ABSTRACT
Rural tourism is an alternative form of tourism that takes place in rural areas. It has imposed itself gradually being one of the most popular tourist forms, especially in highly developed countries with a high degree of urbanization, whose inhabitants are operating in more stressful conditions. Rural tourism represents the return to pure values, to the ancestral space, closeness to nature, i.e. a return to origins. Thus we can motivate that in terms of resources villages respond in the highest degree to multiple tourist motivations. Rural tourism can generate stability, production, and quality, multiple economic and social effects, contributing greatly to maintaining rural living, by preserving the economic and social values.

Romanian rural tourism activity is subject to restructuring. The acceleration and enhancement of this restructuring is the result of de-globalization and sustainable development manifested at all levels of the national economy.

Key words: rural tourism, agro tourism, sustainable Development, macroeconomic indicators rural tourism, multi-factorial regression model.

1. General aspects of agrotourism as the main form of rural tourism. State of the art

In rural tourism, as a form of this type of tourism, agrotourism detaches (Nistoreanu, Puiu 2003). The advent of agrotourism was determined by the creation of economic and social conditions specific for the urban environment, characterized by stress, congestion and pollution. Reducing population’s income affected mass tourism and the social category, part of the „middle class” with modest income went mainly to rural tourism (Nistoreanu, Puiu 2003).

Based on studies, it was concluded that rural tourism can be viewed as a system over which many influences from the external environment exert and which, in turn, affect this environment. However, the external environment influence is also felt by the quality of products purchased outside the tourist accommodation units to meet tourist demand, demand that can not be fully satisfied by domestic resources. Agritourism is the most

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effective and cheapest method to export quality rural products, export achieved, avoiding packing, transport, advertising costs (Nistoreanu, Puiu 2003). The importance of agrotourism should not be over-estimated, since it is a complementary, seasonal activity, but, by evaluating it at its true value its beneficial importance can be noticed for rural areas. In conclusion, agrotourism’s influence is manifested both economically and by creating income and new jobs, i.e. the emergence of new activities, and also in socio-cultural terms (by the revival of social life, through demographic stability, preservation and development of cultural heritage) being characterized by globalization (Begu, LS, 2009)

Tourism is an essential component of public service sector, an industry with significant development potential. New values were shaped for tourism, by the practice of rural tourism, this new type being appropriate for the modern era. Rural tourism is an alternative form of tourism that takes place in rural areas. Broadly, rural tourism has been defined by the OECD as „spending the holidays in the countryside” (WTO, 2002). This definition includes the practice, in a limited period of time, of tourism activities in rural areas by tourists who are housed in specially equipped rustic structures in order to create a favourable climate for the development of this type of tourism.

Although it takes place in the same space, agro and rural tourism are two concepts that identify themselves up to a certain level, each being completed and outlined by several different elements. Agritourism is defined as „a set of goods and services offered by the peasant household, for the use of people who, for a set period of time come to rural areas for relaxation, rest and recreation, therapeutic treatments, or business transactions, to practice a hobby, learn the art of traditional crafts, for studies and documentation, and many other specific activities (Mitrache Şt., Manole V., Stoian M., 1996). Dr. H. Potthof argues that the reasons for the occurrence and development of rural tourism were mainly hikers’ behaviour change, the promotion forms of tourism targeting economic development of rural areas and the need to protect nature and the environment.

According to the world practice forms of expression, the characteristics of rural tourism could be: closeness to nature, tranquillity, no crowds, personal contacts, the opportunity to know places and people closely; direct contact with the concerns and activities of the region, the chance of integration into the community during the stay (Talabă, I. et al. 2010).

Therefore, a possible statistical analysis of tourism activities carried out in rural areas should take into account these aspects, rural tourism development leading to lower long-term increase of the country risk and increasing the attractiveness for investments (Danciu, Aniela Raluca, Gruiescu, Mihaela, 2007).

2. Methodology

The knowledge of rural tourism activity is quite laborious. In research purposes, we chose a representative tourist area from Bran Moeciu, in which we took into account the organization and completion of several distinct phases of data collection, systematization and processing, analysis and interpretation of results. The statistical analysis is based on

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1 The data were collected and processed by the graduate Cristache Alexandru Cristian – graduate of Fabiz German, in the diploma thesis entitled Ein Marketingprogramm fur das Gebeit Bran-Moeciu, presented at the exam from July 2014
secondary data research, i.e. the data from the Romanian Statistical Yearbook published by the INS and other publications of public institutions (ANTREG, Ministry of tourism, etc). These data focused on the evaluation indicators of rural tourism, agrotourism respectively, characterizing the two components of rural tourism market, as follows: rural tourism offer and the number of rural tourism accommodation capacity and existing rural tourism demand by the number of tourists arriving in the structures of rural tourism accommodation and related number of overnight stays. Regression analysis was used as the statistical technique that identifies the relationship between two or more quantitative variables a dependent variable, whose value is to be predicted, and an independent or explanatory variable, or variables, about which knowledge is available. The techniques are used to find the equation that represents the relationship between the variables (Mitrut, C., Serban, D. 2007). This statistical technique of regression is most commonly used in programmer evolution to estimate effects. The net effects of the program under evolution can be assessed using regression and correlation analysis (Jaba, E.; Morosanu, A.; Serban, D.; Gruiiescu M., 2014), by attributing part of the changes observed to explanatory variables, while the remaining effects are attributed to the programmer (Andrei, T., Bourbonnais, R., 2008). Special software programs were used to obtain the regression output (Dobrin, Cosmin; Serban, Daniela, 2010).

3. Case study: Statistical characterization of Bran-Moeciu agro-touristic area

3.1. Characteristics of tourism development in Bran-Moeciu

The characteristics of the Bran-Moeciu tourism offer is based on the local tourism heritage, labour resources and the services involved in the tourism activity. Bran Moeciu area has an important natural heritage, especially the presence of Bucegi and Piatra Craiului National Park, Biosphere Reserve, and the presence of other protected natural areas. The tourism and anthropogenic potential of the region Bran, outlined over history, expands by the creative human rise in accordance with the requirements of modern civilization.

Developing the agrotourism activity indicator system is influenced by a number of factors, among which the most significant are those that determine the tourism supply and demand. Data on accommodation offer from Bran Moeciu area were provided by the Department of Statistics Brasov and ANTREC – the branch from Bran.

A picture of the size of the offer, as the total capacity of existing rural tourism accommodation in Bran-Moeciu is shown by the graph in figure no. 1, from which there can be distinguished its general trend of increase, in the period 2004-2014, from a minimum of 1471 accommodation places recorded in 2004, up to a maximum of 2033 places in 2014. This growth was on average 285 accommodation per year, i.e. a relative average increase of 1,039 times with an average rate of 3.98% with an average total annual capacity of accommodation in Bran Moeciu of approximately 2005 places per year.
Also, the existing accommodation capacity in rural locations in Bran Moeciu as outlined in Figure 1 records the same upward trend during 2004-2014. The maximum capacity of existing accommodation in agro touristic boarding houses was recorded in 2014 by 3701 accommodations; the minimum value recorded in 2004 was 856 accommodations. On average the same increase in absolute terms was about 285 accommodations annually, which corresponds to a relative average increase of 1,15 times, with an average rate of 15.76%. This trend is manifested as a result of increased demand for accommodation in this type of rural tourism accommodation structure, by its very specific rural tourism practiced. The average capacity of existing accommodation in rural locations was 2279 accommodations per year. Moreover, we may estimate that the existing accommodation capacity in rural locations in Bran Moeciu increased as compared to the total capacity of the existing accommodation in Bran Moeciu by an average advance coefficient of 4.2% per year. We can also appreciate the fact that the existing accommodation capacity in rural locations in Bran Moeciu area increased in relation to existing accommodation capacity in rural locations at the country level by an average advance factor of 2.4% per year.

In terms of an offer almost constant, the number of places of tourist accommodation of rural inns, motels and tourist lodges, this increase is the result of the influence of sharp increase in the number of places of tourist accommodation offered by boarding houses and more especially by agro touristic boarding houses, where the growth tendency is higher than that of the total area in terms of existing accommodation capacity. In this context, the number of places of tourist accommodation offered by agro hostels in Bran Moeciu underwent a process of continuous and intense growth (more than 2 times
increase in the number of rural locations in 2014 compared to 2004) as shown in Figure no.2.
The general trend of increasing the number of rural tourism accommodation locations in Bran Moeciu overlaps the upward trend of agro touristic boarding houses at the country level, which has the same trend of development in the period under review. Thus, overall, in Bran Moeciu, during 2004-2014 there was an average annual increase of about 68 rural locations per year, which represents a 8.42% average growth per year in terms of recording an annual average value of 880 boarding houses. At the country level, the number of agro touristic boarding houses has seen an average annual increase of 85 rural locations per year, representing an average increase of 6.89% per year.
We can also appreciate the fact that the number of rural locations in Bran-Moeciu increased, as compared to the number of rural locations at the country level by an average advance coefficient of approximately 0.8% per year.

One of the conclusions is that the upturn in the number of rural tourism locations in Bran Moeciu is the result of the development trend of tourism in general. Among the factors behind this trend of increasing development, of rural tourism indicators in the area Bran-Moeciu, the most important ones are: diversity and quality of services offered, cost of travel benefits, workforce qualifications and training, investment development in rural tourism in the area, etc.

3.2. The analysis of demand in Bran-Moeciu area

Between the demand for tourism and tourist consumption, there is some similarity in terms of content, namely:

➢ Tourism demand—all those who have the desire to go outside their residence;
Tourism consumption-expenditure incurred by tourism demand for the purchase of goods and services related to tourist motivation. Fluctuations in demand and consumption of rural tourism in Bran-Moeciu area can be highlighted using key indicators measuring: number of tourists accommodated and number of overnight stays in the touristic establishments.

The evolution of the number of tourists arriving in a tourist area Bran-Moeciu, during 2004-2014, is the result of theoretical demand transformed into effective demand, on the one hand due to meeting motivations for practicing rural tourism and, on the other hand, as a response to the offer’s quality of this type of tourism. The evolution trend in the number of tourists is followed by the rural touristic offer’s indicators, meaning the steady registration. The evolution graph (figure no. 3) of the number of tourists staying in Bran Moeciu suggests an overall increase during 2004-2014, from a minimum of 18745 tourists registered in 2004, up to a maximum of 44265 tourists in 2014 (an increase of more than 2 times the number of tourists arriving in rural locations in Bran Moeciu).

The number of tourists staying in rural locations in Bran Moeciu had an annual average increase of 2552 visitors, corresponding to average rate of about 9%. In that area during 2004-2014 there was an average increase of 3170 visitors a year, with an average rate of 8% in annual terms arrival of 44224 tourists per year on average. The study of structural changes on the number of tourists staying in rural locations suggests that the choice of tourists to rural areas is mainly aimed at escaping from the stressful urban environment to spend as much time outdoors in an unpolluted environment. Agro touristic boarding houses in Bran Moeciu accommodated more than half of the tourists arrived there, these shares recording slight fluctuations ranging from 66% in 2004 and 75% in 2014 as shown in Figure no. 4.

We can also state that the number of tourists staying in the agro boarding houses in Bran Moeciu area has increased by an average advance coefficient of 0.11% per year as related to the number of tourists accommodated in such locations at country level.
This favourable structural situation is based on the fact that practicing rural tourism is accessible to all categories of consumers of rural tourism services, offering affordable prices to all those who want to spend time in rural areas.

Further analysis of the development of rural tourism activity through the demand manifested during 2004-2014 is considering further study of the number of overnight stays registered in Bran Moeciu. The number of overnight stays is directly influenced by the number of tourists arriving in tourist accommodation establishments and indirectly through touristic offer, not so much by its existence, but especially by the quality of services provided to tourists. The evolution of overnight stays in the tourist area Bran Moeciu closely follows the trend of increase registered in the number of tourists accommodated in tourist accommodation locations. From the evolutionary chart (figure no. 5) it can be noted that the number of overnight stays is increasing from year to year in the period 2004-2014, the minimum value thereof recording 86,392 in 2004 and the maximum value in 2014 being 216,642. The absolute average increase in the number of
overnight stays in Bran Moeciu was 13025 overnight stays per year, i.e. a relative average increase to 1,096 times, with an average rate of 9.6% in terms of determining an annual average of overnight stay of 151517 overnight stays per year.

3.3. Analysis of correlation between indicators characterizing rural tourism in Bran Moeciu

Trends in the evolution of Romanian rural tourism activities are complemented by an analysis of the relationship and interdependence between indicators characterizing the tourist activity in Bran Moeciu: existing accommodation capacity, number of overnight stays, number of tourists, tourist reception for the period 2004-2014.

- Correlation between existing accommodation capacity, the number of tourists and total number of overnight stays in Bran-Moeciu area_Model 1

The existence and intensity of the relationship between existing accommodation capacity, the number of tourists and the number of overnight stays in the area Bran Moeciu were analyzed using multiple regression and correlation method. The application of the correlation method involved determining the correlation coefficient whose value of 0.99 indicates a direct and significant link between the existing accommodation capacity, the number of tourists and the number of nights spent in the area Bran Moeciu. The theoretical linear adjustment equation of the multifactorial model is:

\[ \hat{y}_i = -30923.63 + 4.089x_1 + 0.869x_2 \]

The regression coefficient \( b_1 \) whose value is 4.08 shows that, for an increase in the number of tourists of one tourist, there is an average increase in the number of overnight stays of about 4.08 nights. Since the p-value = 0.00 means that this coefficient is valid for a significance level of 0.05. The coefficient of determination of 98% shows that the existing accommodation capacity influence and the number of tourists over the nights spent is 98%, the remaining 2% belonging to other random, nonessential factors, when they have a permanent influence. The result of using Fisher test for determining the validity of the regression model, while the materiality (Prob F statistic = 0, lower than the
maximum permissible risk of 5%) indicates that the model used is valid and correctly identified statistically and expresses very well the correlation established between the existing accommodation capacity, the number of tourists staying overnight as factorial variables and the number of overnight stays as a resulting variable corresponding to Bran Moeciu area during 2004-2014. Accepting the model as valid enables prediction of existing accommodation capacity and overnight stays for the coming years. Regardless of the method used it has been determined and showed that, overall, in the 2004-2014 period, the analyzed indicators: existing accommodation capacity, the number of tourists accommodated and the number of nights spent in Bran Moeciu developed into a close relationship, which outlines the favourable trend of the rural tourism activity towards the sustainable development thereof (see table 1).

Model 1-Multiple correlation between the number of overnight stays as a resulting variable and the evolution of existing accommodation capacity and the total number of accommodated tourists in Bran Moeciu as factorial variables

Table no.1

<table>
<thead>
<tr>
<th>Dependent Variable: NUMAR_INNOPTARI</th>
<th>Method: Least Squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included observations: 11</td>
<td></td>
</tr>
<tr>
<td>NUMAR_INNOPTARI=C(1)+C(2)*NUMAR_TURISTI+C(3)</td>
<td></td>
</tr>
</tbody>
</table>

*CAPACITATE_CAZARE

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(1)</td>
<td>-30923.63</td>
<td>438.462</td>
<td>-70.527</td>
</tr>
<tr>
<td>C(2)</td>
<td>4.089</td>
<td>0.0115</td>
<td>3.548</td>
</tr>
<tr>
<td>C(3)</td>
<td>0.869</td>
<td>0.520288</td>
<td>1.671</td>
</tr>
</tbody>
</table>

R-squared = 0.99, Adjusted R-squared = 0.98

Durbin-Watson test: DW = 2.69

Prob(Durbin-Watson) = 0.53

Deviation of error or Standard Error equals 0.53. Because it is not 0 this means that also other factor are affecting the dependent variable. The Durbin-Watson test, used in the errors autocorrelation analysis, in the multiply model (see Table 1) has registered a computed value DW = 2.69, value which was compared with the critical statistic values for α = 0.05, p = 2 and n = 11; d1 = 0.95 and d2 = 1.54 meaning that errors are not correlated. Regarding the distribution of errors, they are not equally distributed in relation to the average value according to the graph (figure no. 6), therefore we may conclude that the variance is not constant.
From the correlogram, we may appreciate that the points in the graph’s network (figure no. 7) are uniformly distributed, without differences between them, so we can conclude that the link between the existing accommodation capacity and the number of tourists as factorial variables and the number of nights spent as a resulting variable is linear, direct and significant. In conclusion, one cannot speak of tourists and overnight stays than in close correlation with the structures of tourist reception, implicitly of accommodations as number of places, but also as a number of places-days, so any change in an indicator will immediately react in one way or another on the other indicators involved in the development of rural tourism activity.
In this context, the structural changes observed and interpreted in each indicator are the result of both the changes at each level and their joint action in order to deepen the analysis of rural tourism activity required to study their evolution in a close and complex correlation and association.

- **Correlation between the number of agro touristic boarding houses, the number of tourists accommodated in agro touristic boarding houses and the average duration of the stay in Bran Moeciu area_Model 2**

The theoretical linear adjustment equation of the multifactorial model is:

$$\hat{y}_i = -0.699 + 0.007x_1 + 0.003x_2$$

The regression coefficient $b_1$ whose value is 0.007 shows that, for an increase of one agro touristic boarding house, there is an average increase in the duration of the stay of approximately 0.007 days. Since $p$-value= 0.00 < $\alpha$ means that this coefficient is valid and significant for a level of significance of 0.05. The determination coefficient value of 99% shows that the influence of the existing accommodation capacity and the number of tourists on the number of nights spent is 98%, the remaining 2% belonging to other random, nonessential factors. The result of using the Fisher test to determine the validity of the regression model, given the fact that the materiality (Prob F statistic=0, less than the maximum allowable risk 5 %) indicates that the model used is valid and correctly identified in statistical terms (see table no. 2).

**Model 2- Multiple correlation between the average duration of the stay as a resulting variable and the evolution of the number of agro touristic locations and the number of tourists accommodated in rural boarding houses in Bran Moeciu**

<table>
<thead>
<tr>
<th>Dependent Variable: DURATA_MEDIE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Least Squares</td>
</tr>
<tr>
<td>Sample: 1 11</td>
</tr>
<tr>
<td>Included observations: 11</td>
</tr>
</tbody>
</table>

DURATA_MEDIE=C(1) +C(2)* NR_PENS_AGRO+C(3)* NR_TUR_CAZATI

<table>
<thead>
<tr>
<th>PEN</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(1)</td>
<td>-0.699</td>
<td>0.228</td>
<td>-3.065</td>
<td>0.015</td>
</tr>
<tr>
<td>C(2)</td>
<td>0.007</td>
<td>0.0005</td>
<td>14</td>
<td>0.00</td>
</tr>
<tr>
<td>C(3)</td>
<td>0.003</td>
<td>0.004</td>
<td>0.75</td>
<td>0.274</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.994</td>
<td>Mean dependent var</td>
<td>5.935</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.993</td>
<td>S.D. dependent var</td>
<td>1.736</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>729.756</td>
<td>Durbin-Watson stat</td>
<td>2.069</td>
<td></td>
</tr>
<tr>
<td>Prob (F-statistic)</td>
<td>0.000</td>
<td>Std. Error</td>
<td>0.149</td>
<td></td>
</tr>
</tbody>
</table>

Deviation of error or Standard Error equals 0.149 when this indicator is 0, which means that all points are on the right of regression. The Durbin-Watson test, used in the errors...
autocorrelation analysis, in the multiply model (see Table 2) has registered a computed value $DW = 2.069$, value which was compared with the critical statistic values for $\alpha = 0.05$, $p = 2$ and $n = 11$; $d_1 = 0.95$ and $d_2 = 1.54$ the errors are not positively autocorrelation. Analysing the scatter diagram, we can appreciate the points in the graph’s network (figure no. 8) are uniformly distributed, without differences between them, so we can conclude that the relationship between the number of rural boarding houses and the number of tourists accommodated in rural locations as factorial variables and the average duration of stay as a resulting variable is linear, direct and significant.

Because errors occur evenly scattered around the average represented by the regression line, the data are heteroscedastic, so the variance is constant, according to graph 10.
Moreover, the trends in the evolution of rural tourism in Romania are the result of market economy development and the behaviour change and lifestyle of the population, Romanian society gradually turning into a consumer society.

5. Conclusions
The ongoing adaptation of the material resources to tourist demand represents one of the basic particularities of tourism, along with tourist accommodation which represents the main component that through supply constitutes a balance point for the Romanian tourist activity (Cristache S., Popa I., Dobrin C., Vuta, M. 2011).

Knowing the factors that determine and stimulate the tourist activity it is necessary to relaunch the Romanian rural tourism and to promote it globally. From this point of view, the Romanian tourism faces a lot of problems, which should be solved in order to make it more competitive on the global travel market.

Ensuring a competent management able to improve their tourism operators to grow is a difficult problem whose solution depends largely on the success or failure of the tour operator. Tourism development is finding a vector of economic and social cohesion within the European Union (Tigu, G. 2012).

Competitiveness, the desire to resist on the marketing and not at least getting a profit will make administrators of rural lodging houses become increasingly interested in the permanent monitoring of the needs to fully, rapidly and effectively satisfy tourists. Such an analysis is absolutely necessary and obligatory to be made by all operators in rural tourism and not only. These are, among others, designed to provide valuable information on the conduct of activities in specialized units so that they can take relevant measures to make tourism activity efficient.

Finally, the rich natural and cultural resources, with the new structural approach and the new model of sustainable development of Romanian tourism will result in more competitive tourism products tailored to market needs, with the potential to attract many more international tourists.

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