

STATISTICAL METHODS APPLIED IN THE MANAGEMENT OF TOURISTIC ACTIVITY

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ABSTRACT

Following the major changes which had marked the world's economy after 1989, the tourism industry was marked by a powerful internalization and globalization. The competition on this market has a monopolistic form, with many suppliers and tourist. Also, competition relationships have an ascending tendency owing to the tourism operators' ability to assimilate and develop innovative ways to answer the environment dynamic and the new paradigms in the process of European integration.

In average, in the analysed period (2000-2008) the total number of tourists recorded a 5717.3 tourists/year annual average, with a 276 tourists/year absolute average. On average, in 1990-2008 foreigner tourists recorded an annual average of 1230.22 persons/ year, with an absolute average of 74.87 persons/ year, which represents a relative annual regress of approximately 1%.

Regarding the number of overnight stays in tourist accommodation units, in 2000-2008, an increase can be noticed, per total, from 17647 thousands overnight stays in 2000 to 20726 thousands in 2008 and, respectively, an increase concerning foreigner tourists from 2148 thousands overnight stays in 2000 to 3359 thousands in 2008 (foreigner tourists), which represents an absolute increase of 3079 thousands overnight stays per total and of 1211 thousands for foreigner tourists.

In conclusion the overall analyze of the Romanian international tourism circulation highlights the modest level of this in comparison with our country resources and with the future increasing reserves.

KEYWORDS *tourism circulation, number of overnight stays, number of tourists, tourists/year annual average, accommodation units, linear trend, transportation means, accommodation capacity.*

Introduction

After accession to the EU the tourism has become an extremely dynamic service, which has to adapt the changes in the economic environment, the changes of the consumers' behavior and demands, the changes in structure of the economy and the occupancy of the work force and, last but not least, the European perspective.

Following the major changes which had marked the world's economy in 1989, the tourism industry was marked by a powerful internalization and globalization of the markets. On the one hand, numerous competitors appeared, and on the other hand, the old local or regional firms were either abolished or transformed in transnational agencies. The change of the market relationships from the planned economy to the free one led to the redistribution of the tourist waves. The tourist informational system formed after the privatization of the branch begins to be identified with a way to balance the demand and offer of such services. The competition on this market has a monopolistic form, with many offer givers and buyers of tourist services of all kinds. Also, competition relationships have an ascending tendency owing to the tourism operators' ability to assimilate and develop innovative ways to answer the environment dynamic and the new paradigms in the process of European integration.

Paper Body

Numeric information regarding tourist phenomenon's evolution in time is systematically recorded. To understand as comprehensive as you can the informational message offered by the formed time series, these make the subject of a complex statistic analysis, ended with understanding the evolutionary regularities.

➤ **The analyse of the total number of tourists (thousands of persons)**

Fluctuations in interest in the tourism movement in Romania can be highlighted by the structural change of its main indicators, the number of accommodated tourists and overnight stays but also by targeting trends during 2000-2008..

Between 1990-2002 the total number of tourists records successive diminutions, followed by a constant increase from 2003 arriving in 2005 at 5805 thousands people; the big fall records in 2002 comparative with 1990 (with 7450 thousands people).

After a sinusoidal trend with a minimum in 2000 (17.62%), foreign tourist arrivals in Romania registered the maximum level of 2005 falling to 24.63% from base year. In 2007 compared with 2005, recorded a decrease of 2.4% foreign tourists. The number of Romanian tourists increased in 2007 compared with 2005 the same percentage of 2.4%. Year 2008 suggests a slight decrease in the number of foreign tourists from the previous year by 1.65% while the same percentage increase of Romanian tourists in 2008 compared with 2007. Accordingly, the number of Romanian tourists who have done tourism between 2000-2008 (Table 1), with a very large share of total tourists (75-82%) was in decline and natural contour evolution gave the total number of tourists stay in this period.

➤ **Tendencies in the number of tourists' evolution and in the number of overnight stays in the accommodation units (per total number of foreigner tourists) between 2000 and 2008**

The evolution of tourist tours is determined by the action of different categories of factors which form the components of the chronological series given. One of the main problems of these series' analysis is actually the separation of the components and their statistic evaluation. Simple (mechanical) and analytical methods are used in order to determine the trend or the central tendency. Analyzing the chronological series of data, it is noticed that the annual changes in absolute size don't have constant values. As a consequence, the absolute change method cannot be used. Thanks to the fact that the dynamic indexes with chain base are not approximately equal, we are not going to use the method of the dynamics' average index either to determine the trend.

The trend analytical methods are based on the series' chronogram which allows choosing the mathematical function which estimates the best the general tendency of tourist tours. From the evolution analysis, we are able to draw a conclusion that the number of foreign

travelers had a decrease from a year to another. To adjust the number of tourists, we'll use the linear function. From the equations system resulted the a and b parameters; so attain the following trend equation:

$$\hat{y}_t = 1230,22 + 89,85 \cdot t_i$$

In conclusion we can say that the number of foreign tourist between 2000 and 2008, was 1230,22 thousands of persons, with a yearly medium increase of 89000 persons.

To adjust the number of staying over night in touristic accommodation units of foreign tourists, we'll use also the linear trend as:

$$\hat{y}_i = 2980,44 + 175,65 \cdot t_i$$

The annual average of foreign tourist's accommodation was 2980,44 th., with an average increase of 175,65 the accommodation/year (see tabel 2).

According to these functions we forecast the number of tourists for 2006 as 671,24 persons and for 2007 as 652 persons. But for 2006 and 2007 data from the Tourism Authority are showing increases in the number of tourists. we are concluding that we have a cycle in the evolution of tourists, the trend is not permanently decreasing.

As with the number of tourists, the number of overnight stays for the Romanian structure is steadily decreasing in the period 2000-2008, except 2006, 2007 and 2008 where the number of overnight stays increasing slightly, with percentages between 87.82% in 2000 and 83.80% in 2008. As the number of overnight stays of foreign tourists is observed that the share of their record of successive increases in the period 2000-2005 from 12.18% in year 2000 minimum to maximum of 18.85% in 2005. In the period 2006-2008 showed slight decreases in their share value of 17.07%, 17.42% and 16.20%.

The main reason that we can give these values, when Romanian tourists, is a difficult period of the national economy suffered in the transition to a market economy, with a sharp decline in macroeconomic indicators and thus the purchasing power of population, which generated a major reduction. In 2007, the structure overnight stays for the Romanian tourists recorded a slight reduction of 0.35%, while overnight stays of foreign tourists recorded a minimal increase of 0.53%. Regarding the evolution of overnight stays of foreign tourists has made their success from year to year in the period under review, compared with 2000. Analysis of indicators for the period 2000-2008 the number of overnight stays, justifying its likeness with the evolution of the number of tourists from the same period. Romanian tourists have made the most significant decreases in the two indicators, following the economic situation and poor service.

Trends and structure modifications of the Romanian tourism circulation

For characterizing Romanian tourism circulation structure in 1992-2005 and structure modifications in the same period, there were used the structure relative sized.

This paradox situation of the tourist movement from Romania, may depend of the political situation from our country until 1996, the year of election, and the aggravation of coming in of foreign travelers after 1996 – the modernization of the custom houses, the extension of collaboration relations with United States in the economical, political and military field. In 1997 and 1999 the lowest weight were the visitors from America, about 15%. Between 2001 and 2002 the lowest weight was of visitors from Africa, of 14%, in 2001 and 16% in 2002.

In the same time with the decreasing of foreign visitors in Romania, from Africa and Asia by 1%, respective 2%, increased between 2001 and 2002 the number of visitors from America, reaching 19% in 2002.

During 2002-2005, African and Asian continent continued to hold the smallest share at between 10% (minimum) -14% (maximum). In 2007 recorded a radical shift in foreign visitor arrivals in the sense that America has the lowest share of 5%, followed by

Europe with 10%, while the share of Asia increased by 4%, compared with registered 2005 (10%) and 5% of those in Africa, compared with 2005. To deepen the analysis of tourist movement development in Romania is needed analysis of tourism activity by means of transport because transport is a basic component of the benefit of interest, ensuring he mainly tourists travel from place to place reference for spending holidays - for tourism, residence, or the entire trip - when touring tourism.

The foreign tourists that visit our country preferred the rutier transport with an increase trend from 65% in 1990 at 78% in 1996, but fluctuating and decreasing (the year 2005 recording a maxim value of 85%). This can be explained trough the commodity and the gas price, much lower in Romania comparative with their countries.

Also during 2005 - 2008 road transport has the lowest share of 76% in 2005, 73% in 2006 and 75% in 2007. Transport by rail safer, but less tempting, declined in 2007 to 3%, to 2000, when record a maximum of 13%. The share of tourists arriving by air has a clear upward trend from 13% in 2000 to 19% in 2007. The explanation is related to speed and comfort of travel, particularly business tourism, conferences and symposia. Shipping was the least used part proved small weights made of 2-3% in the period 2000-2008:

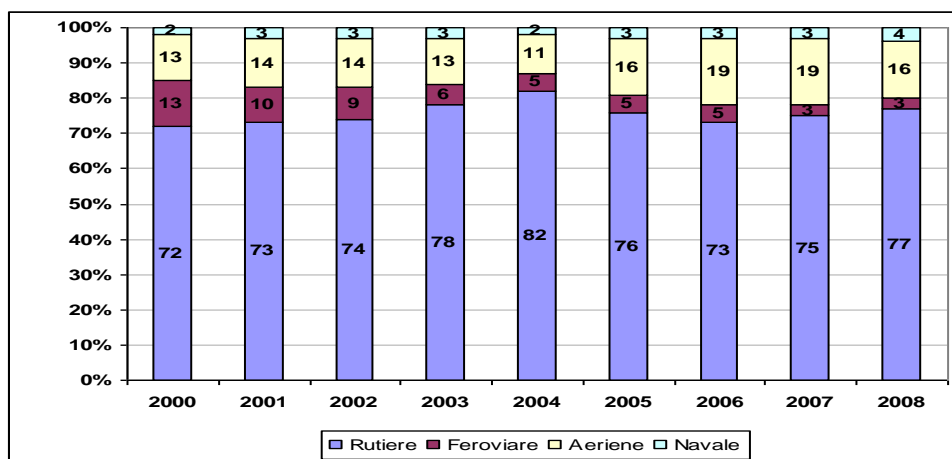


Figure 1 The evolution of structure the foreign tourists abroad (by means of transportation)

The weight of the Romanian tourists abroad (by means of transportation) doesn't differ too much by the weight of foreign tourists in our country.

Have a significant share of the still in the road transport vehicles used (79% - 80%), followed by air transport (8-18%). The means of rail transport are down markedly during 2000-2008, reaching a minimum in 2007 and 2008 by 2%, the decrease was 9 percentage points. The same weights are recorded and if low shipping of (1-2%). However, it is noted that each, in turn, recorded swings in the share each year as follows:

- In 2000, road transport accounted for a record 79%, for the years 2003, 2004 to increase to 86%, after which, in 2005, to record successive reductions of up to 79% in 2008;
- significant decreases were recorded and rail transport: one had the highest share in 2000, 11%, for the period 2002-2008 There was a period of significant decline, amounting to 2% in 2008.

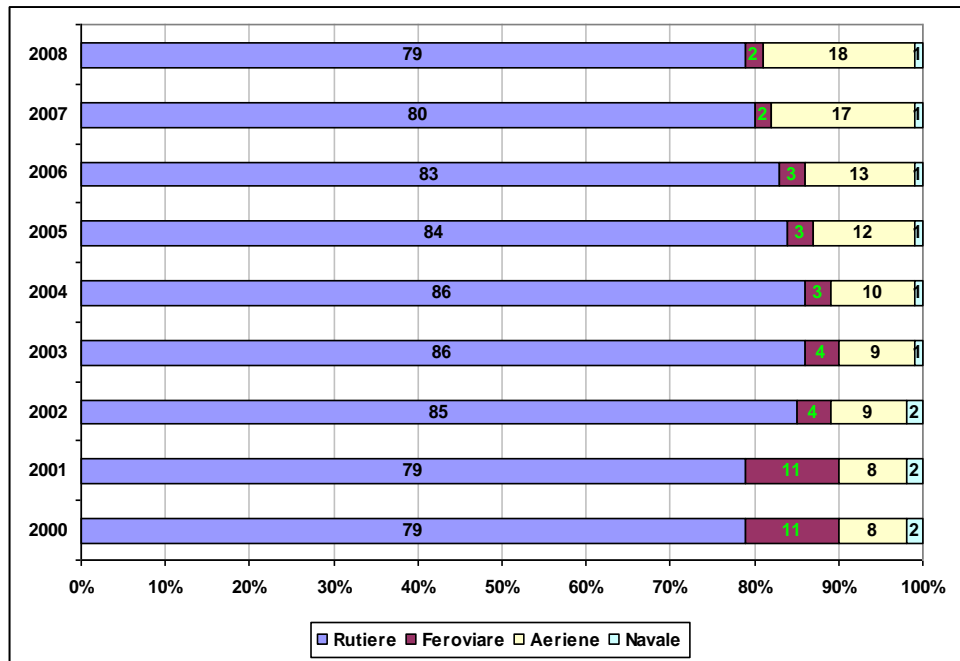


Figure 2 The evolution of structure for travel Romanian tourists in foreign countries (by means of transportation)

Air transport began to record a significant increased demand since 2005 (12%), 2006 (13%), 2007 (17%) and 2008 (18%) compared with 2000.

These fluctuations were based on a series of social-economic acts like: the devaluation of the national coin, leu comparative with the others international circulation coins (dollar, pound); the evolution of the living standards, the weak infrastructure, etc. A significant element in the mean of transports weight is the number of travel agency. Depending on the prices practiced by them, on the advantages and disadvantages that offer every mean of transport used, the choosing affects the oscillations presented previous.

Conclusions

Improvement of national economic situation should lead to a better image abroad and so to bring more foreign tourists. In the same time, it must be developed better "the most interesting tourist places" through development of a suitable marketing.

Regarding the tourism organized by the tourist agencies on tourist activities and places (mountain, seacoast, watering resorts, historic, religious pilgrimage and other places), was recorded a decreasing of tourist activity through the decrease of tourists number, in the same time with a increasing of medium time of the holiday for the historical, religious places and watering resorts.

Taking into account the Romanian international tourism, it is noticed both the modest level of the tourism activity (tourism contributes with 3-6% to receives in the current account of the external balance) and the strongest link between proceeds and tourists arrival-departure dynamic. The overall analyze of the Romanian international

tourism circulation highlights the modest level of this in comparison with our country resources and with the future increasing reserves. The development of international tourism and the better capitalization of the natural potential assume flourishing efforts for Romanian economy, for elaborating an adequate strategy, having as main objectives the improvements of the qualitative level of services, modernizing the tourism material basis and the general infrastructure, performing an aggressive promoting policy, expending the international cooperation in this field.

Finally getting interest of efficiency is directly subject to how resources are consumed and consumption is influenced by managerial skills.

References

1. Bădiță, M. and Cristache, S. E. (2002) *Statistică pentru afaceri în comerț-turism*, Editura Luceafărul, București
2. Bartholew, D. J. (1986) "The foundations of factorial analysis", *Biometrika*, 71
3. Boudon, R., and Lazarfeld, P. (1969) *L'Analyse empiriques de la causalité*, Mouton, Paris
4. Cristache, S. E. (2003) *Metode statistice de calcul și analiză a eficienței economice în comerț*, Editura ASE, București.
5. Cristache, S. E., et al., (2005) *Statistică aplicata în managementul turistic*, Editura ASE București
6. Harman, H. H. (1967) *Modern factorial Analysis*, University of Chicago Press, Chicago
7. Stănciulescu, G., et al., (1998) *Dicționar poliglot de termeni folosiți în turism*, Editura All Back, București

Number of tourists (thousands of persons) in period 2000-2008

Table 1

Indicators	Number of tourists			Structure tourists		
	Years	Romanians	Foreigners	TOTAL	Romanians	Foreigners
2000	4053	867	4920	82,38	17,62	100
2001	3960	915	4875	81,23	18,77	100
2002	3848	999	4847	79,39	20,61	100
2003	3952	1105	5057	78,15	21,85	100
2004	4280	1359	5639	75,90	24,10	100
2005	4375	1430	5805	75,37	24,63	100
2006	4836	1380	6216	77,80	22,20	100
2007	5421	1551	6972	77,77	22,23	100
2008	5659	1466	7125	79,42	20,58	100

Source: Data taken and calculated from the Statistical Yearbook of Romania 2007 and 2008 and Romania in 2008 and 2009 figures, published by the National Institute of Statistics

Number of overnight (thousands of persons) in period 2000-2008

Table 2

Years	Number of overnight			Structure number of overnight		
	Roumanians	Foreigner	TOTAL	Roumanians	Foreigner	TOTAL
2000	15498	2149	17647	87,82	12,18	100
2001	15731	2391	18122	86,81	13,19	100
2002	14743	2534	17277	85,33	14,67	100
2003	15079	2766	17845	84,50	15,50	100
2004	15168	3333	18501	81,98	18,02	100
2005	14909	3464	18373	81,15	18,85	100
2006	15750	3242	18992	82,93	17,07	100
2007	17007	3586	20593	82,58	17,42	100
2008	17367	3359	20726	83,80	16,20	100

Source: Data taken and calculated from the Statistical Yearbook of Romania 2007 and 2008 and Romania in 2008 and 2009 figures, published by the National Institute of Statistics