

Methodology of Assessment and Analysis of Regional Competitiveness Based on the Evolutionary Theory

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Abstract— The article deals with issues related to the analysis and assessment of factors and the level of regional competitiveness. Approaches are offered for the development of the existing methodical apparatus in this field. The approach to analysis and assessment proposed by the authors is aimed at researching the regional socio-economic system as a dynamically-changing self-developing organism. The provisions on the assessment of elements of the economic system are formulated on the basis of grouping them according to the principle: regress-depression-progress. The proposed methodology is based on the principles of evolutionary economic theory and tested over the analysis of the construction materials industry in the Belgorod region.

Keywords— regional socio-economic system, regional competitiveness, evolutionary theory, development indicators.

1. INTRODUCTION

The socio-economic situation in the regions of the Russian Federation raises serious concerns and threatens to default, even despite the government's decision to write-off apart of the debts to the subjects. When running at the me so-level, a lot of contradictory questions arise that do not allow to fully use all the existing potential of territorial systems in order to reach the necessary rates of economic growth and progressiveness of their development, to ensure their competitiveness in the struggle for markets, the flow of investment, resources, including intellectual, for a top-rated position among other subjects [5, 6, 7, 11]. Solving this task is of a strategic nature, that is why a number of Russian [10; 12; 19] and foreign scientists pay special attention to the consideration, investigation and regulation of these issues, since these factors obviously have an impact on the welfare of the whole country. Many problems of overcoming depression can and should be solved at the level of the region and its enterprises through diversification, conversion, modernization of production, stimulation of small business development, improvement of the local investment climate, searching for new markets, etc. Finally, a certain part of the regions that fully meet the symptoms of the depressive ones can get a state status of the problem regions and become the objects for a targeted state support. Given these circumstances, we believe

that the topic of this article is important for consideration, both as in the theoretical format and as for the practical activities of a region.

2. PROBLEM STATEMENT

It is known that management supposes the supervision and guidance of the course of any significant and manageable processes. It necessarily includes an assessment of the initial state, and the effectiveness of future decisions largely depends on the quality of this assessment. This applies fully to the management of the regional system and its competitiveness (RC). According to researchers (Minakir P.A., Demjanenko A.N., Staber U.), the spatial economic system, which regional one is, should be studied as a time-varying object forming and acquiring a set of specific qualities and features. These are qualities such as productivity, adaptability, diversity, robustness, etc. In other words, the economic system can be assessed in terms of its ability to survive and to have a positive development, that is, evolution [14]. Taking this into account, the authors' approach to the management of the RC is based on the principles of the evolutionary theory in application to the analysis and assessment of regional systems as the complex self-developing organisms.

3. METHODOLOGY

Evolutionary theory or heterodox direction in economic theory is based on the introduction of methodological approaches of modern evolutionary biology into economic research and consideration of the process of economic changes in terms of "natural selection" among the population of subjects. In the 1980s the books of R. Nelson and S. Winter, "An Evolutionary Theory of Economic Change" [15], whose main ideas still are the basis of theoretical constructions of this direction, are published. In the focus of evolutionary theory are the processes of irreversible dynamic changes in the economic system (Thorsten Weblein, [20]) based on the application of biological concepts of heredity and selection. Thus, evolutionary theory imparts new aspects and perspectives to the traditional classical views of a firm or a larger economic system. From the point of view of the

supporters of evolutionism and its methodology, the principles and approaches to the analysis of economic systems, their state, behavior, as well as their functions and purposes obtain specific characteristics.

The required condition for the evolutionary approach: the object is considered only in a long-term period, the modeling of its economic "life" has a pronounced predictive character [8]. Authors' method for analysis and assessment of regional competitiveness, taking into account evolutionary economic theory, which does not abolish but complement existing ones, consists in the following provisions and algorithm.

1. The regional socio-economic system (RSES) is considered as a set of developing – evolutionary (development with a sign "+") and involutory (development with a sign "-") elements.

2. The objective of a competing regional system is to support evolutionary elements, reducing the proportion of involutory ones by means of sanation or taking the necessary measures. For this, it is required to identify both the first and the second ones according to certain criteria.

3. Elements of the RSES – the objects for analysis – may be micro- and me so units: individual corporations or structural branches of a particular RSES.

4. The assessment involves the use of R/D/P indicators, which reflect the aggregate trend of the development of the element: R is for a regressing element; D is for a depressive element; P is for a progressive element.

5. In the case of selecting as an object for analysis of an regional complex, the assessment is carried out on the group of its enterprises – by the averaged indicators.

6. The assessment is suggested to be based on the additive approach, aggregating the private R/D/P indicators into enlarged ones taking into account their significance. It is envisaged to use the scales to ensure the one-dimensionality of the data.

7. The element is assessed in dynamics (for a period of not less than 5 years) to get at the output a trend reflecting the type of its behavior over time (R, D or P).

8. The desired intermediate objective is the definition of R/D/P in the element.

9. The desired ultimate objective is the definition of the R/D/P ratio in the regional structure, which is the condition and a "mirror" of the trend in regional sustainability and competitiveness.

10. The received R/D/P values serve as a basis for making strategic decisions related to certain elements.

In certain, specifically stipulated, cases expert assessment is allowed. The composition of R/D/P indicators, according to the approach proposed, includes four groups, which in turn consist of private R/D/P indicators. So the Economic Trend (ET) is based on the consideration of market parameters, namely, the volume of sales of products and services; the financial component; estimation of production and technological level; innovativeness of development. The Managerial Trend (MT) reflects the level of standardization of business processes, the level of external and internal communications and business partnership, striving for the

best. The Personnel Trend (PT) reflects changes in qualifications, motivation, dynamics of the average monthly salary, average age of employees. The Social Responsibility Trend (ST) reflects investing in improvement of working and living conditions, in health improvement; number of workplaces; expenses for social support of the society, including charity.

This is shown in the table 1.

Table 1. Composition of enlarged and private R / D / P indicators

The aggregate R/D/P indicators	Private R/D/P indicators			
The Economic Trend (ET)	The volume of sales per 1 worker, thousand rubles	Level of capitalization, %	Coefficient of renewal of fixed assets, %	Innovative activity per 1 worker, thousand rubles
The Managerial Trend (MT)	Level of organizational structure	Level of standardization of business processes, type of standard	Motivation for the best, expert evaluation	Integration (clusters, scientific and industrial associations and other forms of cooperation)
The Personnel Trend (PT)	Change in qualifications of employees	Staff turnover, %	Average monthly salary, rub.	Average age of workers, years
The Social Responsibility Trend (ST)	Social investments per 1 worker (internal), thousand rubles	The amount of taxes paid to the budget, million rubles	Change in the number of workplaces	Social investments per 1 worker (external), thousand rubles

Indicators can vary or expand to suit the specific situation, priorities and objectives of the region. Based on the actual estimation of indicators over a period of 5 years or more, the rates of their growth are calculated, which ensures the comparability of the dynamics of their changes. Thus, the calculation performed onto JSC "Belgorod Plant of Reinforced Concrete Structures 1" allows to build an economic, managerial, personnel and social trends (Figures 1-4).

Graphical analysis allows to conclude that the economic parameters of the enterprise generally correspond to the average development trend, the managerial and personnel parameters outstrip the average trend, while the social ones lag behind it.

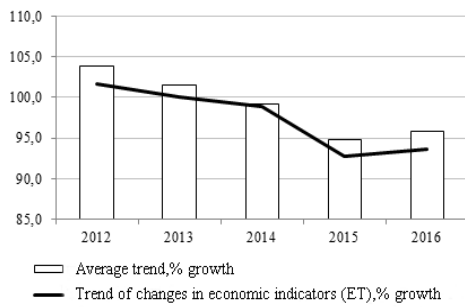


Fig. 1. Dynamics of indicators of the Economic Trend of the enterprise

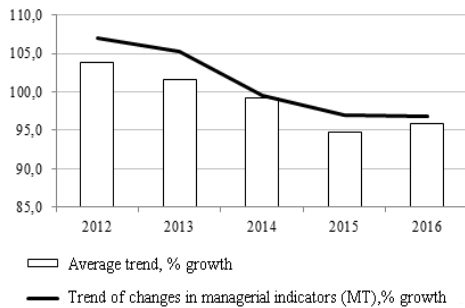


Fig. 2. Dynamics of indicators of the Managerial Trend of the enterprise

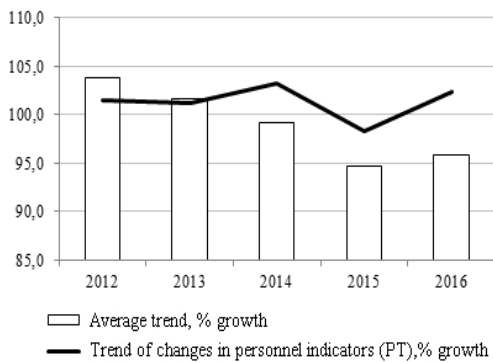


Fig. 3. Dynamics of indicators of the Personnel Trend of the enterprise

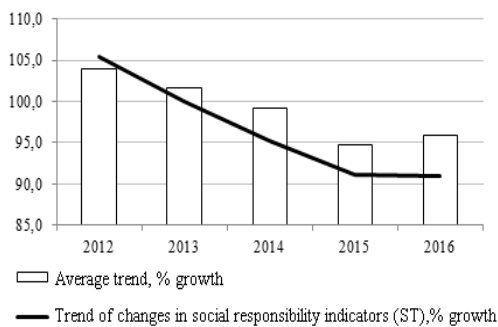


Fig. 4. Dynamics of indicators of the Social Trend of the enterprise

Static averaging (according to the several parameters of the group and the intergroup one in the framework of one year) demonstrates a decline in development in the considered example. Meanwhile, not all indicators have the same trend of change. The application of the R/D/P method allows to identify the most problematic areas of activity and to give an

assessment of the performance of the enterprise in total. The proposed scale is presented in Table 3.

Table 2. The scale for estimating the R/D/P ratio

The parameters	Estimate R	Estimate D	Estimate P
The values of growth rates of indicators, %	< 98	98-102	>102
Corresponding score	0	1	2

The estimation example for JSC “Belgorod Plant of Reinforced Concrete Structures In accordance with the proposed method, the enterprise has an RDDR rating. When the R/D/P ratios are converted to points, the enterprise scores 0.85 points, which indicates its proximity to a depressive state rather than a regressive one. To assess the final R/D/P ratio for the region in total, all its significant sectors and their constituent entities should be examined by this method. Our analysis of three construction materials industry enterprises, three mining and metallurgical enterprises, three food industry enterprises, and three machine building enterprises allows us to conclude that the Belgorod region has a DPDR rating. The economy, personnel and social responsibility should be emphasized as the key directions to develop.

* The work is realized in the framework of the Program of flagship university development on the base of the Belgorod State Technological University named after V.G. Shoukhov

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