of the correlation coefficients of the variables considered in twos. It is a symmetric square matrix in relation to the main diagonal (equal to one because a variable is perfectly correlated with itself). The correlation matrix form is as follows:

The analysis of the coefficients of the correlation matrix allows evaluating the possibility of applying the principal component analysis: the high values of these coefficients (greater than +0.5, lower than -0.5) indicate that there are significant statistical connections between the variables considered (direct connections if the value of these coefficients is positive, reverse connections if the value of these coefficients is negative). In this case, the principal component analysis can be applied. The low values of these coefficients indicate that there is no correlation between the statistical variables; therefore, the principal component analysis, whose aim is to identify these correlations, cannot be applied.

b. χ^2 test statistics and the KMO statistics (KMO and Bartlett's Test output)

To test the hypothesis regarding the independence of the statistical variables, the SPSS software provides the calculated values of the corresponding test statistics (table no. 4). The χ^2 test statistics is used to test whether the correlation matrix is an identity (unit) matrix; in other words, whether there is a statistical connection between the statistical variables (Pintilescu, 2007). For this purpose, the following statistical hypotheses are formulated:

• H_0 hypothesis, the hypothesis of independence, according to which there is no statistical connection between the two variables.

• H_1 hypothesis is the hypothesis of dependence, according to which there are connections between the two statistical variables (Everitt, and Dunn, 2001).

The calculated value of the test statistics χ^2 is 181.409 (table no. 4). The significance level of this value is Sig. = 0.000 <0.05; therefore, it rejects the hypothesis H_0. Thus, it can be stated, with a 95% probability, that there are important statistical connections between the statistical variables considered. In this situation, the principal component analysis can be applied to the data considered. The simultaneous analysis of the results triggered by testing the hypothesis of independence, using the test statistics χ^2, and of the value of the determinant of the correlation matrix allows identifying the properties of this matrix of interest to the PCA.

The identification of the connections between variables is facilitated by calculating the Kaiser-Meyer-Olkin statistics (KMO), Measure of Sampling Adequacy. The value of the KMO statistics can range in the interval [0,1]. A value greater than 0.5 indicates that there are significant connections between statistical variables; therefore, the PCA can be applied. A KMO value of 0.658 shows that the solution based on the application of the PCA is acceptable.

c. The variance of variables ("Communalities" output)

The standardization of variables yields new variables of zero mean and variance one. The variances of variables (table no.5) are presented in the "Communalities" output.

The variance values, after the extraction of factors, are calculated based on the results of the output "Component Matrix". The low values of the variables' variance after the extraction of factors (column Extraction) show that those variables can be removed from the proper analysis because they are not correlated with the factorial axes. Since all variables have high variance values, they will be retained in the analysis because they are correlated with the factorial axes or, in other words, all the analysed indicators help define the axes whereby we can make judgments on the similarities or differences between statistical units (Field, 2009).

d. The eigenvalues of the correlation matrix associated with each factorial axis and the variance explained by each factorial axis (Total Variance Explained output)

The eigenvalues of the correlation matrix (Eigenvalues) are the values that correspond to the inertia (spreading) explained by factorial axes

(Pintilescu, 2007). Their sum is the total inertia of the cloud of points equal to the number of the statistical variables of the original data table, i.e. with the sum of the main diagonal elements of the correlation matrix (4.432 + 1.355 + 0.004 + ... = 7). The software displays these values in table no. 6 as absolute (column "Initial Eigenvalues Total") or as relative (column "Initial Eigenvalues % of Variance"), as a percentage of total inertia, as well as aggregate relative sizes (column "Cumulative%"). The first factorial axis explains 62.879% of the total variance of the point cloud, and the second factorial axis explains 25.081% (Table no.6, column "% of Variance"). The most important differences between locations (in terms of the recorded variables) are highlighted by the first factorial axis. In interpreting factorial axes, we must take in consideration that the first factorial axis is the one that explains the key differences between locations/ resorts (see Figures no.3). In other words, it is sufficient to explain the first factorial axis due to the high degree of the variance explained by it, i.e. 62.879% of the total variance of the point cloud. The first two factorial axes explain 87.96% of the total variance (Pintilescu, 2007).

The number of factorial axes (figure no. 1) that will be interpreted by the PCA is chosen according to several criteria:

• Kaiser's criterion (1960) that involves choosing those factorial axes wherefore the corresponding eigenvalues are greater than one. In our situation, according to this criterion, we chose the first two factorial axes (λ_1=4,402 and $\lambda 2$=1,756);

• Cattell criterion (1966) involves the graphical representation of the eigenvalues (figure "Scream Plot"); it also involves following a sudden decrease in the inertia explained by them. We chose the axes preceding this sudden change in the slope of the eigenvalues.

• Benzecri criterion involves choosing those axes that explain over 70% of the total variance of the point cloud (Benzecri, 1992).

CONCLUSIONS

By processing the database through the PCA (principal component analysis) and by looking at the information obtained from the research stages presented in this study, we drew the following conclusions:

✓The application of the PCA indicates that there are statistical connections between the variables analysed (see Table no.7 and Figure no. 2).

The values in the table above show the position of the variables on factorial axes. For example, the variable "foreign arrivals" has a high positive coordinate (close to one) on the first factorial axis (0.792) and a negative coordinate on the second factorial axis (-0.325). This fact reveals that the variable will be graphically represented in the positive quadrant of the first factorial axis and in negative quadrant of the second factorial axis (see Figure no.2).

The high values of the variables' coordinate on the factorial axes show that those variables are highly correlated with the respective factorial axis. For example, the variables "Romanian arrivals", "foreign arrivals", "Romanian overnight stays", "foreign overnight stays" and "accommodation capacity" are strongly correlated with the first factorial axis, which indicates that these variables explain, in a significant way, the differences between the statistical units. The variables "Romanian stay" and "Foreign stay" are highly correlated with the second factorial axis. Specifically, there are significant differences between statistical units, in terms of the values recorded for these variables.

✓We identified similarities between the statistical units (locations) analysed in terms of all the variables recorded.

Our study reveals that the locations Constanta, Mamaia and Eforie Nord are the most preferred by tourists, since they register the highest values in terms of the variables "Romanian tourist arrivals and foreign tourist arrivals" and "overnight stays of Romanian/ foreign tourists". Moreover, the same locations registered the highest values in terms of the indicators "overnight stays of Romanian tourists" and "overnight stays of foreign tourists". From our perspective, due to the diversified structure of the supply, tourists are attracted to spend more time in these three locations, i.e. Constanta, Mamaia and Eforie Nord.

The locations Techirghiol, Neptun and Saturn reach the highest values in terms of the indicators "average stay of Romanian tourists" and "average stay of foreign tourists". The existence of treatment facilities and the tourism activity throughout the entire year, due to the accommodations equipped with heating, are the main factors that explain the high values of these indicators. It can be said that these locations are attractive to those tourists who prefer especially health tourism or that tourists perceive them as tourist spa resorts.

✓We have identified differences between the statistical units (locations) analysed in terms of all the variables recorded (see Figure no.3).

Constanta municipality represents a particular situation [1], which, on the one hand, ranks first (in the group of the 17 locations/resorts analysed), in terms of the indicator "number of foreign tourists" and, on the other hand, it ranks second to last, in terms of the value of the indicator "average stay of foreign tourists" (see Table no. 2). The interpretation of the values of the two indicators led us to affirm that Constanta city attracts the largest number of foreign tourists compared to other locations of the Romanian coast, due to several elements that make

up its tourist supply, namely: it is the largest Romanian city port; it has a variety of cultural, artistic and religious institutions (museums, theatres, churches, mosques, Roman mosaic, aquarium, aquarium, planetarium etc.), and some of them are unique in the country. It is an important economic and business center; it hosts cultural, sportive etc. events. It has a material base of accommodation units and a network of catering units able to satisfy different segments of tourists. Tourists can arrive in Constanta by ships, terrestrial vehicles and by airplanes. By analysing the values of the two indicators (i.e. "overnight stays of foreign tourists" and "average stay of foreign tourists"), it can be concluded that foreign tourists choose Constanta especially for business tourism and cultural tourism.
Mamaia resort (represented [2] in Figure no.3) draws the attention with the following aspects: the "number of foreign tourists" (15,984) was almost twice lower than the "number of Romanian tourists" (297,248) in 2015, while "the average stay of foreign tourists" (7.44 days) was double compared to "the average stay of Romanian tourists" (3.68 days) (see Table 2). The values of these indicators reveal that foreign tourists spend in Mamaia resort holidays longer than those spent by Romanian tourists, being attracted by the reputation of this resort, by the accommodations with a high comfort level, providing a diversified structure of tourism products, able to satisfy the segments of tourists with high income and with refined/ sophisticated wishes. For several years, it has been increasingly made evident that Mamaia is the favourite resort of Romanian tourists, especially for weekend holidays, considering the material basis of this resort. Furthermore, other factors have contributed to this aspect, such as the construction of the Sun Highway (A2), the organization/ management of work and leisure for certain socio-professional categories, the increase in the accommodation capacity, by building new accommodation units and by upgrading and expanding the existing ones, the organization of business, cultural and artistic events and of sports activities.
Saturn is another special situation [17], which is distinguished by a high value of the variable "overnight stays of Romanian tourists", taking in consideration the fact that the variable "Romanian tourist arrivals" does not register a high value. It is noteworthy that this resort is situated in the southern part of the seaside (tourists might travel more compared to other locations) and the accommodation units are not framed/ classified in high comfort levels. In this context, a possible explanation of this situation could rely on the fact that this resort is chosen by tourists (less numerous) with low income or by tourists who are not attracted by a high comfort level, but who are willing to enjoy a longer stay. In this resort, some accommodation units have treatment facilities, which could provide another reason for these high values of the indicator "average stay of Romanian tourists". It is also known that to obtain the expected results in undergoing spa cures, indicated for various diseases, specialists recommend a certain treatment duration, which leads to increased values of the indicators "number of overnight stays" and "average stay".
These treatment facilities, which imprint some particularities in tourism product supply and demand, the natural landscape, but also the international reputation of the resort may be the explanation for the highest value of the indicator "average stay of foreign tourists" (9.91 days) recorded by Neptun [13]. It can be said that Neptun is the favourite location, especially as far as the foreign tourists interested in spa tourism are concerned.
Eforie Nord ([4] in Figure no. 2) is distinguished by the following aspects: it holds most "accommodation units" (153) of all the 17 locations analysed and it ranks second in terms of the "accommodation capacity" (with 12,070 beds). The accommodation units are very diverse as far as the accommodation capacity and the level of comfort are concerned; some units have heating and treatment facilities, which ensure their activity during the low season. These aspects make Eforie Nord the favourite location for numerous Romanians and foreign tourists (see Table no.1), both for helio-marine holiday tourism in the summer and for spa tourism, throughout the calendar year.
Each of the 17 resorts analysed show a certain combination of values of the 10 indicators analysed in our study, which reveal an image specific to each location, but, at the same time, it is also representative for its tourist supply. The segments of tourists (quite different, formed depending on age, size and family structure, income, socio-professional category, free time, etc.) can choose, depending on the type of holiday they want (recreation, leisure, treatment etc.), a certain location from the Romanian seaside, which satisfies their desires as well as possible. The more the tourist supply of the locations is closer to the expectations of tourist segments, the happier tourists will be; thus, they are likely to become loyal tourists and to attract other tourists.
This harmonization between tourist demand and supply is reflected in the high values of the tourist traffic indicators, but also in the image that tourists have or form about the tourist locations from the Romanian seaside. This image shows how each location is perceived; moreover, it is the result of the concerns of all tourism, catering, recreation and treatment units, and of the administrative, cultural, artistic and sport institutions, which investigate the trends in tourism demand and prepare the appropriate supply, in order to meet the expectations of all tourist segments.

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ANNEXES

Table 1. Descriptive statistics indicators (Descriptive Statistics output)

	N	Minimum	Maximum	Mean	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
arrivals_Ro	17	3944.00	297248.00	55779.4118	2.490	.550	6.536	1.063
arrivals_foreign	17	.00	28410.00	3412.5294	2.896	.550	8.305	1.063
Overnight stays_Ro	17	14632.24	1093872.64	228307.6894	2.483	.550	7.081	1.063
Overnight stays _foreign	17	.00	118920.96	16252.8776	2.568	.550	5.941	1.063
Stay_Ro	17	2.59	9.62	4.7706	1.716	.550	3.599	1.063
stay _foreign	17	.00	9.91	4.7265	.517	.550	.563	1.063
Accommodation_capacity	17	442.00	20030.00	5118.5882	1.691	.550	3.205	1.063
Valid N (listwise)	17							

Source: Elaborated using SPSS programme

Table 2. Distribution of variables "number of arrivals", "number of overnight stays", "length of stay", for Romanian/ foreign tourists, and the accommodation capacity, on locations, in 2015

Locations	No of units [1)]	Accommo-dation capacity – beds [1)]	No. of tourists/ No. of arrivals			Average stay			No. of overnight stays	
			total	Romanian	foreign	total	Romanian	foreign	Romanian	foreign
Constanța	59	3997	188347	159937	28410	2,59	2,52	3,00	414236.83	85230
Mamaia	86	20030	313232	297248	15984	3,87	3,68	7,44	1093872.64	118921
Eforie Sud	53	4611	19754	19457	297	4,65	4,66	4,29	90669.62	1274.13
Eforie Nord	153	12070	132806	127483	5323	4,27	4,22	5,55	537978.26	29542.65
Mangalia	12	1171	18543	17171	1372	6,67	6,74	5,89	115732.54	8081.08
Năvodari	28	2987	29561	29216	345	3,77	3,77	4,13	110144.32	1424.85
Mamaia Sat	14	1808	15916	15166	750	3,96	3,99	3,42	60512.34	2565
Techirghiol	13	964	13334	13202	132	9,62	9,62	9,21	127003.24	1215.72
2 Mai	7	442	3944	3944	-	3,71	3,71	-	14632.24	0
Vama Veche	12	609	11574	10684	890	3,06	3,16	1,89	33761.44	1682.1
Costinești	151	5802	32442	32084	358	4,05	4,06	3,12	130261.04	1116.96
Olimp	9	686	14805	14591	214	5,08	5,09	4,36	74268.19	933.04
Neptun	49	10571	64071	63160	911	4,93	4,85	9,91	306326	9028.01
Jupiter	29	7433	40568	39762	806	4,46	4,48	3,58	178133.76	2885.48
Cap Aurora	7	2012	16456	16351	105	5,03	5,04	4,50	82409.04	472.5
Venus	28	4802	43589	43084	505	4,42	4,43	3,87	190862.12	1954.35
Saturn	27	7021	47321	45710	1611	6,98	7,01	6,19	320427.1	9972.09

Source: Data provided by the NIS and the Department of Statistics, Constanta County

Table 3. The correlation matrix of variables "number of arrivals", "number of overnight stays", "length of stay", for Romanian/ foreign tourists, and the accommodation capacity, in 2015

Correlation Matrix

		Arrivals _Ro	Arrivals _Ro	Overnight stays_Ro	Overnight stays_Ro	Stay _Ro	Stay _Ro	Accommodation_ capacity
Correlation	Arrivals_Ro	1.000	.776	.972	.963	-.319	.291	.840
	arrivals_foreign	.776	1.000	.639	.888	-.389	.007	.383
	Overnight stays_Ro	.972	.639	1.000	.892	-.170	.426	.911
	Overnight stays _ foreign	.963	.888	.892	1.000	-.328	.194	.679
	stay_Ro	-.319	-.389	-.170	-.328	1.000	.614	-.195
	stay _ foreign	.291	.007	.426	.194	.614	1.000	.462
	Accommodation_ capacity	.840	.383	.911	.679	-.195	.462	1.000
Sig. (1-tailed)	Arrivals_Ro		.000	.000	.000	.106	.128	.000
	arrivals_foreign	.000		.003	.000	.061	.489	.065
	Overnight stays_Ro	.000	.003		.000	.257	.044	.000
	Overnight stays _ foreign	.000	.000	.000		.100	.228	.001
	stay_Ro	.106	.061	.257	.100		.004	.226
	stay _ foreign	.128	.489	.044	.228	.004		.031
	Accommodation_ capacity	.000	.065	.000	.001	.226	.031	

a. Determinant = 7.260E-007

Source: Elaborated using SPSS programme

Table 4. Test statistics values – KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.672
Bartlett's Test of Sphericity	Approx. Chi-Square	181.409
	df	21
	Sig.	.000

Source: Elaborated using the SPSS programme

Table 5. Variances of statistical variables

Communalities

	Initial	Extraction
Arrivals_Ro	1.000	.992
Arrivals_foreign	1.000	.733
Overnight stays_Ro	1.000	.967
Overnight stays _foreign	1.000	.937
stay_Ro	1.000	.835
stay _foreign	1.000	.915
Accommodation_capacity	1.000	.779

Extraction Method: Principal Component Analysis.

Source: Elaborated using the SPSS programme

Table 6. Eigenvalues and the variance explained by factorial axes

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.402	62.879	62.879	4.402	62.879	62.879
2	1.756	25.081	87.960	1.756	25.081	87.960
3	.613	8.750	96.711			
4	.173	2.469	99.180			
5	.047	.666	99.845			
6	.009	.123	99.968			
7	.002	.032	100.000			

Extraction Method: Principal Component Analysis.

Source: Elaborated using the SPSS programme

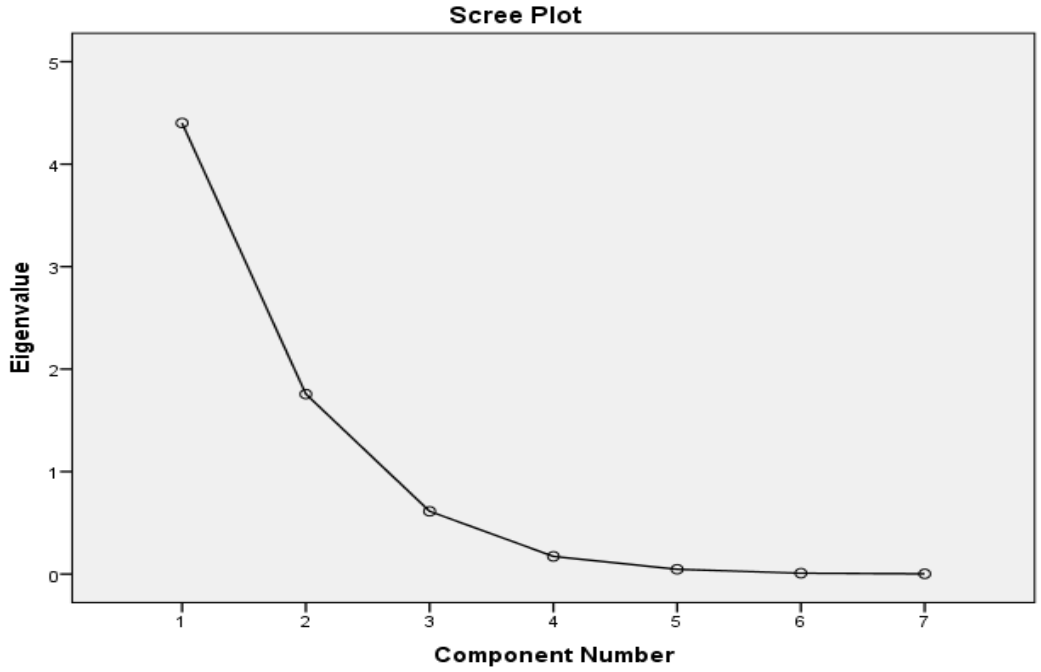

Figure no. 1 The graphical representation of the eigenvalues of the correlation matrix

Source: Elaborated using the SPSS programme

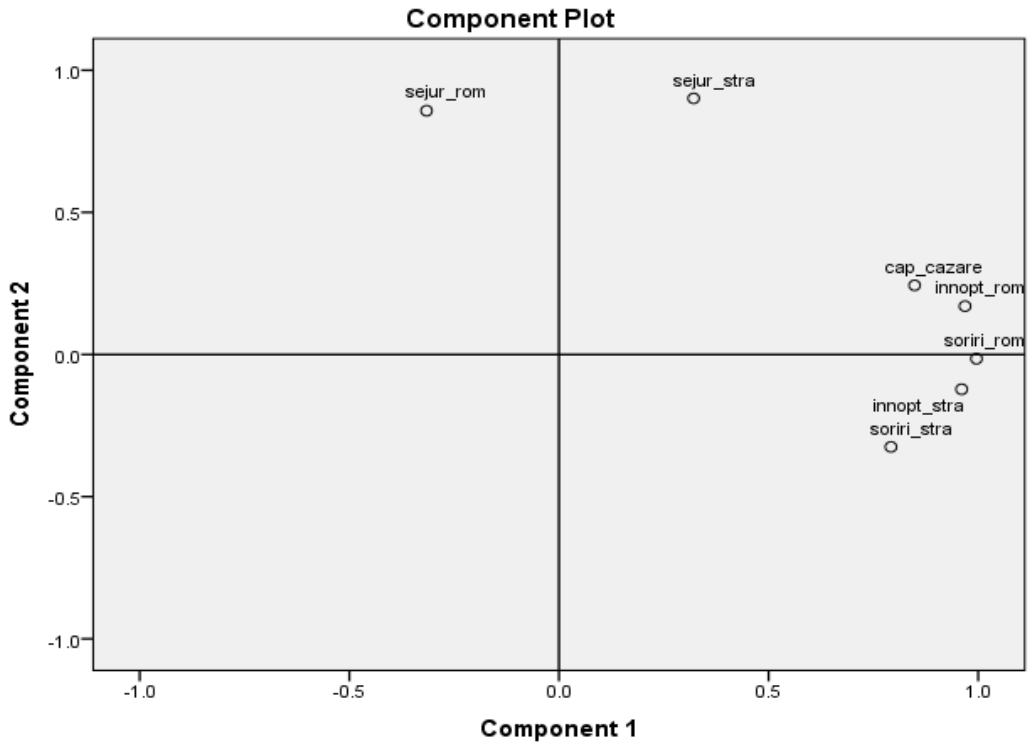

Figure 2. The representation of the statistical indicators in the system of the first two factorial axes
Source: Elaborated using the SPSS programme

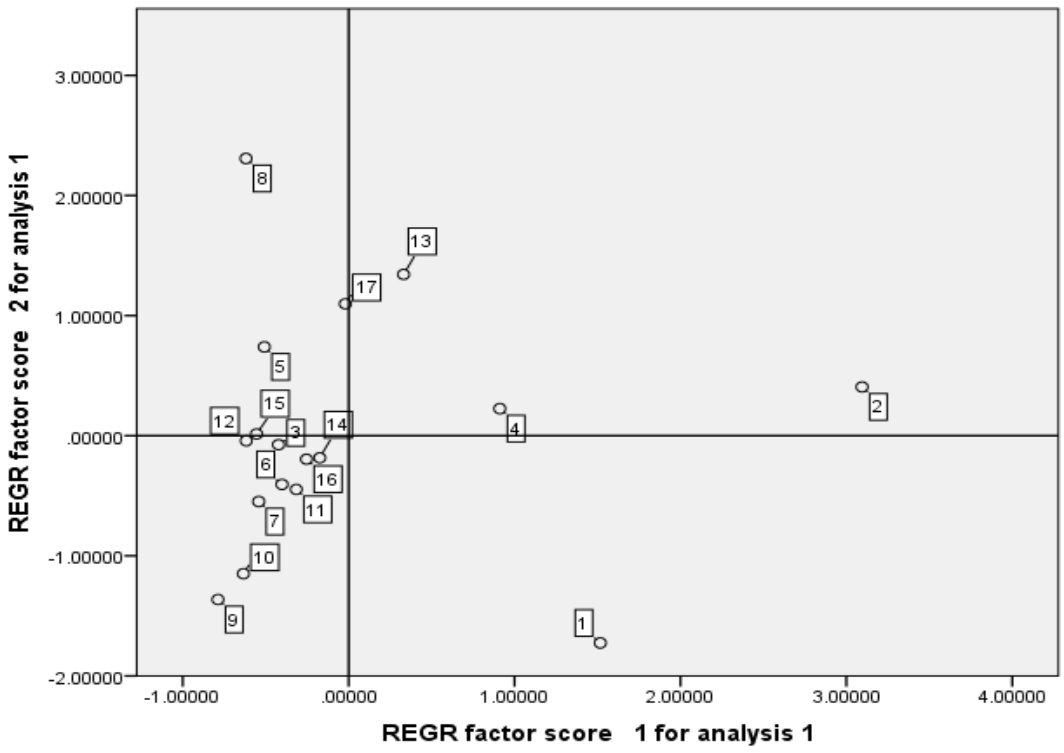

Figure 3. Representation of the locations analyzed, in the system of the first two factorial axes
Source: Elaborated using the SPSS programme