



THE INFLUENCE OF THE NUMBER OF OVERNIGHT STAYS ON THE CAPACITY OF THE ACCOMMODATION IN SALAJ COUNTY

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Abstract *In this article we will analyze the influence of the number of overnight stays on the capacity of the accommodation in Salaj County. The two indicators of tourist industry highlights the intensity of tourist traffic in this county. During the work will be presented the capacity of accommodation for a period of four years, depending on the evolution of the number of overnights recorded over a period of nine years.*

Key words:
Number of overnights,
accommodation capacity, linear
regression model Accommodation
capacity_Number of overnight
stays in Salaj County

1. Introduction

In the paper, the author highlighted the importance that tourist traffic indexes have over the accommodation capacity and how can the number of overnight stays can influence this index. As can be seen forward, in the linear regression model, the relationship between those two touristic indexes is a direct one.

2. Literature review

In the specialized literature, simple regression equation is a mathematical relationship that describes the relationship between two variables of the unifactorial. This model is determined by means of the relationship (Anghelache C., Niculescu E., 2000, p 45):

$$Y = a + b \cdot X + \varepsilon \quad (1)$$

where:

- Y is the dependent variable;
- X is the independent variable;
- a and b are the parameters of the regression line;
- ε is the residual standard deviation or random variable of the model.

According to the specialized literature, simple linear regression is determined by the relationship between the dependent variable and the independent variable that varies in arithmetic progression (Anghelache C., Niculescu E., 2000, p 45).

The parameters a and b of the model can be determined using the method of least squares, which can still be observed minimum amount of sum of

squares of deviations of the studied and corresponding points of the righteous (Anghelache C., Niculescu E., 2000, p 45-46).

The parameter a is performed at initial form and can have positive or negative values, and the parameter b (regression coefficient) determines the right inclination of the axis of abscis and may be positive in the case of direct links between the two studied variables and negative in the case of an inverse relationship between these (Anghelache C., Niculescu E., 2000, p 46).

Specialists in the field of statistics Baron t., Țițan E., Matache S. and Ciuchiță L. determine the parameters of linear regression by least squares method using the relation (Baron T., Țițan E., Matache S. and Ciuchiță L., 1999, pp 67-68):

$$Y = a + b \cdot x \rightarrow \sum (Y_i - a - b \cdot X_i) = 0 \quad (2)$$

Linear regression model parameters are determined by using the specified data series for the two variables of it. In the linear regression model, residual variable has a normal distribution with mean 0 and variance is constant.

Deviation is included in the regression model from a number of reasons (Anghelache C., Mitruț C., Anghelache C.S., Mitruț C.A., 2006, p 52):

- in the economic field cannot be seen by most of the time a linear functional dependence between the variables presented;
- series of data is determined by the studies of samples.

In the specialized literature, the set of assumptions studied in linear regression model for the estimation of

parameters are (Anghelache C., Mitruț C., Anghelache C.S., Mitruț C.A., 2006 , p 53):

- lack of errors of measurement of data series;
- the average residual variable is 0;
- the dispersion invariation throw time;
- deviations are not autocorrelated;
- explanatory variable is correlated with the residual.

For hypothesis testing related to linear regression model will be used an econometric software program.

3. Methodology of research

During the workpaper were consulted on both national and international sources in the physical format, as well as online one.

Series of data upon which the research has been carried out has been collected on the website of the National Institute of Statistics and was processed using an informatic program.

Linear regression model accommo–dation capacity_number of overnight stays in salaj county

After entering the database program for the period of nine years (2005-2013), the econometric model analysis generated by the linear regression line is shown below:

Table 1. Linear regression model Accommodation Capacity_Number of overnight stays in Salaj County Descriptive Statistics

	Mean	Std. Deviation	N
Capacitatea de cazare in functiune(mii locuri-zile)	3,5820E2	125,42614	9
Numar innoptari(mii)	70,8222	13,06099	9

Table 2. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,875 ^a	,766	,733	64,86751	,766	22,910	1	7	,002

a. Predictors: (Constant), Numar innoptari(mii)

b. Dependent Variable: Capacitatea de cazare in functiune(mii locuri-zile)

Table 3. ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	96399,179	1	96399,179	22,910	,002 ^a
	Residual	29454,561	7	4207,794		
	Total	125853,740	8			

a. Predictors: (Constant), Numar innoptari(mii)

b. Dependent Variable: Capacitatea de cazare in functiune(mii locuri-zile)

Table 4.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		
	B	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	-237,030	126,224		-1,878	,102	-535,504	61,443
	Numar innoptari (mii)	8,405	1,756	,875	4,786	,002	4,252	12,557

a. Dependent Variable: Capacitatea de cazare în funcțiune (mii locuri-zile)

Table 5. Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Numar innoptari(mii)
1	1	1,985	1,000	,01	,01
	2	,015	11,589	,99	,99

a. Dependent Variable: **Capacitatea de cazare in functiune(mii locuri-zile)**

Table 6.

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	218,5	302,54	3,5820E2	109,77202
Residual	-9,42431E1	1,05168E2	,00000	60,67800
Std. Predicted Value	-1,273	1,491	,000	1,000
Std. Residual	-1,453	1,621	,000	,935

Regression model determined by SPSS 16.0 is $Y = 8,405 \cdot x + (-237,03)$. In the output obtained can be noticed the simple correlation coefficient R, of 87.5%. This information shows that the regression model is valid and the number of overnight stays over the accommodation capacity is significant. R Square in the linear regression model is 76,6%, indicating that its prediction power is high. At the same time, another element that determines the validity of the model is Adjusted R Square which has a value of 73,3%. Adjusted R Square represents the proportion of the accommodation capacity in operation is explained by the number of overnight stays. The regression coefficient is positive, which shows us a direct link of the two indicators in the model studied. The Fisher test generated by SPSS regression model is appropriate and contributes greatly to the power of the regression prediction, Sig F Change-the meaning of the model being 0,002 (threshold of less than 0.05).

The analysis of ANOVA variation strengthens the validity of the model, because the variation explained in regression model is greater than that of the remaining variables.

The T test is 4.786, nonzero value, which means that the hypothesis tested in the regression model is relevant. Next, the histogram of the standard notes for residues will be presented in Figure 1.

In the histogram of residuals generated notes by SPSS 16.0 we can see a number of irregularities in the prediction model. These are small deviations from predetermined trend, because about 12.5% are influenced by other independent variables. Normal P Plot of Regression Standardized Residual highlights the fact that the distribution of the points on the graph pattern is close to reality.

This graph generated by SPSS can be observed in Figure 2.

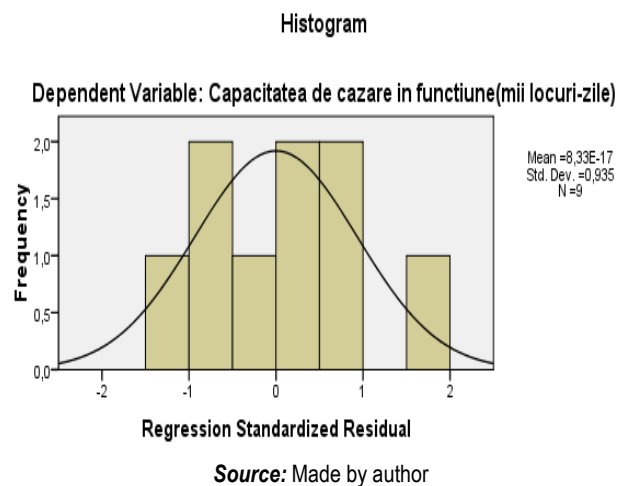


Figure 1. The Representation of Standard Notes for Residues of the Linear Regression Model Accommodation capacity_Number of overnights in Salaj County

Normal P-P Plot of Regression Standardized Residual

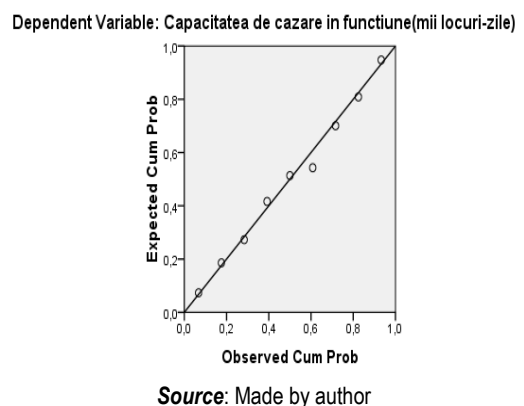
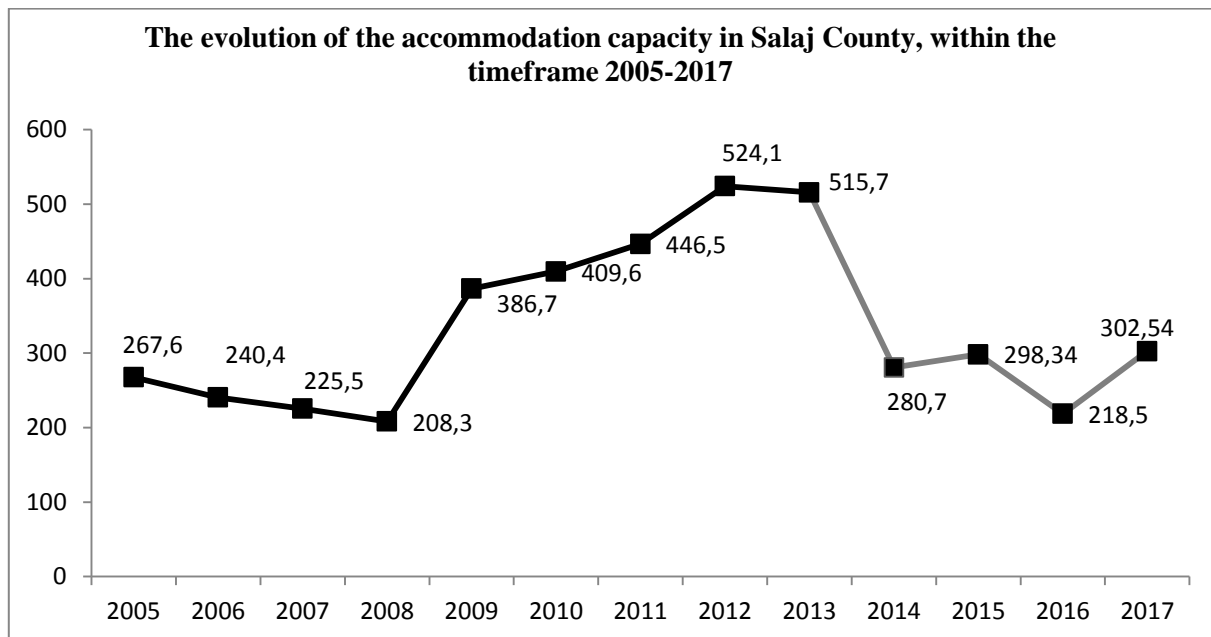


Figure No.2 Cumulative probability of standard residues notes chart for linear regression model Accommodation capacity_Number of overnight stays in Salaj County

The points which focuses above trend is overestimating the capacity of accommodation into service, while those that concentrate below the trend, is underestimating the value of this indicator.

The evolution of the accommodation capacity in Salaj County, within the timeframe 2005-2017 can be seen in Figure no. 3:



Source: Made by author

Figure 3. The evolution of the accommodation capacity in Salaj County, within the timeframe 2005-2017

As shown in Figure no. 3, a change of accommodation capacity in operation takes place during the period of time 2014-2017. The smallest value generated by the program for dependent variable is 218,5, in 2016 and 2017 year is going to register a higher value of the accommodation capacity in service of 302,54.

4. Conclusions

In conclusion, there is a direct connection and close one also between the number of overnights in Salaj and accommodation capacity in function. Linear regression model of accommodation capacity in operation is valid, registering an error of 2%. This model was developed in order to identify ways to improve services for accommodation in Salaj County, so as to increase tourist demand and occupancy of accommodation units to be higher level.

References

1. Anghelache C., Niculescu E. (2000) *Statistical pocket-book. Indicators and calculation formulas*, Economica Publishing House, Bucharest
2. Anghelache C., Mitruț C., Anghelache C.S., Mitruț C.A. (2006), *Elements of Econometrics. Lecture notes*, Artifex Publishing House, Bucharest

3. Baron T, Țițan E., Matache S., Ciuchiță L. (1999), *Practical manual of statistics*, Expert Publishing House, Bucharest

4. O.Lungu (2001), SPSS 10.0 Manual, <https://alingavreliuc.files.wordpress.com/2010/10/ovidiu-lungu-spss.pdf> accessed at 04.03.2015

5. www.insse.ro accessed at 03.02.2015