

A COMPARATIVE ANALYSIS OF THE ROMANIAN DEVELOPMENT REGIONS, IN TERMS OF ECONOMIC AND TOURISM INDICATORS

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Abstract:

The present paper aims to achieve a comparative analysis of the development regions of Romania from the perspective of some relevant indicators from the economic and tourism field. The used statistical method is the one of variance analysis of some quantitative numeric variables, which, in our case, are the economic indicators of tourism, under the influence of a qualitative variable (the region), that permits the sharing of the population into categories. The study is achieved with the help of ANOVA process, using the SPSS program.

Key words: regional development, regions, tourism, analysis of variances,

JEL Classification: L83, C10

1. INTRODUCTION

The general objective of the study is the identification of some possible differences between the tourist activity of the 8 development regions of Romania, basing on some tourist indicators. The statistical analysis method of data is the Anova procedure, with the help of which we will follow the effect of an independent qualitative variable, which has several levels (in our case, the development region with 8 levels, corresponding to the 8 regions), on a quantitative, numeric variable. In this study, we will consider at a time, the relevant tourism indicators as dependent variables.

This paper includes a theoretical part which describes the mathematical system we use and general concepts regarding regional development and tourism, a practical part that includes an empirical research on the influence of the region factor on some tourism indicators and is finishing with some conclusions based on the research results.

2. THE STATISTICAL INSTRUMENT

In the first step we apply the statistical Levene test to study the homogeneity of the variance. If the significance level less or equal then 0,05, meaning that the probability of the null hypothesis is less than 5%, we have to reject the null hypothesis, meaning that the variances of the regions are not equal (the variance is not homogeneous). In this situation we need to use the Tamhane statistical test to determine the presence of some significant differences between the average values of the variables.

If we have the opposite situation, that is the significance of the Levene statistical test is greater than 0.05, then the variance of the regions is homogeneous. In this case, we can make the analysis of variance by the Fisher coefficient, calculated as follows:

$$F = \frac{S_E^2}{S_R^2}$$

where

- S_E^2 is the estimator of the inter-groups variance which is calculated as the square value of the deviation of each group from the average value of the statistical population, and shows the fluctuation generated by the grouping factor;

- S_R^2 is the estimator of the average value of the group variances and shows the fluctuation inside each group, generated by random factors.

If the value of F is large enough then there are significant differences between groups. The significance level of F is established depending on the number of degrees of freedom inter-groups (number of groups minus one) and the number of degrees of freedom intra-group (number of values minus number of groups) and is computed with SPSS.

We shall also use the Bonferroni test in order to compare each two groups, with a different significance level.

3. THE REGIONAL DEVELOPMENT AND THE TOURISM

Considering necessary to shortly present the frame in which our research will take place, the regional one, we will summarize some aspects regarding the region, regional development and the role of tourism in the regional development policy.

The concept of region appeared at geographers at the beginning of the 20th century, and at the moment, there are a few of accepted definitions in the specialty literature. Different senses can be associated to the term *region*. So, one can consider that *the region* (1) have a *material* component, the territorial cutting, on which *the relational component* is projected, these two being in an indissoluble association.

The definition adopted by The Europe Regions Meeting in The Declaration on the Regionalism in Europe in 1996 considers *the region* as being *the territorial public entity corresponding to the immediate inferior level compared to the state one, and endowed with a government that disposes of own politics powers* (2).

There is no definition to contain all the aspects that characterize a region. Common to all definitions given to the region is the idea of space as entity, so the most significant statement that can be made about it, is that it represents *a unit, which includes a limited number of zones, of medium size and territorially adjacent*.

Regarding the context in which the regions appeared in the E.U., it must be mentioned that **Nomenclature of Territorial Units for Statistics (NUTS)** was created by Eurostat (The E.U. Statistics Office) in 1981 with the purpose of having a unique and coherent scheme of the territorial repartitions for the unification of the regional statistics and for the application of the E.U. regional policies.

So, in the E.U., there have been created territorial units of medium size called regions, which besides the role of handle regional statistics, have also the purpose of efficiently absorbing the funds from the E.U. for regional development. In the same time, the actual tendency in the E.U. is the one of decision decentralization.

Regionalization became in this way a common tendency of the territorial organization of European states evolution, besides the one of decisions decentralization, the regions being the responsible structures for institutional convergence ensuring of the E.U. member states. Although the regions apparition is not necessarily a consequence of the E.U. regional development policy, the high level of funds for the achievement of its general objective (obtaining economical and social cohesion) had an important contribution on regionalization, as well as on the establishing of strategies, plans and programs of regional development which can efficiently assure the repartition and use of resources.

In Romania there have been created *8 development regions*, by the reunion of several counties. They are not administrative territorial units, they have not juridical personality, being the result of a free agreement between the councils of the counties and the local ones, having the same function as in the other E.U. countries.

The regional development (3) is a quite new concept, meaning not only the boost and the diversification of the economic activities, the private sector investments boost, the contribution at unemployment decrease and living improvement, but a whole environment of supporting and

adaptation of the durable actions that converge with the competence domains of the region.

Since 1998, we can talk about regional development in Romania, too; its purpose, like in the E.U., is to reduce the disparities of development between the regions of the country, improving in this way the life quality, in general, by stimulating and diversifying the economic activities and the investments in the private sector.

The regional development policy strengthens the role and the responsibilities of the local public administration and of the regional organisms in the economical and social development of each settlement and of the development regions, in the same time with the reduction of government institutions involvement in such activities. One of the objectives is the reduction of the economical and social disparities existing among diverse E.U. regions, focusing on the balanced development stimulation and the disadvantaged zones revitalization; it stimulates the economic growth and the SME sector development acting on some significant fields for development such as: transports, agriculture, urban development, environment protection, employment and professional training, education, chance equality, etc.

One of the ways which E.U. uses for the achievement of these objectives is the creation of *The Structural and Cohesion Funds* (especially The European Found Regional Development), which are the financial instruments that E.U. uses to eliminate the economical and social disparities among regions, with the goal of economical and social cohesion achievement.

The policies and plans of regional development in the last years take into account more and more the tourist sector, as a strategic sector for providing a dynamic and durable economic growth, of certain regions with an important tourist potential.

The Regional Development Agencies existent in every development region have an important role in the implementation of the Regional Operational Program 2007-2013 (Regio), which is one of the Romanian Operational Programs agreed with the E.U., financed by The European Regional Development Found (ERDF), constituting itself as an important instrument to implement The National Development Strategy and policies for regional development. The program is accessible for the 8 development regions of Romania.

It has 6 priority axes, and the presence of tourism in the frame of the Priority Axis 5 of Regio, reveals the fact that tourism has an important place and must know a better development in every region.

By achieving the targets of tourism development, we will get to the tourism multiplier. The benefic effects will be observed on the population incomes level and on some other fields, extern from tourism. The tourism multiplier (4) is represented by the fact that an initial expenditure made by a tourist, in an area or country, is successively converted into revenue for other areas of the economy (agriculture, manufacturing industry of consumer goods, construction and materials of construction industry, trade, services), directly or indirectly related to tourism, until the funds in question leave the country, the zone or the economic sphere, in general by the payment of taxes, savings (hoarding), imports, etc. called leaks from the system.

The context in which we develop our research being established, the next parts will reveal and analyze, with the help of some specific means the differences between the actual status and the difference between the regions from the tourist activity point of view.

4. STATISTICAL ANALYSIS ON THE INFLUENCE OF REGION ON ESSENTIAL INDEXES IN TOURISM

The scientific study of tourism activity need appropriate dates, methods and instruments that allow quantification. In the present paper we considered adequate economic indicators such as GDP (gross domestic product), turnover (for hotels and restaurants), and value of investments, accommodation capacity, and index of utilization for tourism resources, and number of overnight stays in hotels.

The purpose of this work is to study if there are significant differences concerning those indicators, between the 8 development regions.

The influence of development region on the gross domestic product (GDP)

The GDP is an essential economical indicator for the socio-economical development level and is given as RON / inhabitant / year, for each development. In this work we study the influence of the development regions in Romania on the corresponding, for the period 2000-2005.

We shall consider that we have a significant difference between the 8 regions if there are statistically significant differences between the average levels of the GDP during the 6 years we considered.

The average values are presented in the following figure:

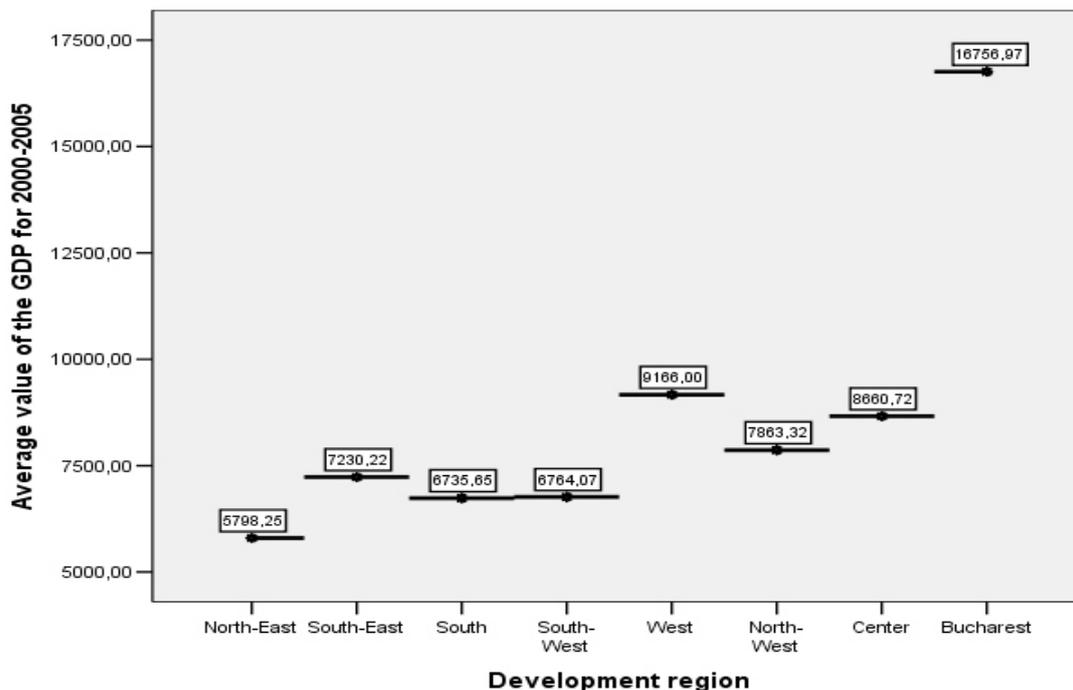


Figure no. 1. The average values of the regional GDP, 2000-2005

By using the Levene test in SPSS we obtained a significance level of Sig. = 0,08 > 0,05, proving that the variance corresponding to the 8 regions are homogeneous:

Test of the homogeneity of variance

Levene Statistic	df1	df2	Sig.
1,991	7	40	,080

Consequently we shall apply the ANOVA procedure in order to determine the presence of significant differences between groups and the Bonferroni test for each possible pair of regions.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Inter-group	503829452,808	7	71975636,115	4,150	,002
Intra-group	693781143,042	40	17344528,576		
Total	1197610595,850	47			

The Fisher coefficient with 7 and 40 degrees of freedom is $F = 4.15$ and the significance level is $\text{Sig.} = 0.002 < 0.05$, proving that there are significant differences between the levels of GDP corresponding to different regions.

We can easily see from the Bonferroni test that the average value of the GDP in the region Bucharest-Ilfov is significantly different from the average value in every other region, except for the West region.

Compeering the Bucharest-Ilfov region to the West region we can see that the average value of GDP for the first one is larger, but the difference is not statistically significant.

The influence of the development region on the total turnover in tourism

The turnover we shall use in this work is considered for the all the hotels and restaurants in the region, between 2000 and 2005 and is expressed in thousands of RON.

We shall consider that there are significant differences between regions if the average values of this variable, for the six years, are statistically different.

The average values are presented in the following figure:

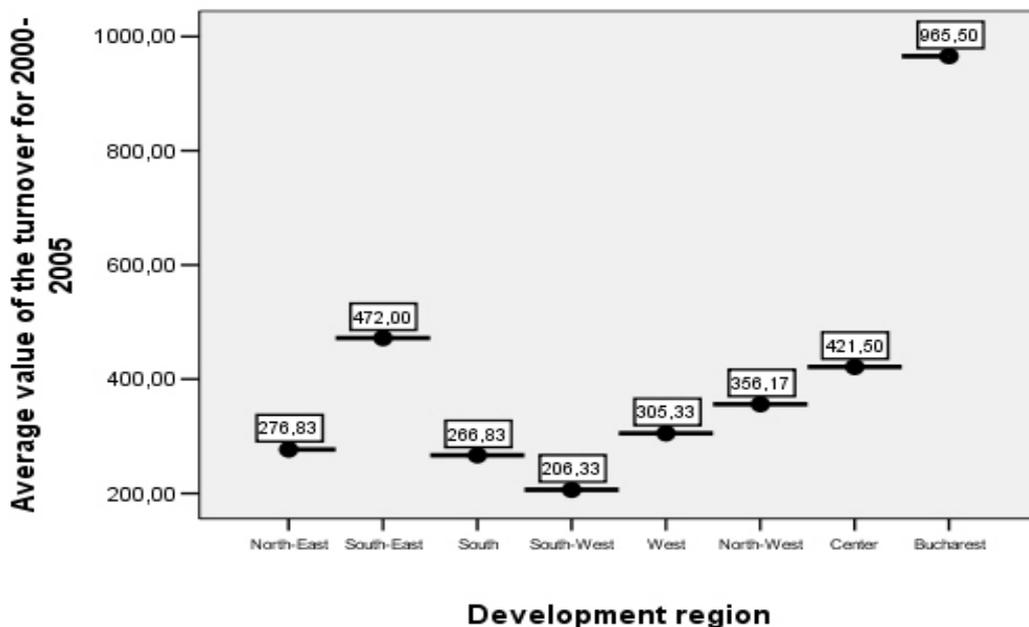


Figure no. 2. The average value of the regional hotel-restaurant turnover, 2000-2005

Using the Levene test with SPSS we obtain a significance level of $\text{Sig.} = 0.007 < 0.05$ proving that the variances corresponding to the 8 development regions are not homogeneous:

Test of the homogeneity of variance

Levene Statistic	df1	df2	Sig.
3,329	7	40	,007

This situation does not allow us to use the ANOVA procedure. Even if in the figure above we can see that the average value of the turnover of the region Bucharest-Ilfov is larger then those corresponding to others regions, by using the Tamhane test with SPSS we can see that there are not statistically significant differences between development regions.

The influence of the development regions on the value of investments in tourism

In this paper the value of investments in tourism is expressed in RON and we are essentially interested on the period between 2000 and 2005. We shall consider that there are differences among regions, on the level of this variable, if the statistical analysis shows significant differences on their average values for the six years we considered.

The average values are presented in the following figure:

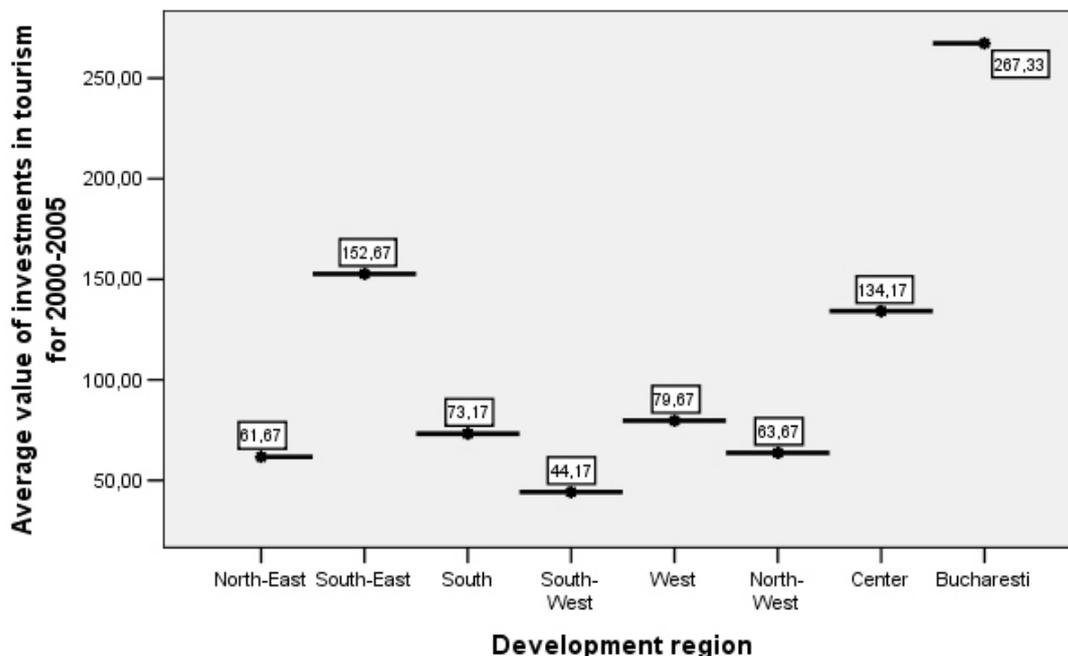


Figure no. 3. The average value of the regional hotel-restaurant investments, 2000-2005

By using the Levene test with SPSS we obtained a significance level of Sig. = 0.34 > 0.05 proving that the variances of the eight statistical subpopulations corresponding to the development regions are homogeneous:

Test of the homogeneity of variance

Levene Statistic	df1	df2	Sig.
1,172	7	40	,340

Consequently we may continue with the ANOVA procedure, in order to determine the presence of significant differences between groups corresponding to development regions and with the Bonferroni test that compare every region to the others.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Inter-group	229502,646	7	32786,092	5,008	,000
Intra-group	261875,167	40	6546,879		
Total	491377,813	47			

The Fisher coefficient with 7 and 40 degrees of freedom is $F = 5$ and the significance level is $\text{Sig.} = 0 < 0.05$, proving that there are significant differences between regions on the level of investments in tourism.

Finally, by using the Bonferroni test we can see that the value of investments in Bucharest-Ilfov region is significantly larger than the values corresponding to all other regions, except for the South-East region and the Center region. Comparing the Bucharest-Ilfov region to those other development regions we can easily see that the value of investments is always larger, but the difference is not statistically significant.

The influence of the development region on the accommodation capacity

In this work the variable accommodation capacity is expressed number of accommodation places is hotels and we shall consider it for the period 1991 – 2005.

The average values are presented in the following figure:

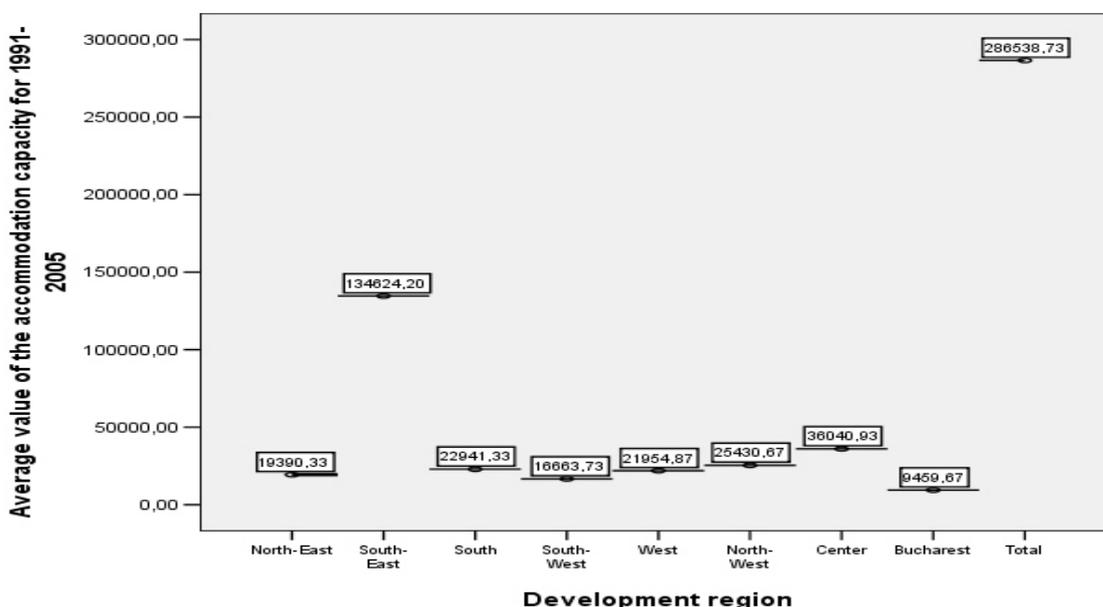


Figure no. 4. The average value of the regional accommodation capacity, 1991-2005

Applying the Levene test with SPSS we find a significance level $\text{Sig.} = 0 < 0,05$ proving that the variances of the eight statistical subpopulations are not homogeneous.

Test of the homogeneity of variance

Levene Statistic	df1	df2	Sig.
5,076	7	112	,000

At this point we can use the Tamhane test with SPSS and that shows the following differences between the average value corresponding to each region on the first column minus the average values corresponding to regions from the first row.

Table no. 1.

	N-E	S-E	S	S-V	V	N-V	Center	Bucharest-Ilfov
N-E		-115233*	-3551*	2726*	-2564*	-6040*	-16650*	9930*
S-E	115233*		111682*	117960*	112669*	109193*	98583*	125164*
S	3551*	-111682*		6277*	986	-2489*	-13099*	13481*
S-V	-2726*	-117960*	-6277*		-5291*	-8766*	-19377*	7204*
V	2564*	-112669*	-986	5291*		-3475*	-14086*	12495*
N-V	6040*	-109193*	2489*	8766*	3475*		-10610*	15971*
Center	16650*	-98583*	13099*	19377*	14086*	10610*		26581*
Bucharest-Ilfov	-9930*	-125164*	-13481*	-7204*	-12495*	-15971*	-26581*	

*The difference is considered to be significant if the significance level is < 0.05.

From the results in the table above we find the following conclusions:

- The South-East region has an accommodation capacity significantly larger than the others Romanian development regions, and that can be explained by the touristy potential of the Black Sea.
- The North-West and Center region have an accommodation capacity significantly larger than all the other regions, except for the South-East region.
- The South-West and Bucharest-Ilfov development regions have accommodation capacity significantly smaller than all others development regions.

The influence of the development region on the use index of the touristic capacity

We state, from the start, that the variable index of use refers to the percentage of the accommodation capacity provided by the tourist units for the period 1991-2005. We will consider that the level of this variable varies between the eight regions, if, statistically, we will notice the presence of some significant differences between the means of their values, for the 15 years taken into account.

These average values are presented in the following figure:

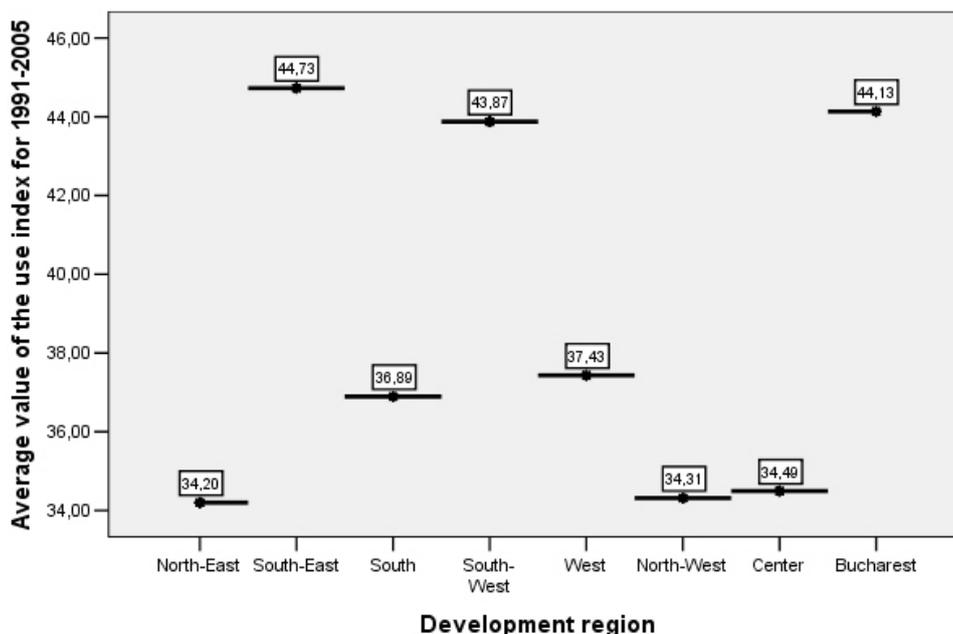


Figure no. 5. The average value of the regional use index of accommodation capacity, 1991-2005

After applying the Levene test using SPSS, we obtained a significance level $Sig = 0 < 0.05$, showing that the variances of the 8 statistical subpopulations, corresponding to the regions, are not homogeneous.

Test of the homogeneity of variance

Levene Statistic	df1	df2	Sig.
9,128	7	112	,000

Applying Tamhane test with SPSS, the following differences are obtained between the use index values in the regions on the first column minus the one from the regions form the first line.

Table no. 2.

	N-E	S-E	S	S-V	V	N-V	Center	Bucharest-Ilfov
N-E		-10,52*	-2,69	-9,67*	-3,23	-0,11	-0,29	-0,93
S-E	10,52*		7,83	0,85	7,29*	10,41*	10,23*	0,59
S	2,69	-7,83		-6,98	-0,54	2,58	2,40	-7,24
S-V	9,67*	-0,85	6,98		6,44*	9,56*	9,38*	-0,26
V	3,23	-7,29*	0,54	-6,44*		3,12	2,94	-6,70
N-V	0,11	-10,41*	-2,58	-9,56*	-3,12		-0,18	-9,82
Center	0,29	-10,23*	-2,40	-9,38*	-2,94	0,18		-9,64
Bucharest-Ilfov	9,93	-0,59	7,24	0,26	6,70	9,82	9,64	

*The difference is considered to be significant if the significance level is < 0.05 .

Based on the above table, one can draw the conclusion that in South-East and South-West regions, the use index level is significantly higher than in the North-East, North-West, West and Center.

Regarding other regions, there are no significant differences.

The influence of the development region on the number of overnight stays in tourist units

The variable number of overnight stays in tourist units is considered for the period 1991-2005, the average being among the values corresponding to these 15 years. The values of these means are presented in the following figure.

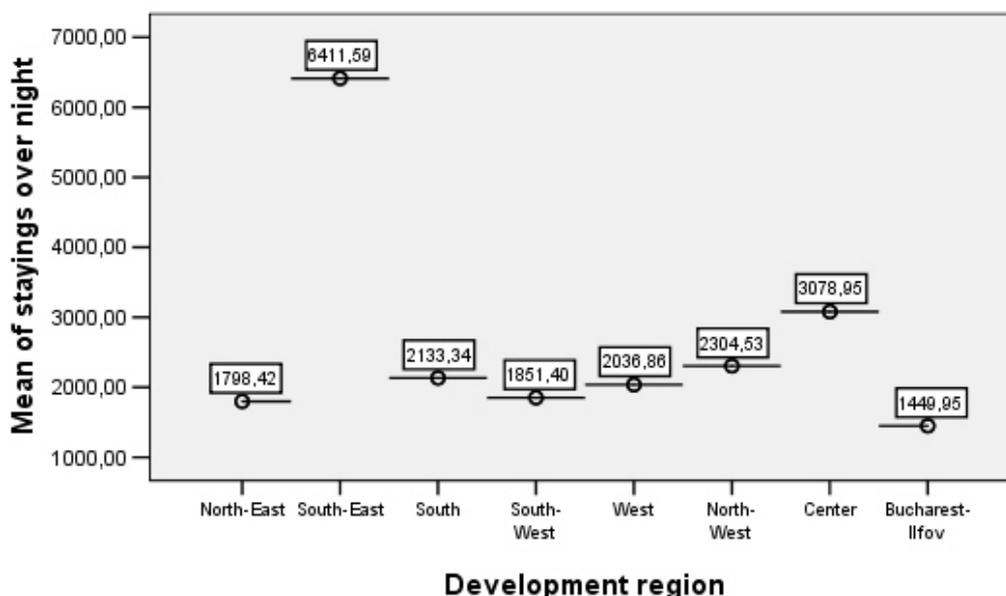


Figure no. 6. The average value of the regional overnight stays, 1991-2005

After applying the Levene test using SPSS, we obtained a significance level $\text{Sig} = 0 < 0.05$, proving that the variances of the 8 statistical subpopulations, corresponding to the regions, are not homogeneous.

Test of homogeneity of variances

Levene Statistic	df1	df2	Sig.
22,724	8	126	,000

Applying Tamhane test, the following differences are obtained between the overnight stays value in the regions on the first column minus the one from the regions form the first line.

Table no.3.

	N-E	S-E	S	S-V	V	N-V	Center	Bucharest-Ilfov
N-E		-4613*	-334	-52	-238	-506	-1280*	348
S-E	4613*		4278*	4560*	4374*	4107*	3332*	4961*
S	334	-4278*		281	96	-171	-945*	683*
S-V	52	-4560*	-281		-185	-453*	-1227*	401
V	238	-4374*	-96	185		-267	-1042*	586*
N-V	506	-4107*	171	453*	267		-774*	854*
Center	1280*	-3332*	945*	1227*	1042*	774*		1628*
Bucharest-Ilfov	-346	-4961*	-683*	-401	-586*	-854*	-1628*	

*The difference is considered to be significant if the significance level is < 0.05 .

From the above table we can notice to the following:

- South-East region differs significantly from all other regions of Romania, in the sense that the number of overnight stays is significantly higher;
- in the Center region, there has been recorded a number of overnight stays significantly higher than in all other regions, except South-East region;
- there are no significant differences among the North-West, North-East, South and West regions; North-West region recorded a number of overnight stays significantly higher than the South-West and Bucharest-Ilfov regions;
- the number of overnight stays corresponding to Bucharest-Ilfov region is significantly lower than in all other regions, except the North-East and South-West regions.

CONCLUSIONS

1. It is to be noticed that, regarding the investments, the regions with high potential (Center and South-East) record a significantly higher level compared to the other regions, being able to be compared only with the region of Bucharest-Ilfov.
2. Regarding the accommodation capacity, one can notice that, the regions with high tourist potential, benefiting of high investments, have the biggest number of places compared to the other regions.
3. The region Bucharest-Ilfov, although benefits of high investments, have a smaller accommodation capacity than all the other regions (investments in quality, luxury, business tourism). The utilization index is also higher in the Bucharest-Ilfov area.
4. Another fact to be noticed is that, the utilization index in the South-East region (including the Black Seaside) is higher than in the other region with great tourist potential (including Prahova Valley).

ENDNOTES

- (1) Pușcașu Violeta – *Dezvoltarea regională*, Ed. Economică, 2000, p.10
- (2) *** Declarația asupra Regionalismului în Europa, Adunarea Regiunilor Europei, 1996, art. 1
- (3) Pușcașu Violeta – *Dezvoltarea regională*, Ed. Economică, 2000, p.10
- (4) *** Declarația asupra Regionalismului în Europa, Adunarea Regiunilor Europei, 1996, art. 1

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