DIFFERENTIATION OF THE REGIONS OF THE CENTRAL FEDERAL DISTRICT OF THE RUSSIAN FEDERATION ACCORDING TO THE LEVEL OF COMPETITIVE ADVANTAGES

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Abstract

Purpose: The article reveals the methodology of competitive positioning of the regions, based on the clustering of the initial key competitive indicators, including those reflecting the regional resource potential.

Methodology: The usage of the proposed methodological approach provides model systematization of data based on selected indicators of competitiveness, reflecting the effectiveness of socio-economic processes in the development of regional space and indicators of resource provision in the region, determining the development of competitive advantages.

Result: The most important condition for ensuring the sustainability of socio-economic systems is competitiveness. The processes of globalization have increased attention not only to the cross-country component of competitiveness but also to the formation, evaluation, and development of the competitive advantages of individual regions. Due to the fact that it is the complex of various competitive advantages of a region that predetermines its competitive position among other regions and provides attractiveness in the context of the main target groups whose inflow the region needs for further development, it becomes very important to compare competitive advantages based on their quantitative and qualitative measurement.

Applications: This research can be used for universities, teachers, and students.

Novelty/Originality: In this research, the model of Differentiation of the Regions of the Central Federal District of the Russian Federation According to the Level of Competitive Advantages is presented in a comprehensive and complete manner.

Keywords: *Competitiveness, Region, Resource Potential, Competitive Strengths, Integrated Assessment, Regional Development.*

JEL Classification: C82, O11, R11, R58, F63.

INTRODUCTION

Assessment of the competitiveness of regional systems, as the most important characteristic of their integrated development, is especially important for regional authorities whose activities are aimed at active and regular impact in order to maintain and enhance the competitive advantages of the region. Evaluation of the competitiveness of a region should serve as the basis for determining the reserves for using strong points and neutralizing weaknesses (Vlasova, 2017, 2018, Tretyakova, 2015, 2016, Chajnikova, 2008, Courlet, 2013).

A study of the theoretical aspects of the assessment of competitiveness allows us to conclude that the present time, researchers have not proposed the most optimal methodological approach to the assessment of competitiveness neither in relation to individual business entities, nor to the territorial socio-economic systems of the macro- and meso-level, which creates certain difficulties for regional management structures in developing rational management decisions focused on increasing of the competitive power.

Researchers have developed various methodological approaches to the integral assessment of the competitiveness of regions, among which the most frequent assessments are based on indicators of the official statistics, organized ranks and expert analysis (Fridman, et al. 2014, Shorokhov, 2007, Grosman, 2000, Mayo, 2012, Porter, 2006.).

It should be noted that most of the proposed methods differ either by the inclusion of a sufficiently large number of indicators to assess the competitive advantages of the region or the complexity of the mathematical instrumentation which is used for assessment.

The developed and proposed methodological approaches for the regions can be used mostly to assess their current condition in the country and not for the management of competitiveness. Gadelshina, L. A., & Vakhitova, T. M. (2015).

METHODS

The authors propose a method of competitive positioning of the regions, based on the clustering of the initial key competitive parameters, including those reflecting the regional resource potential. The main advantage of the proposed approach is the possibility of using a set of indicators that do not require the assurance of comparability of the units of their measurement under the conditions of a small sample.

It should be noted that neither the economic science nor the real economic practice offered a complete set of indicators for assessing the competitiveness of regions.

There must be mentioned the author's set of indicators reflecting the competitive advantages of the regions: life expectancy at birth, age (X_1); rate of natural increase per 1000 of the population (X_2); net migration rate per 10000 of the population (X_3); the correlation of the average per capita money income of the population with the subsistence minimum, % (X_4); the proportion of people with cash incomes below the subsistence minimum, % (X_5); occupation level, % (X_6); density of public roads with hard surface, km of roads per 1,000 km^2 of territory (X_7); depreciation of fixed assets at the end of the year, % (X_8); investment amount in the fixed capital per capita, rub. (X_9); equity contribution in fixed assets to GRP, % (X_{10}); share of domestic research and development costs in GRP, % (X_{11}); level of innovation activity of organizations, %(X_{12}); share of loss-making organizations, % (X_{13}); per capita rate of the gross regional product per capita, rub. (X_{14}). In our opinion, the selected indicators are the most effective in the determination of the main socio-economic processes in the development of regional space and also in the reflection of its resource potential. Moscow. Parakhina, V. N., Boris, O. A., & Midler, E. A. (2015)

The proposed methodological approach was tested for comparative analysis of the competitiveness of the regions of the Central Federal District of the Russian Federation in dynamics according to data for 2010 and 2016. The analytical base of the research was made up of official statistics. The cluster analysis was carried out on the basis of the "Statistic 8.0" package, all indicators previously included to assess competitiveness were subjected to the standardization procedure. Tolstel, M., Yalmaev, R., & Pridachuk, M. (2018, May).

RESULTS AND ITS DISCUSSION

The study used both hierarchical and non-hierarchical clustering algorithms. As a result of applying the first algorithm, dendrograms were obtained, visually reflecting the distribution of subjects over the obtained clusters and dependency graphs between the number of clusters and the value of the merge coefficient. On the basis of its studying it was concluded that according to the data of 2010 and the data of 2016, it is advisable to highlight 5 clusters. The use of the second of these algorithms allowed us to distribute the subjects into 5 clusters in accordance with the requirement of their maximum difference. Test of the significance of differences between groups and convergence within groups by means of the analysis of variance showed that the selected set of indicators optimally discriminates the resulting clusters. Gadelshina, L. A., & Vakhitova, T. M. (2015).

Thus, in the course of carrying out a multidimensional complex assessment, 5 groups of subjects of the Central Federal District were identified through clustering of initial data:

The group 1: subjects with a high level of competitiveness;

The group 2: subjects with a level of competitiveness above average; Zubarevich, N. (2013).

The group 3: subjects with an average level of competitiveness;

The group 4: subjects with below-average competitiveness;

The group 5: subjects with a low level of competitiveness. Tolstel, M., Yalmaev, R., & Pridachuk, M. (2018, May

The composition of the formed groups of subjects of the Central Federal District in terms of competitiveness and the direction of their movement in 2016 compared with 2010 is presented in Tab. 1.

Then we are going to analyze the indicators on the final results of clustering to characterize the formed groups and establish causal relationships between indicators of the effectiveness of socio-economic processes in the development of regional space and indicators of resource provision in the region, determining the development of competitive advantages. Let us dwell on the description of the formed clusters according to the data of 2016 (Tab. 2). Moscow. Parakhina, V. N., Boris, O. A., & Midler, E. A. (2015)

Table 1: Changes in the groups of subjects of the Central Federal District in terms of their competitiveness

Groups of subjects of the Central Federal District	2010	2016
Group 1: subjects with a high level of competitiveness	Moscow	Moscow
Group 2: subjects with a level of competitiveness above average	The Belgorod Region The Kaluga Region The Moscow Region	The Kaluga Region The Moscow Region

Group 3: subjects with an average level of competitiveness	The Lipetsk Region The Tambov Region The Tula Region The Yaroslavl Region	The Lipetsk Region The Belgorod Region The Voronezh Region
Group 4: subjects with below-average competitiveness	The Bryansk Region The Voronezh Region The Kursk Region The Ryazan Region The Smolensk Region The Tver Region	The Kursk Region The Ryazan Region The Tambov Region The Tula Region The Yaroslavl Region
Group 5: subjects with a low level of competitiveness	The Vladimir Region The Ivanovo Region The Kostroma Region The Oryol Region	The Bryansk Region The Vladimir Region The Ivanovo Region The Kostroma Region The Oryol Region The Smolensk Region The Tver Region

Source: compiled and calculated by authors based on data of Rosstat (In Russian)

In the first group with a high level of competitiveness was included one subject of the Central Federal District – Moscow, which is characterized by the most optimal values for all selected indicators reflecting individual competitive advantages.

So, with the maximum values of life expectancy (77.08 years) and gross regional product per capita (1103453.3 rub.), the maximum value of the natural population growth rate and migration increase are observed in Moscow. Parakhina, V. N., Boris, O. A., & Midler, E. A. (2015

Table 2: The results of the clustering of the regions of the Central Federal District in terms of competitiveness (according to 2016)

Regions	Indicators reflecting the competitive advantages of the regions													
	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}
Group 1: subjects with a high level of competitiveness														
Moscow	77.08	1.8	24	469.4	8.9	75.1	2472	36.9	137841	12.0	2.3	16.1	29.5	1103453.3
Group 2: subjects with a level of competitiveness above average														
The Kaluga Region	71.18	-2.9	77	338.7	10.6	67.8	321	39.7	79118	22.6	2.49	8.5	31.4	331468.3
The Moscow Region	72.50	0.1	141	415.4	8.2	69.7	729	41.9	86106	17.4	3.01	8.5	25.4	441778.2
Group 3: subjects with an average level of competitiveness														
The Belgorod Region	72.87	-2.8	46	408.2	8.2	67.3	729	48.2	92686	19.7	0.24	14.1	27.3	443086.2
The Lipetsk Region	71.62	-3.9	40	386.5	9.0	65.9	528	55.7	110721	27.2	0.07	19.2	25.6	395476.5
The Voronezh Region	72.08	-4.5	54	407.4	9.4	63.0	338	46.3	116087	32.2	0.76	11.6	25.4	352926.0
Group 4: subjects with the competitiveness which is below average														
The Kursk Region	70.94	-5.0	76	352.7	10.3	64.9	362	51.5	79952	25.7	1.36	6.5	27.5	299723.7
The Ryazan Region	71.87	-4.7	17	336.4	12.4	60.2	269	57.1	45258	15.1	0.60	12.3	28.0	279032.6
The Tambov Region	72.11	-6.3	-33	371.7	10.4	61.8	286	60.4	102198	33.7	0.54	10.6	25.1	326479.9
The Tula Region	70.56	-6.8	21	341.2	10.2	66.6	394	46.0	74894	21.7	1.08	10.9	31.4	315660.1
The Yaroslavl Region	71.21	-3.6	28	330.1	10.6	66.3	269	53.0	64433	18.8	1.86	7.1	32.8	339699.5

Group 5: subjects with a low level of competitiveness														
The Region	Bryansk	70.92	-4.7	4	319.0	13.6	64.3	312	43.7	55856	23.9	0.25	6.8	35.9	219575.8
The Region	Vladimir	70.28	-5.3	-2	286.7	14.6	65.7	340	47.7	56306	18.0	1.15	10.4	30.3	255398.6
The Region	Ivanovo	70.77	-5.2	-13	279.0	14.9	64.8	335	47.2	22032	13.0	0.36	3.2	40.5	165496.3
The Region	Kostroma	70.87	-3.6	-15	296.2	13.1	63.6	136	48.6	40741	16.4	0.09	8.6	31.8	241539.0
The Oryol Region		70.73	-5.5	-10	292.9	14.0	62.2	368	50.7	63218	20.4	0.30	7.4	30.0	269862.2
The Region	Smolensk	69.98	-5.9	2	271.4	17.5	65.6	308	52.4	62661	22.4	0.54	6.9	32.5	267334.9
The Tver Region		69.24	-6.6	4	277.9	12.9	65.8	249	47.7	68914	26.0	1.33	7.9	36.7	260478.4

Source: compiled and calculated by authors based on data of Rosstat (In Russian)

The high standard of living in the region is indicated by the ratio of the average per capita money income of the population to the subsistence minimum and the relatively low value of the proportion of the population with money income below the subsistence minimum. A distinctive feature of the region is a high investment and innovation potential, as it was evidenced by the maximum aggregate values of the share of investments in fixed capital and the share of domestic research and development costs to the gross regional product. Gadelshina, L. A., & Vakhitova, T. M. (2015).

The second group is represented by subjects with a level of competitiveness above average: The Kaluga Region and The Moscow Region are included in its structure. For most indicators, the subjects of this group cumulatively exceed the average indicators, but with a high value of the share of domestic expenditures on research and development to the gross regional product in these subjects, the level of innovative activity of organizations is relatively low. Zubarevich, N. (2013).

The group of subjects with an average level of competitiveness is represented by the Belgorod, Lipetsk and Voronezh Regions. These regions are characterized by the average values of the majority of indicators. The low share of domestic expenditures on research and development in the gross regional product is the characteristic feature of the regions.

The Kursk Region, The Ryazan Region, the Tambov Region, the Tula Region, and the Yaroslavl Region are in the group of regions with a level of competitiveness below the average. The Bryansk Region, the Vladimir Region, the Rvanovo region, the Kostroma Region, the Oryol Region, the Smolensk Region, and the Tver Region were classified as subjects with a low level of competitiveness.

In the regions of these two groups, the lower availability of structural elements of the resource potential is combined with lower values of macroeconomic and macrosocial indicators of the development of the region, which is evidence of their low level of competitiveness. Zubarevich, N. (2013).

The results of clustering do not provide an opportunity to compile a positioned ranking of regions in terms of their competitiveness, but they do allow them to identify typical groups of regions with similar characteristics of competitive advantages. In addition, the final analytical data allows to compare not only the groups of regions themselves formed during the clustering, but also to identify the advantages and disadvantages of individual competitive strengths within the group as well as causal relationships between indicators of the effectiveness of socio-economic processes in the development of regional space and indicators of the region's resource support, determining the development of competitive advantages. Zubarevich, N. (2013).

FINDINGS

The proposed approach allows identifying typical groups of regions with similar characteristics of competitive advantages and on the basis of an integrated assessment obtaining objective data confirming the possibility of a transition to a higher-quality model of the formation of regional competitiveness based on the resource potential by highlighting the advantages and disadvantages of individual competitive strengths.

This circumstance determines the possibility of using the proposed methodological approach for practical purposes to assess the level of competitiveness of regions and substantiate management decisions on the increase of the level of competitiveness on the ground of the development and realization of the resource potential.

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