

IDENTIFICATION OF THOSE VARIABLES THAT HAVE A SIGNIFICANT INFLUENCE ON THE EXPECTED NUMBER OF DAYS OF STAYING IN THE CENTRE DEVELOPMENT REGION OF ROMANIA

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Abstract

I started from the assumption that there are more variables that have a significant influence on the expected number of days of staying in the Centre Development Region. To identify those variables this paper includes the analysis of variance with two variables that are not interacting, in this case the dependent variable is the question "How many days did you plan to stay in Centre Development Region?" and the independent variables are: "What is the purpose of your stay?" "What is the highest level of education?". Given that there are cases when interactions occur between variables, I also analyzed the interaction effects between the two independent variables. The paper also includes an ANOVA analysis with three variables between which interactions relationships occur. After identifying the dependency relations between the variables I found that the inclusion of the third variable, namely the "Marital status" of respondents, adds value to the model. Following the results obtained by ANOVA analysis, I identified those socio-demographic characteristics that, in my opinion, companies that operate on tourist market in the Center Development Region should consider when fundamenting marketing strategies in tourism.

Key words: ANOVA, interaction, level of significance.

JEL classification: M31, L83

1. INTRODUCTION

It can be said, without the risk of making a mistake, that experts are also unanimous in considering studying consumer behavior as the main component of marketing research, and that disregarding the interpretations, sometimes different, given to these concepts of modern marketing (Cătoi, 2004, p.111).

The analysis of variance known as ANOVA (Analysis of Variance) is a way of decomposing the variance of a variable called the dependent variable in several variances. Among these, some are due to variables acting on the analyzed variable (called independent variables), joined by a residual variance that includes the influence of influence factors other than those included in the analysis.

To achieve the ANOVA analysis, as known, the dependent variable should be mandatorily metrically measured, and the independent variable/variables measured nominally, with several categories of responses.

The independent variables with several categories of responses are called factors (Malhotra, 2005, p.572).

In conclusion the variance analysis is a method which assumes cause-effect relationship between a dependent variable metrically measured and one or more independent variables measured nominally, showing several ways of manifestation (Lefter, 2004, p.269).

The questionnaires were filled by foreign tourists and Romanian tourists in: Braşov, Predeal,

Poiana-Braşov, Sfântu Gheorghe, Covasna, Miercurea-Ciuc, Gheorgheni, Tuşnad, Târgu-Mureş, Sighişoara, Sibiu, Alba – Iulia and other settlements linked to this route.

I distributed over 2,000 questionnaires. The quantitative research was conducted within the period 15.05.2009-17.10.2009. I could include in this marketing research a number of 410 questionnaires.

The purpose of this paper is to see whether independent variables affect the dependent variable, namely whether the expected duration of stay is influenced by the purpose of stay, by education and marital status of the respondent.

Objectives of the study:

- Knowing the average of days planned for the categories of the variable "Purpose of stay";
- Knowing the average of days for the categories of the variable "Highest level of education";
- Separate testing of the influence of each independent variable on the dependent variable;
- Testing the interaction effect between independent variables.

As a first step I will present the analysis of variance considering a single independent variable. For the analysis of variance I worked in SPSS. The first table provided by the system is the one of the descriptive statistical indicators.

2. ANALYSIS OF VARIANCE CONSIDERING ONE INDEPENDENT VARIABLE

The one-way ANOVA test is applied when only one grouping variable is present in the dataset, i.e., one has available c independent samples, corresponding to c categories (or *levels*) of an effect and wants to assess whether or not the null hypothesis

should be rejected (Marques de Sá, 2007, p.140). The ANOVA One-Way method is equivalent of the t test for the independent samples. (Labăr, 2008, p.162)

The analysis of variance when it considers a single independent variable involves decomposition of the total variance of the dependent variable in two variances: one due to the independent variable and another due to the influence of other factors, called residual variance or error (Constantin, 2006, p.208).

Table 1 - Descriptive statistical indicators divided into groups

Descriptives								
How many days did you plan to stay in this region?								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
rest, entertainment	238	6.34	3.135	.203	5.94	6.74	2	20
treatment	38	15.89	7.188	1.166	13.53	18.26	1	36
business	36	3.83	3.085	.514	2.79	4.88	1	15
visit to monasteries	16	7.25	3.296	.824	5.49	9.01	3	13
study trip	44	6.14	.979	.148	5.84	6.43	4	10
week-end	22	2.18	.395	.084	2.01	2.36	2	3
transit	4	1.00	.000	.000	1.00	1.00	1	1
other reasons	12	3.17	1.403	.405	2.27	4.06	2	6
Total	410	6.65	4.714	.233	6.20	7.11	1	36

From the above data it may be noted that tourists who have chosen as reason for their staying the rest, entertainment have planned to spend / stay in the Centre Development Region 6.34 days on average, the minimum period indicated by the respondents being 2 days and the maximum period 20 days. The standard deviation is 3.135 days. Based on this deviation the confidence interval for the mean was calculated, which means that we can guarantee with a 95% probability that at the level of the total population, the average of the days spent by the tourists interviewed who came to the region in order to rest, entertain lies in the interval [5.94 days, 6.74 days].

I conducted similarly the analysis for all other groups. Thus:

- Those who came for treatment had planned to remain in the region of the country 15.89 days in average, more than twice than the respondents who have visited these places for rest or entertainment;
- The respondents who have chosen the third alternative of the variable by which I wanted to know the purpose for which they arrived in the Centre Development Region, namely the "business" alternative had planned to stay in average 3.83 days;
- Those persons, who established the purpose of their stay as visiting monasteries, were expecting to stay on average 7.25 days;
- Individuals with study trips planned to stay on average 6.14 days (Table 1).

Levene test is a Fisher-type test for which the value of $F_{calc} = 12.999$ is compared to a critical value in the Fisher distribution law table chosen according

to the level of significance α and the freedom degrees df_1 , respectively df_2 (Table 2).

Table 2 - The test for the differences between variables

Test of Homogeneity of Variances

How many days did you plan to stay in this region?

Levene Statistic	df1	df2	Sig.
12.999	7	402	.000

$F_{calc} = 12,999 > F_{0,05;7;402} = 2,01$ – the alternative hypothesis is acceptable according to which the variances referring to the days / period envisaged in the Centre Development Region are different for the 8 groups formed according to the purpose of the staying.

This conclusion could be also reached based on the minimum level of significance for which the alternative hypothesis can be accepted, which is less than 0.05, so the variances at the level of the total population are different (Table 2).

Although homogeneity of variances is a necessary condition for the ANOVA method, some authors consider that the ANOVA method is sufficiently robust to be applied even under breach of this condition (Labăr, 2008, p.162).

Testing of the differences between means was carried based on ANOVA analysis of variances.

Table 3 - Variances analysis table**ANOVA**

How many days did you plan to stay in this region?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4285.371	7	612.196	51.235	.000
Within Groups	4803.448	402	11.949		
Total	9088.820	409			

$F_{calc} = 51,235 > F_{0,05;7;402} = 2.01$, so H_1 is accepted, according to which the average of the days planned at level of the 8 groups are different. Therefore, the purpose of the staying exerts a significant influence on the expected day. This decision can also be taken directly based on the minimum level of significance for which we can accept H_1 ("Sig. = 0.000"), which is less than 0.05, so the alternative hypothesis is accepted (Table 3).

The analysis of variance can also considered the simultaneous influence of several independent variables on the dependent variables.

Next I will present ANOVA with two independent variables that are not interacting.

3. ANOVA WITH TWO INDEPENDENT VARIABLE THAT ARE NOT INTERACTING

In the two-way ANOVA test we consider that the variable being tested, X , is categorized by two independent factors, say Factor 1 and Factor 2. We say that X depends on two factors: Factor 1 and Factor 2 (Marques de Sá, 2007, p.156).

In the case of the analysis of variance with two independent variables without interaction a test is carried out for the equality of the averages for each of the independent variables, the values of F_{calc} being compared to the theoretical values in the Fisher law distribution Table selected according to the level of significance (Constantin, 2006, p.225).

The results of the analysis of variance are presented below:

Table 4 - The averages of the days for the categories of the variable "Purpose of the staying"**1. Which is the purpose of the staying?**

Dependent Variable: How many days did you plan to stay in this region?

Which is the purpose of the staying?	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
rest, entertainment	6.330	.336	5.669	6.991
treatment	15.835	.596	14.664	17.006
business	4.139	.662	2.838	5.440
visit to monasteries	7.220	.898	5.455	8.985
study trip	6.448	.618	5.233	7.663
week-end	2.409	.791	.853	3.965
transit	1.185	1.727	-2.211	4.580
other reasons	3.455	1.036	1.419	5.491

At the level of the analysed sample there are differences between the means of days planned at the level of the 8 groups formed according to the purpose of staying. Thus:

- Those who came for rest, entertainment remain on average 6.330 days;
- The respondents who came for treatment on average 15.835 days;
- People with business purposes stay on averaged 4.139 days;
- For visiting monasteries in the Centre Development Region, the respondents spend an average of 7.220 days.

I should mention here that the cultural tourism is among the "new" forms of tourism which claim to be less injurious than the mass tourism. The "cultural" tourists taking part in this form of tourism describe themselves as being "thinking tourists" and they are more attentive, more sensitive and more constructive in their behavior (Iordache and Popa, 2008).

- Those interviewed who were in a study trip stay on average 6.448 days;
- Those who came for weekend, on average 2.409 days;
- People who were in transit, on average 1.185 days;

• The respondents arrived for purposes other than those mentioned above, (nostalgia, "on the way to Greece", for personal reasons, meeting with friends, partnership between schools, "on the way") wish to

remain in this region of country for an average of 3.455 days (Table 4).

The means of the days forecasted in the case of the variable the highest level of education are also different at the level of the sample (Table 5).

Table 5 - The averages of the stays for the categories of the variable "The highest level of education"

2. Which is the highest level of education?

Dependent Variable: How many days did you plan to stay in this region?

Which is the highest level of education?	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Basic Schooling	4.247	1.126	2.032	6.461
Vocational training	7.877	.629	6.641	9.114
High School	5.848	.427	5.008	6.689
University degree	5.537	.329	4.890	6.184

Table 6 - The arithmetic mean of the forecasted days

3. Grand Mean

Dependent Variable: How many days did you plan to stay in this region?

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
5.878	.429	5.035	6.720

In the "Grand Mean" table the arithmetic mean of the forecasted days is calculated which does not take into consideration the grouping factors and the estimation of a confidence interval for this mean at the level of the total population. Thus, we can guarantee with a 95% probability that the arithmetical mean for the forecasted days at the level of the total population will be located between 5.035 and 6.720 days (Table 6).

Next I will create a separate testing of the influence of each independent variable on the dependent variable.

Table 7 - ANOVA with two variables without interaction

Tests of Between-Subjects Effects

Dependent Variable: How many days did you plan to stay in this region?

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	22643.191 ^a	11	2058.472	178.674	.000
var7	4000.105	7	571.444	49.601	.000
var38	206.639	3	68.880	5.979	.001
Error	4596.809	399	11.521		
Total	27240.000	410			

a. R Squared = .831 (Adjusted R Squared = .827)

var7 = "Which is the purpose of the staying?" and *var38* = "Which is the highest level of education?"

In the case of the "purpose of staying" variable $F_{calc} = 49.601 > 2.01$, so the H_1 alternative hypothesis is accepted, according to which the purpose of the staying has a significant influence on the expected period of staying in the Centre Development Region.

In the case of the "Highest level of education" variable $F_{calc} = 5.979 > F_{0,05;3;399} = 2.60$ which leads us to the conclusion that this variable also

significantly influences the expected period of staying (Table 7).

Given that there are cases when interaction relationships occur between independent variables, I shall present next the ANOVA with two variables which are interacting.

4. ANOVA WITH TWO INDEPENDENT VARIABLES THAT ARE INTERACTING

To make a complete analysis of the influence of the purpose of the staying and of the level of education on the number of days planned (to stay in the Centre Development Region) I must study the effect of the interaction between variables on the

dependent variable. $F_{calc} = 4.121$, which is higher than the critical value from table $F_{0,05;10;389} = 1.83$ the hypothesis is accepted, according to which the interaction effect significantly influences the dependent variable (Table 8).

Table 8 - ANOVA with two variables in interaction
Tests of Between-Subjects Effects

Dependent Variable: How many days did you plan to stay in this region?

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	23083.556 ^a	21	1099.217	102.875	.000
var7	3329.197	7	475.600	44.511	.000
var38	217.362	3	72.454	6.781	.000
var7 * var38	440.364	10	44.036	4.121	.000
Error	4156.444	389	10.685		
Total	27240.000	410			

a. R Squared = .847 (Adjusted R Squared = .839)

var7 = "Which is the purpose of the staying?", *var38* = "Which is the highest level of education?"

As a next step I add another independent variable representing the marital status of respondents.

I started from the assumption that marital status of tourists may influence the expected period of staying of tourists in the Centre Development Region. The reason I introduced this mentioned variable in the ANOVA analysis is also the fact that, in case the hypothesis proves true, the results of this analysis can be a starting point in formulating strategies for companies operating in the tourism market in the region.

Another argument which based the use of the independent variables included in this analysis is also given by the fact that in the segmentation based on the description of the tourist, marketers are focusing their attention on the person making the trip and, according to Philip Kotler there is geographic segmentation,

social-demographic segmentation, by gender, by income, psychographic segmentation, by lifestyle, by personality, behavior, degree of loyalty and by usage. Socio-demographic segmentation involves dividing the market into groups of common socio-demographic characteristics such as age, sex, family life cycle, education level, religion, nationality (Stăncioiu, 2004, p. 103).

Depending on the characteristics of target segments (...) another stage is the development of marketing mix for each target market segment (Stăncioiu, 2004, p.107).

Although it is true that generally, lower prices lead to increased tourism demand (increased tourists number, length of stay, frequency of travel etc.), and vice versa. However practice has shown that price is not the main motivator (Gabrovanu et al, 2009).

Table 9 - ANOVA with three variables in interaction
Tests of Between-Subjects Effects

Dependent Variable: How many days did you plan to stay in this region?

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	23771.575 ^a	45	528.257	55.591	.000
var7	1701.811	7	243.116	25.584	.000
var38	280.185	3	93.395	9.828	.000
var39	190.068	3	63.356	6.667	.000
var7 * var38	601.125	9	66.792	7.029	.000
var7 * var39	455.777	11	41.434	4.360	.000
var38 * var39	13.619	6	2.270	.239	.963
var7 * var38 * var39	18.241	4	4.560	.480	.751
Error	3468.425	365	9.503		
Total	27240.000	410			

a. R Squared = .873 (Adjusted R Squared = .857)

var7 = "Which is the purpose of the staying?", *var38* = "Which is the highest level of education?", *var39* = "Marital status"

It is noted that the new variable introduced in the model significantly influences the dependent variable ("Sig. = 0.000" < 0.05).

In addition it may be noted also that the interaction between the variable "Purpose of staying" and "Marital status" affects the dependent variable. ("Sig. = 0.000" < 0.05) (Table 9).

Based on the results obtained, it is considered that top management must at first, clearly define the goals related to target groups, and then motivate employees for their realization. The goals must be in accordance with the goals and satisfaction of customers. Employees should realize that being the best results from customer's preferences, which are established by activities of marketing management, such as researching of customer's needs, forming teams for seeking quality solutions and distribution of product/ services better than competitors (Ilieska, 2008).

Ensuring tourists' satisfaction is a sure way to make current customers loyal and attract potential ones. Romanian tourism enterprisers should give special attention to tourist relations and allocate financial resources in order to support marketing programmes that aim at the ongoing improvement of the cooperation between a company and a tourist. Satisfied tourists' advertising is much more efficient than many other promotional actions a company can resort to (Iordache and Parpandel, 2009).

5. CONCLUSIONS

After testing separately the influences of each independent variable I found that: The purpose of the stay has a significant influence on the intended period of staying; The level of education of the respondent also has a significant influence on the period of intended staying in the Centre Development Region.

After testing the interaction effect between the two independent variables ("The purpose of the staying" and "The level of education") I have concluded that the interaction effect of the two independent variables significantly influences the dependent variable ("The staying period").

As a final conclusion of the ANOVA analysis with three variables between which there are interaction relationships I found that the inclusion of the third variable ("Marital status") adds value to the model.

It is believed that tourism is the biggest deal in the world: it is the main industry in its contribution to gross world product (Niță and Niță, 2008, p.13).

Based on the multiple regression analysis of main economic indicators in Romanian tourism it is considered that the variables: Investment in hotels and

restaurants; Tourist arrivals in tourist reception facilities are significant predictors for the GDP dependent variable is in the sector of hotels and restaurants during the analysis period 1995-2007 (Kulcsár, 2009).

Although Romania has a rich and diverse tourism potential, one can say that Romania's tourist potential, with limited exceptions, is under-recovered. Of course, issues should be addressed differently on areas depending on their features - the amount of attractions, the level of endowment, environmental quality - and levels of action aimed at: developing technical accommodation equipment or simply their upgrading, increasing recreational facilities, diversification of tourism etc. (Minciu, 2001, p.174).

The product policies are often compared to the "heart of marketing" this metaphor is trying to express the idea that the development of products, services and ideas and their introduction on the market, along their vital cycle, is the core of the marketing activity (Florescu, Mâlcomete et al, 2003, p. 537).

Enterprises operating on the Romanian tourism market, according to their potential, can choose from the following key strategic directions in the product policies of the company: the flexibility strategy, the differentiation strategy, the diversification strategy and the offer renewal strategy.

I believe that companies that operate on the tourist market in the Centre Development Region, based on the results obtained, should adopt the product diversification strategy aimed at refining the modalities for meeting the requirements of numerous segments of customers. Its practical realization may be achieved through the strategy of diversification of the offer involving product market expansion by refining the arrangements for meeting the needs of tourist nature.

Due to the fact that the independent variables ("Purpose of staying", "Educational level", "Marital status" of respondents) significantly influence the dependent variable (The expected duration of staying) and the interaction effects between the independent variables ("Purpose of staying", "Educational level"; "Purpose of staying", "Marital status") in my opinion companies operating in the Centre Development Region should offer differentiated packages to each segment considering the results obtained.

But consumer behaviour is dynamically evolving, which is determined by the changing conceptions and social conditions or simply by changing fashion. For profitability companies should apply various techniques of products portfolio management such as Boston Consulting Group method, a method that classifies products according to the predictable cash flow.

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