ROMANIAN MOUNTAIN ENTREPRENEURSHIP FROM A STATISTICAL PERSPECTIVE: EVIDENCES ON COMMERCIAL AND LOGISTICS SECTORS

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Abstract. *The paper aims to replace in the Civil Society Organizations in Romania the way that has been performed so far, as for them to acquire the transformation in order to achieve superior, modern, sustainable results and progress in their development.*

1. Introduction

Romanian mountain entrepreneurship represents an important dimension in the economic context of the Carpathian-Danubian-Pontic space [2]. From a geographical point of view, Romania has an extensive mountainous area, which is why mountain development is important. The sustainability of the Romanian mountain areas is ensured mainly from the mountain countryside, with the supporting sectors presenting the most important, especially the infrastructure sectors [1]. This is because the Romanian mountainous countryside, like many other mountainous areas of the world, falls into the category of geographical areas disadvantaged from an infrastructural point of view. The transport of goods in these areas is carried out with difficulty, considering that the mountainous areas present a natural handicap in this regard. Agriculture cannot develop properly if there are no sustainable support sectors. In order to become more competitive in relation to other economic sectors, agriculture must be better inserted into the global added value chain. The commercial and logistics sectors ensure the intelligent development of the mountainous countryside, in this case Romanian.

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2. Materials and Methods

The paper makes specific reference to the Eurostat sectors Wholesale and retail trade, repair of motor vehicles and motorcycles, respectively Transport and storage [3, 4]. The Eurostat indicator referred to in the paper is the Population of active enterprises in t - number. The specific analysis to evaluate the demographic situation of the current Romanian mountain areas was carried out with ANOVA (Analysis of Variance), and forecasting techniques were used for forecasting, both being simulated in SPSS. The specific developments in this paper refer to Romania's macro-regions, considered to be representative of the development regions and subsequent counties.

The paper considers as a hypothesis the direct correlation between the analyzed sectors and their development in the future, the goal being the creation of a faithful image regarding the future developments of these sectors in the general Romanian mountain picture [5, 6].

3. Results and Discussions

The results of the statistical simulations present the analyzed sectors as sustainable for Romanian mountain entrepreneurship [7, 8].

3.1. Development of the Wholesale and retail trade, motor vehicle and motorcycle repair sectors

The statistics for the sectors Wholesale and retail trade, repair of motor vehicles and motorcycles – S1 (Figures 1 – 5), show for each sector separately ascending values for the mean and median, the other statistical indicators having sometimes antagonistic fluctuations (statistical values for Average, Std. Error of the mean, Median, Std. Deviation, Skewness, Kurtosis, Variance, Minimum, Maximum, Percentile 50 Value; they are repeated for each indicator separately), as follows: mean of 263,245.22, standard error of the mean 5,551.789, median 271,459.00 , standard deviation 16,655.368, variance 277,401,290.444, Skewness -1.506, standard error of Skewness .717, Kurtosis .913, standard error of Kurtosis 1.400, distance 44,714, minimum 229,846, maximum 274,560, percentile 25 - 250,798.50, 50 - 271,459.00, 75 - 274,027.00.

The presented values demonstrate that the wholesale and retail trade sector, the repair of motor vehicles and motorcycles in the mountain area have a good development in Romania for the population of active enterprises. Some sectors also show negative values, the overall picture showing a good overall mountain business situation for the industry.

The importance of these tests is given by the need to carefully observe the influences of certain factors in the evolution of the Wholesale and Retail trade,

motor vehicle and motorcycle repair sectors. Following the application of normality tests, after logarithmization, the null hypothesis must be rejected and the working hypothesis can be analyzed. The descriptive and inferential analysis was done considering the distribution of scores within normal limits, according to the working hypothesis, for which the parametric tests are applied.

The central trend of the Wholesale and retail trade, repair of motor vehicles and motorcycles sectors of the economy in the analyzed period shows that the population of active enterprises of mountainous Romania has grown considerably from 2008 to 2019. The statistics related to this indicator show a high degree of non-variability, which means that the results do not show a large deviation and are positive. The corresponding symmetrical distributions lead to the idea that the business environment begins to stabilize considerably during the analyzed period. Kurtosis with a low standard error represents crowding in some industries.
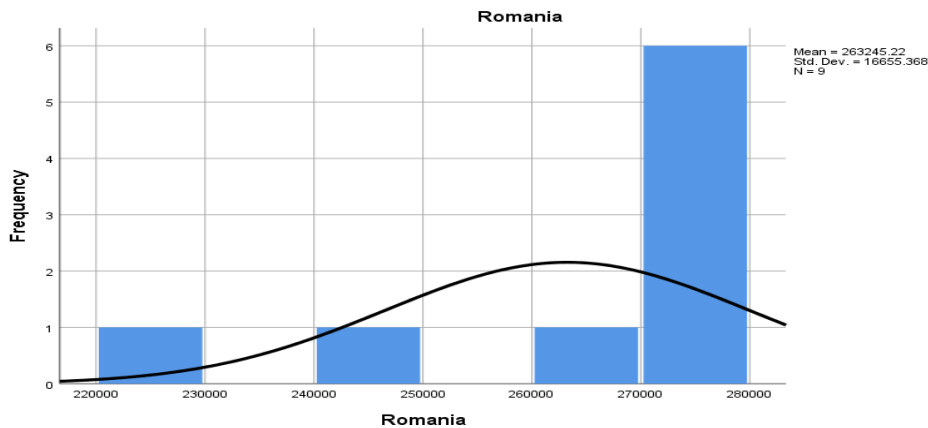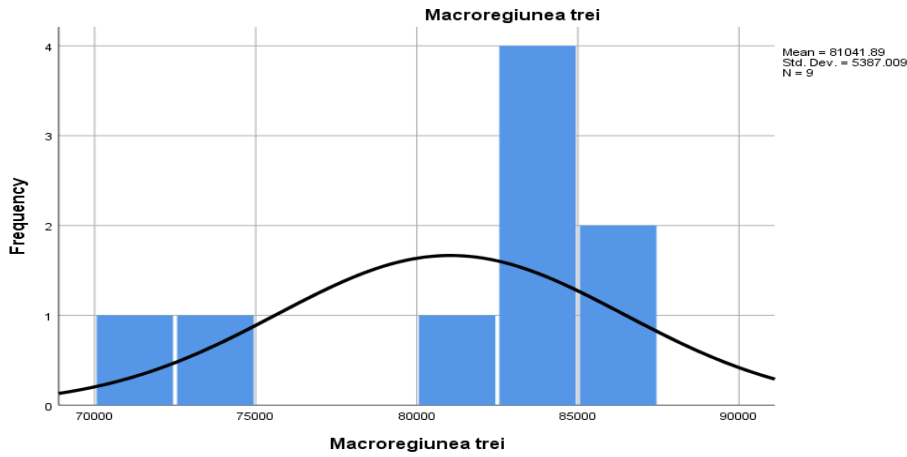

Fig. 1. The evolution of mountain entrepreneurship in Romania for S1 in the period 2008-2019
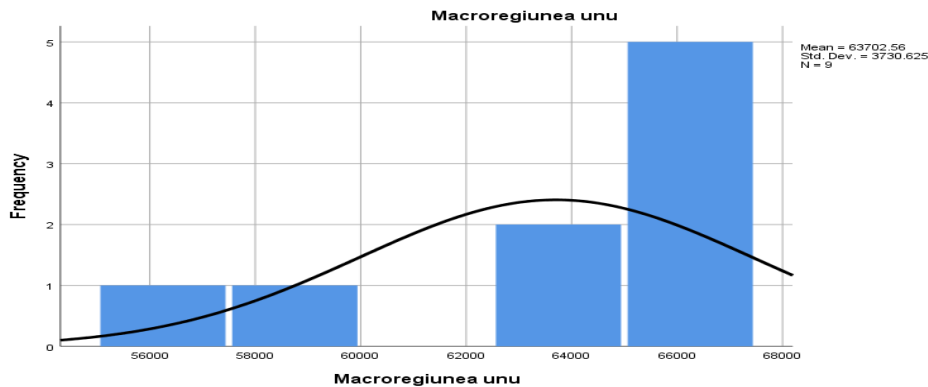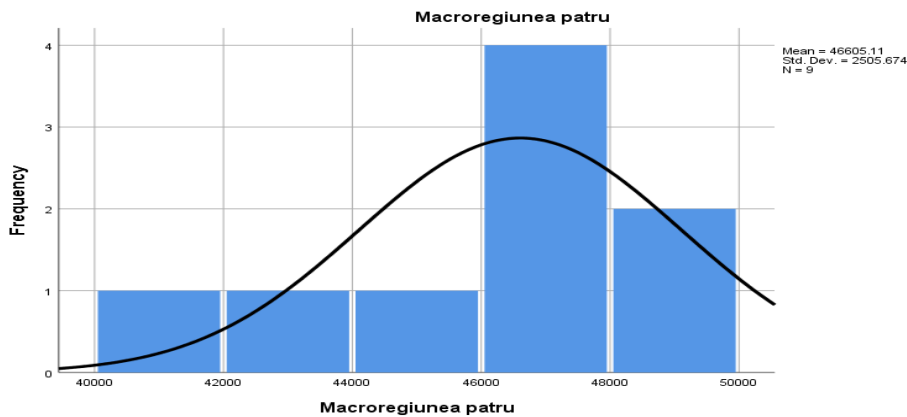

Fig. 2. The evolution of mountain entrepreneurship in Macroregion one of Romania for S1 in the period 2008-2019
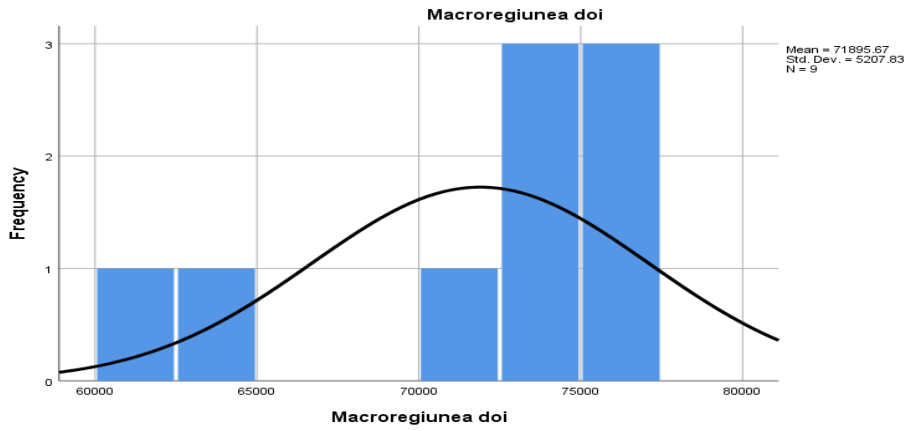
Fig. 3. The evolution of mountain entrepreneurship in Macroregion two of Romania for S1 in the period 2008-2019

Fig. 4. The evolution of mountain entrepreneurship in the third Macroregion of Romania for S1 in the period 2008-2019

Fig. 5. The evolution of mountain entrepreneurship in the fourth Macroregion of Romania for S1 in the period 2008-2019

The forecast analysis for the sectors *Wholesale and retail trade, repair of motor vehicles and motorcycles* in the mountainous area of Romania indicates that they will have a continuous growth until 2030. Both at the national level, as well as at the macro-regional, regional and county level, the resulting models statistical modeling shows certain mountain areas are more sustainable than others. The harmonization statistic presents relevant values for the mean, standard error, minimum, maximum, and 5/10 percentiles (presented in that order below), as follows: Stationary R-squared -.045, .038, -.163, .027, - .106, -.095; R-squared .595, .175, .086, 1,000, .200, .350; RMSE 1206,241, 1942,077, .000, 13181,442, 155,526, 215,111; MAPS 5,638, 1,905, .000, 10,811, 2,603, 2,875; MaxAPE 23.023, 9.064, .000, 47.625, 9.010, 10.947; MAE 713,889, 1072,976, .000, 7254,554, 104,122, 144,529; MaxAE 3045,695, 4980,770, .000, 33841,016, 345,796, 511,718; Normalized BIC 13,306, 1,929, 10,200, 19,217, 10,396, 11,027.

Table 1. Forecast analysis of mountain entrepreneurship in the mountain area of Romania for S1

Model		2022	2023	2024	2025	2026	2027	2028	2029	2030
Romania-Model_1	Forecast	261,169	261,169	261,169	261,169	261,169	261,169	261,169	261,169	261,169
	UCL	313,817	321,962	329,137	335,625	341,590	347,143	352,358	357,291	361,983
	ICI	208,521	200,376	193,201	186,713	180,748	175,195	169,980	165,047	160,356
Macroregion one-Model_2	Forecast	64,173	64,173	64,173	64,173	64,173	64,173	64,173	64,173	64,173
	UCL	75,451	77,196	78,733	80,123	81,400	82,590	83,707	84,764	85,769
	ICI	52,895	51,150	49,613	48,224	46,946	45,756	44,639	43,583	42,578
Macroregion two-Model_17	Forecast	70,675	70,675	70,675	70,675	70,675	70,675	70,675	70,675	70,675
	UCL	88,133	90,834	93,213	95,364	97,342	99,183	100,913	102,548	104,104
	ICI	53,217	50,517	48,137	45,986	44,008	42,167	40,437	38,802	37,246
Macroregion three-Model_32	Forecast	80,897	80,897	80,897	80,897	80,897	80,897	80,897	80,897	80,897
	UCL	96,581	99,007	101,145	103,078	104,855	106,509	108,062	109,532	110,929
	ICI	65,213	62,787	60,649	58,717	56,940	55,285	53,732	52,262	50,865
Macroregion four-Model_44	Forecast	45,424	45,424	45,424	45,424	45,424	45,424	45,424	45,424	45,424
	UCL	54,121	55,466	56,651	57,723	58,708	59,626	60,487	61,302	62,077
	ICI	36,727	35,382	34,197	33,125	32,140	31,222	30,361	29,546	28,771

### 3.2. **Development of the Transport and storage sectors**

The statistics for the Transport and storage sectors – S2 (Figures 6 – 10), show for each sector separately ascending values for the mean and median, the other statistical indicators having sometimes antagonistic fluctuations (statistical values for Average, Std. Error of the mean, Median, Deviation Std., Skewness, Kurtosis, Variance, Minimum, Maximum, 25th, 50th and 75th Percentiles; they are repeated for each individual indicator), as follows: mean 65,417.89, standard error of the mean 3,315.506, median 64,404.00, standard deviation 9,946.518, variance 98,933,224.611, Skewness -.009, standard error of Skewness .717, Kurtosis - 1.223, standard error of Kurtosis 1.400, distance 28,301, minimum 51,206, maximum 79,507, percentile 25 - 56,555.50, 50 - 64,404.00, 75 - 74,913.00.

The central tendency of the transport and storage sectors of the economy during the analyzed period shows that the population of active enterprises in mountainous Romania has grown considerably from 2008 to 2019. The statistics related to this indicator show a high degree of non-variability, which means that the results do not show a large deviation and are positive. The corresponding symmetrical distributions lead to the idea that the business environment begins to stabilize considerably during the analyzed period. Kurtosis with a low standard error represents crowding in some industries.

The presented values demonstrate that the transport and storage sectors in the mountain area have a good development in Romania for the population of active enterprises. Some sectors also show negative values, the overall picture showing a good overall mountain business situation for the industry.
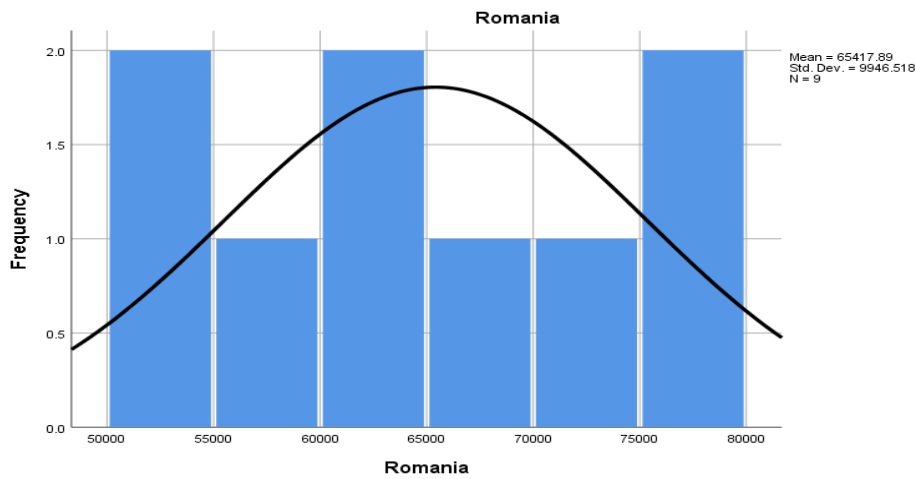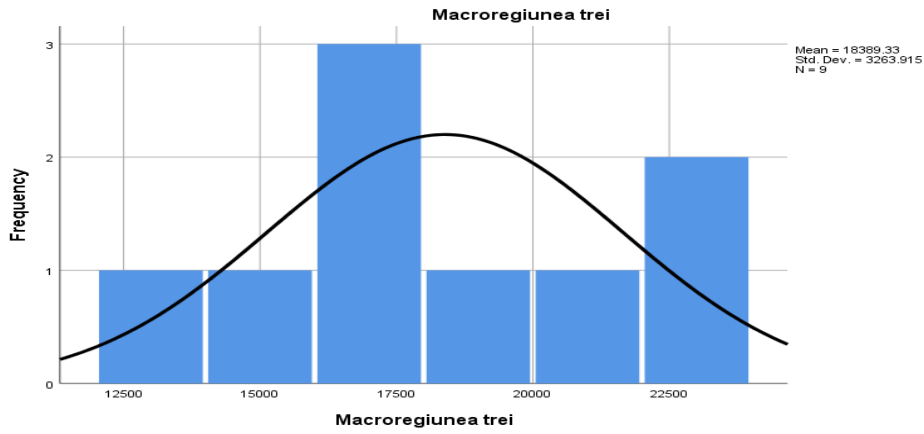

Fig. 6. The evolution of mountain entrepreneurship in Romania for S2 in the period 2008-2019
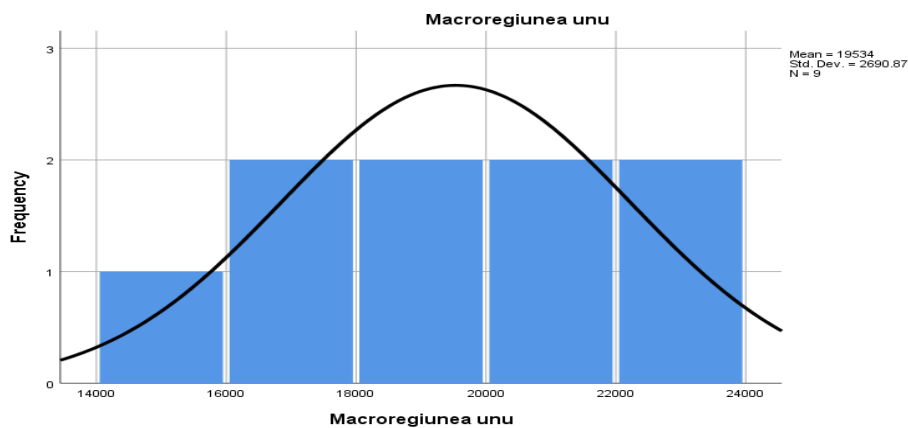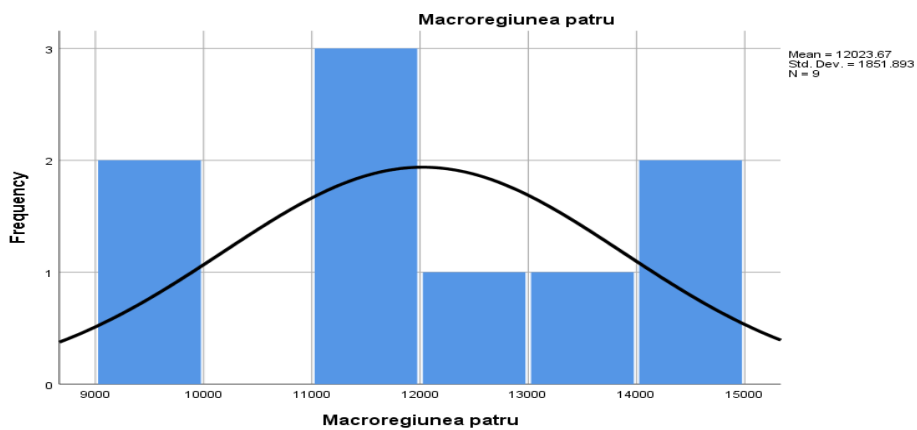

Fig. 7. The evolution of mountain entrepreneurship in Macroregion one of Romania for S2 in the period 2008-2019
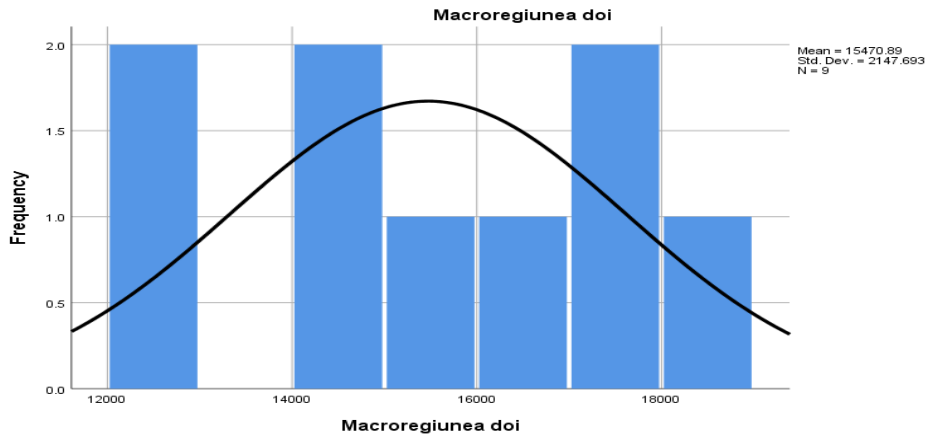
Fig. 8. The evolution of mountain entrepreneurship in Macroregion two of Romania for S2 in the period 2008-2019

Fig. 9. The evolution of mountain entrepreneurship in the third Macroregion of Romania for S2 in the period 2008-2019

Fig. 10. The evolution of mountain entrepreneurship in the fourth Macroregion of Romania for S2 in the period 2008-2019

The forecast analysis for *Transport and storage* in the mountainous area of Romania indicates that they will have a continuous growth until 2030. Both at the national, macro-regional, regional and county level, the models resulting from the statistical modeling show that certain mountainous areas are more sustainable than others.

Table 2. Forecast analysis of mountain entrepreneurship in the mountain area of Romania for S2

Model		2022	2023	2024	2025	2026	2027	2028	2029	2030
Romania-Model_1	Forecast	90,743	94,364	97,984	101,605	105,225	108,845	112,466	116,086	119,707
	UCL	93,226	96,925	100,621	104,315	108,007	111,698	115,386	119,073	122,759
	ICI	88,260	91,802	95,347	98,894	102,443	105,993	109,545	113,099	116,654
Macroregion one-Model_2	Forecast	26,414	27,395	28,376	29,357	30,338	31,320	32,301	33,282	34,263
	UCL	26,863	27,860	28,856	29,851	30,847	31,842	32,836	33,830	34,824
	ICI	25,965	26,930	27,897	28,863	29,830	30,798	31,765	32,734	33,702
Macroregion two-Model_17	Forecast	20,938	21,719	22,500	23,282	24,063	24,844	25,625	26,407	27,188
	UCL	21,507	22,303	23,098	23,892	24,687	25,481	26,275	27,068	27,862
	ICI	20,368	21,135	21,903	22,671	23,439	24,208	24,976	25,745	26,514
Macroregion three-Model_32	Forecast	26,658	27,842	29,027	30,211	31,395	32,580	33,764	34,948	36,133
	UCL	27,766	28,976	30,185	31,395	32,603	33,811	35,019	36,226	37,433
	ICI	25,550	26,709	27,868	29,027	30,187	31,348	32,509	33,671	34,833
Macroregion four-Model_44	Forecast	16,726	17,400	18,073	18,747	19,421	20,094	20,768	21,442	22,115
	UCL	17,230	17,921	18,611	19,301	19,991	20,680	21,368	22,057	22,744
	ICI	16,223	16,879	17,536	18,193	18,851	19,509	20,168	20,827	21,486

The harmonization statistic presents relevant values for the mean, standard error, minimum, maximum, and 5/10 percentiles (presented in that order below), as follows: Stationary R-squared .581, .345, -1.110E-15, .902, -4,441E-16, .000; R-square .922, .060, .673, 1.000, .811, .847; RMSE, 202,407, 228,034, .000, 980,739, 34,002, 40,898; MAPS 5,888, 2,565, .000, 12,517, 1,050, 1,649; MaxAPE 23,673, 10,336, .000, 47,986, 2,657, 4,745; MAE 135,854, 158,860, .000, 707,587, 22,772, 26,172; MaxAE 429,131, 467,324, .000, 1832,895, 74,976, 87,132; Normalized BIC 10,029, 1,954, 7,293, 14,265, 7,474, 7,869.

Conclusions

(1). The statistical results confirm the economic growth of the *Wholesale and retail trade, repair of motor vehicles and motorcycles sector*, with a direct correlation between the previous evolution of this sector and the forecast for 2030.

(2). The analyzes carried out for the *Transport and storage sector* show that there is a direct correlation between the antecedent dynamics of this sector and the future growth forecast for the year 2030, thus confirming the upward trend of this sector.

(3). The mountain commercial and logistics sectors in Romania ensure a good sustainability of mountain entrepreneurship, which develops transversally and longitudinally the Romanian mountain countryside.

R E F E R E N C E S

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