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EFFICIENCY OF DEVELOPMENT OF THE REGIONAL HIGHER SCHOOL

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Abstract: The article reveals methodological approaches to assessing the effectiveness of the regional system of higher education. Based on the methods of rating of national systems of higher education, some higher education institutions developed an algorithm that allows to determine the effectiveness of its development at the meso level, on the basis of the construction of individual sub-indexes, characterizing the relevant functional directions of development of higher education in the region. The implemented approach forms the basis for not only a comparative analysis of the development of regional higher education of the Russian Federation, but also can serve as the basis for the development of state regional policy in the field of higher education. Approbation of the proposed methods is implemented on the basis of the regions of the Volga Federal district. The results of the research allowed to identify, based on the proposed tools, the regions focused on leadership in higher education and science and the regions that need to stimulate the development of the higher school system in the identified areas. An important aspect of the work is a multicomponent dynamic analysis of the development of the regional system of higher education for 2018. The implementation of this stage of the study allowed to determine the main trends of the phenomena and processes studied in the work.

Keywords: regional higher school, Universities, efficiency, state regulation, interregional analysis, Volga Federal district.

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1. Introduction

In the context of globalization, the growth of the competitive environment at the interregional, national levels in the field of innovation increases the role of higher education as the main source of human resources and the formation of the innovation environment. The low level of development of higher education deprives the region of a certain independence, placing it in additional dependence on other systems - regional, national, economic, etc. In this regard, the study of trends in the development of higher education at the interregional level is an extremely urgent task, the solution of which will provide a process of monitoring and forecasting the prospects for the development of socio-economic systems in the medium and long term.

In accordance with the above, it can be argued that within a wide range of regional economic systems there is a transformation of higher education in the dominant factor of economic development, which is reflected in the formation of the innovative mechanisms, specific for a particular region of the country.

The national regional system of higher education is a set of structures and mechanisms that ensure the acquisition, accumulation of scientific and technical knowledge in the region and the conditions for their use for scientific, technical and socio-economic progress. Currently, there are two groups that meet the two main types of models of development of regional higher education:

1) regions, focused on leadership in higher education and science, the implementation of large-scale targeted projects covering all stages of the scientific, production and educational cycle, as a rule, with a significant share of scientific and innovative potential in the defense sector (for example, the Republic of Tatarstan, Samara region, Moscow);

2) regions, focused mainly on the development of the educational environment with a weak level of development of the research component of higher education.

Differences in the regional systems of higher education determine the unequal role played by the state regulation of innovation processes. There are a number of features that form

the specifics of the model of state regulation of higher education - a combination of direct and indirect methods, the inclusion of innovative programs in the overall economic strategy or the development of special projects, the formation of specialized state structures, the degree of independence of economic entities in matters of innovative development, mechanisms of interaction between Federal and local authorities, etc.

It is important to note that the mechanisms of state regulation should strictly correspond to the problems and opportunities that arise and are generated within the framework of the functioning of regional higher education systems. In this regard, it is important to understand and unambiguously identify the key parameters and effectiveness of the development of regional higher education. Despite the wide range of scientific works devoted to the problem, there is still no unity in the field of formal evaluation of the effectiveness of the development of regional systems of higher education in the scientific space. At the moment, we can distinguish a number of methodological approaches, aimed at a comprehensive assessment of the effectiveness of the development of higher education [1]. It should be noted that all of them are aimed more at assessing the rating of a particular University through the prism of a very wide range of factors, that characterize such functional areas of University development as resources, results of activities (Outputs), environment and the ability to interact (Connectivity). These international University rankings include: Quacquarelli Symonds Rankings (QS) [1], Academic ranking of world universities (ARWU) [2], Times Higher Education World University Rankings (THE) [3]. There is no doubt that their list is not exhaustive. There are at least 10 most popular and in-demand international rankings of competitiveness of Universities [4, 5, 6].

At the same time, along with the assessment of the rating of a particular higher education institution, a very important task is the development of methodological tools that form the basis for a systematic analysis of the development of higher education at the regional/national level as a whole. It allows to understand the General trajectories of development of the region in the considered sphere and to supply

understanding of prospects of its long-term development in the conditions of intensively developing processes of growth of the interregional competitive environment. However, in this context, the study of the problem of studying the effectiveness of the development of higher education, it is made only a few attempts to develop methodological tools. These include the work of the German consulting Agency Centrum fur Hochschulentwicklung (CHE) [6,14], ratings 1) Lisbon Council Ranking, (2) QS Higher Education System Strength Ranking, (3) universities 21 Ranking of National Higher Education System, (4) Affordability and Accessibility Ranking [7, 8,11,12,13]. Meanwhile, they are all focused on cross-country analysis. It should be noted that their orientation is primarily aimed at the identification of indicators and their comparative analysis both vertically (in dynamics over the years) and horizontally (interregional comparative analysis).

2. Methods

Unfortunately, it should be noted that the situation is exacerbated by a small number of works, if not their absence, revealing the features of the development of higher education at the regional level. There is still no consensus on the definition of both the concept of "effectiveness of regional higher education" and the indicators that determine its level. An important methodological problem is also the fact that the "scientific field", forming the basis for an indicative study of the parameters and trends in the development of higher education at the meso level, is poorly developed and structured. In this regard, we consider it expedient and relevant to carry out scientific research that contributes to the partial filling of these "gaps". To a large extent, this study also actualizes the fact that it is aimed at a comparative analysis of the higher school of Russia in the interregional context. Such works, unfortunately, are not often found in the scientific space of Russian research. Meanwhile, their importance is difficult to underestimate against the background of the above-mentioned processes of globalization and innovation of economic systems, the growth of inter-country and inter-regional competition.

In our opinion, it is possible to solve the problem of interregional analysis of the effectiveness of the

development of higher education through the prism of indicative, integrated assessment of individual functional components that characterize the effectiveness of the development of higher school of the territory. At the same time, the indicators used by international rankings in the evaluation of a particular University can serve as a basis for the indicators used in the calculations.

The above system of indicators is formed on the basis of the current world practice used in assessing the effectiveness of the functioning of higher education institutions, which is reflected in the various ratings. The most popular and popular of them include QS, THE, ARWU, Webometrics, etc.

The peculiarity of this study is that the aggregated values of indicators for each subject of the Russian Federation are determined on the basis of the sum of their values for each University in the region. This step is due to the fact that in some cases the statistical system does not have the necessary data in the regional context.

The most important methodological aspect of the study is the process of aggregation of indicators into general functional groups, in a concentrated form, characterizing the effectiveness of the individual components of the regional higher school. Guided by the practice of international ratings of Universities, we have included the following groups (sub-indexes), determined on the basis of the corresponding base of indicators (table 1).

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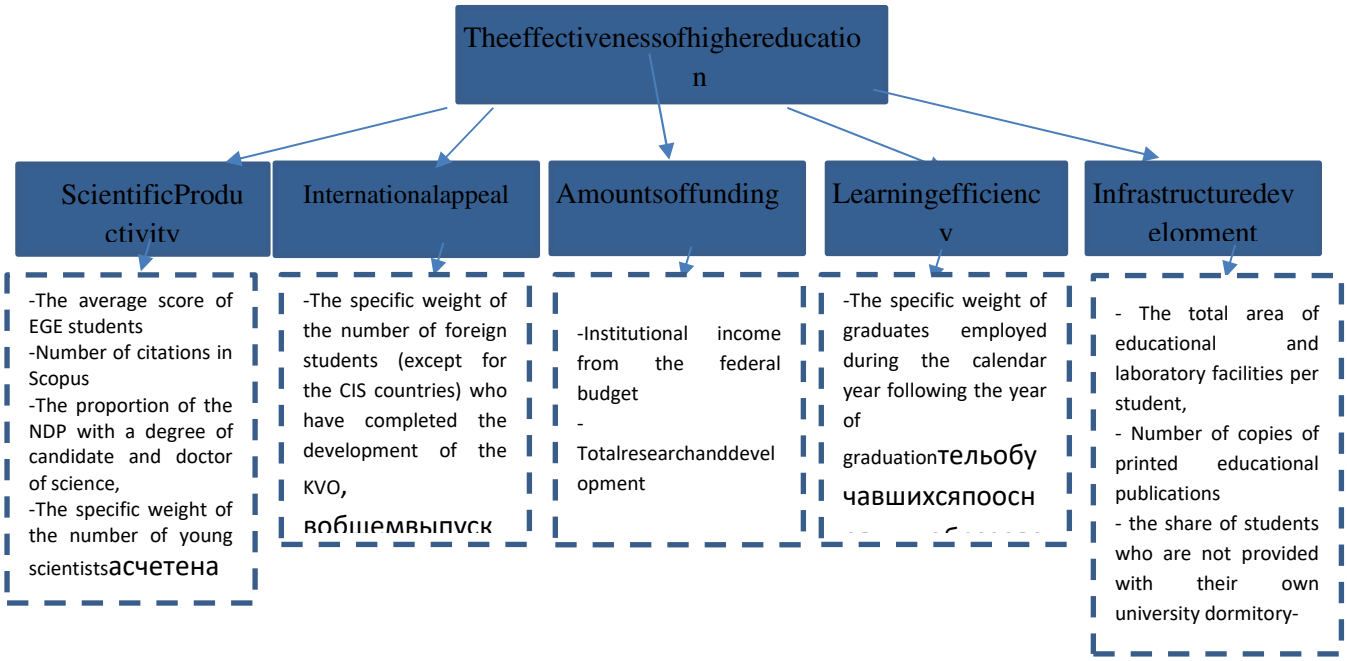

Picture 1 – key sub-indexes that form the potential of regional high schools

The sum of the normalized values of these sub-indexes determines the summary (integral) index of efficiency of development of higher education in the region.

In a concentrated form, the process of aggregation and indicative analysis of the effectiveness of the development of regional higher education is presented below and includes 5 main stages of the study.

Stage 1. Data selection. It is carried out on the basis of monitoring the effectiveness of educational institutions of higher education. [http://indicators.miccedu.ru/monitoring/]

Stage 2. Time series analysis.

Stage 3. Standardization of indicators.

For comparability of data, standardization of baseline indicators (normalization) was carried out.

For indicators-stimulants, i.e. indicators, the growth of the values of which leads to the improvement of the state of the region in the indicated direction, the following formula is applied:

xi=(xi-x_min)/(x_max-x_min), where

xi - the current value of the time series,

x_max - the maximum value of a number,

x_min - minimum value.

For indicators of destimulation, whose growth, on the contrary, leads to deterioration of the general condition were calculated according to the formula:

xi=(x_max-xi)/(x_max-x_min), where

xi - the current value of the time series,

x_max - the maximum value of a number,

x_min - minimum value.

In this study, the indicator "the Proportion of students who are not provided with their own hostel of the University, in the number of students in need of a hostel"is a disincentive.

Stage 4. The calculation of sub-indices,

The total value of each sub-index is calculated by the following formula:

I_j=(∑ ▒S_ij) /n,

where I_j -is the sub-index value,

∑▒S_ij -is the sum of the values of these

n -is the number of sub-factors.

Stage 5. Calculation of the final value of the index.

The index is calculated as the weighted sum of the five underlying sub-indexes .

The final evaluation was carried out using the integral criterion:

I he=Isp+Iia+Ivf+Iinfrast+Iet where

I he - total value index "the Effectiveness of regional high schools»,

I sp - value sub-index "Scientific productivity»,

I ia - value sub-index "international appeal»,

I vf - value sub-index "funding»,

I infrast - value sub-index "of infrastructure»,

I et - value sub-index "Efficiency of training".

3. Results and discussion

Guided by the above methodological approaches, on the

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example of the regions of the Volga Federal district of the Russian Federation, the calculated estimates that determine the effectiveness of the development of higher education are presented, in the context of individual indicators for 2018. (table 2, picture 2).

Table 2 – Values of sub-indexes that form the overall assessment of the value of the integral index "Efficiency of regional higher education»

	Scientific Productivity	International appeal	Learning efficiency	Infrastructure	Finance	Efficiency index
Nizhny Novgorod Region	0,68	1,00	0,83	0,35	0,63	3,49
Saratov region	0,74	0,22	0,60	0,50	0,64	2,71
Udmurtia	0,27	0,13	0,90	0,94	0,41	2,65
Republic of Tatarstan	0,49	0,18	0,37	0,69	0,79	2,53
The Republic of Mordovia	0,71	0,09	0,50	0,36	0,49	2,17

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Perm region	0,48	0,15	0,48	0,43	0,58	2,12
Kirov region	0,45	0,16	1,00	0,23	0,23	2,07
Republic of Bashkortostan	0,45	0,15	0,73	0,14	0,55	2,01

Ulyanovsk region 0,45 0,29 0,60 0,16 0,49 1,98

Samara Region 0.32 0.06 0.63 0.43 0.44 1.88

Orenburg region 0,39 0,01 0,74 0,34 0,22 1,70

Penza region 0,50 0,08 0,39 0,48 0,12 1,57

Chuvash Republic 0,32 0,09 0,18 0,59 0,21 1,39

Mari El Republic 0,44 0,00 0,00 0,50 0,40 1,34

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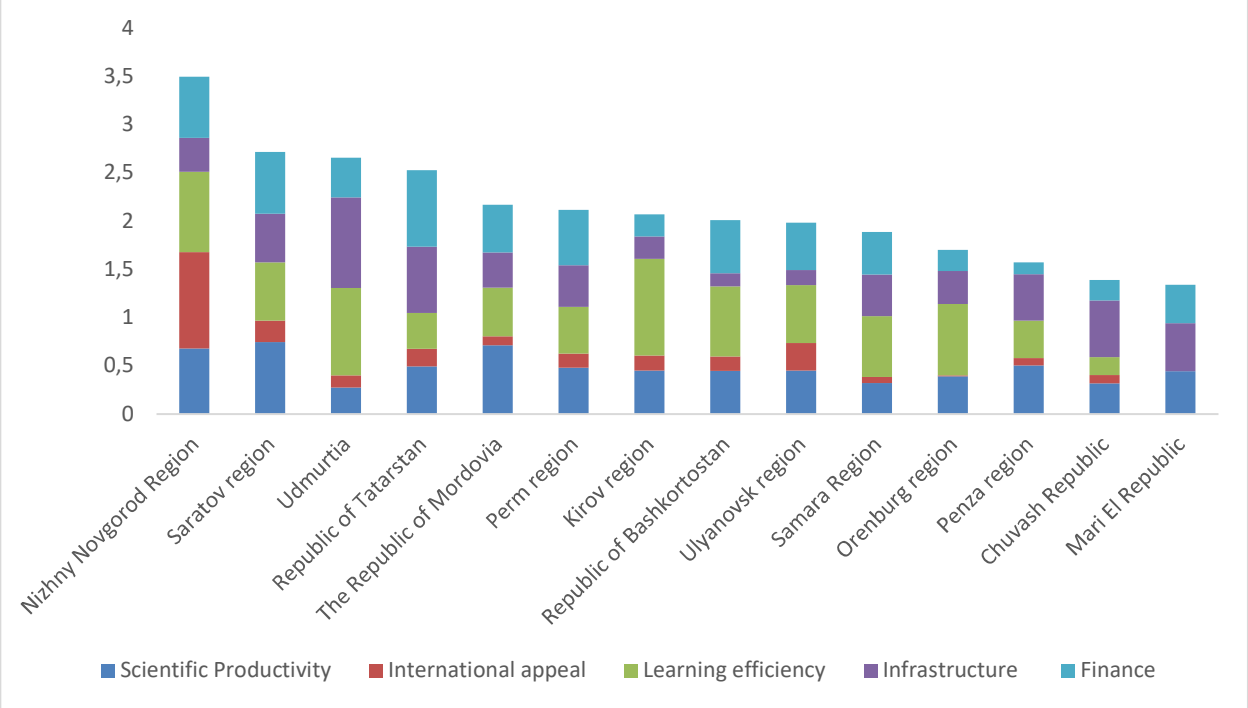

Picture 2 – Integrated assessment of the effectiveness of higher education development in the regions of the Volga Federal district, 2018.

4. Summary

Implemented estimates largely indicate a fairly differentiated nature of the effectiveness of the development of higher education in the framework of the considered set of regions. First, as can be seen in picture 2, the ranking of regions, defined as the sum of sub-index values, can vary by an order of magnitude. So, if for the leader of the VFD for the development of higher education – Nizhny Novgorod region, the aggregated rating value was 3.5 points, for the Republic of Mari El – only 1.33.

Second, the marked differentiation of the development of regional high schools is also recorded in the result of a different kind of effectiveness of development of its individual functional areas. Understanding this process forms the basis for determining the strategic objectives and mechanisms for the development of higher education in the regions.

It is important to note that the interpretation of the results contributes to the understanding of the prospects of

strategic regional development in the context of the prospects of global/interregional competition. Taking into account that higher education in eneral and its individual functional areas form the quality of human capital, the effectiveness of the development of the innovative environment, acting at the present stage of development, as a priority factor in the competitiveness of territories, the fundamental and structural analysis of its effectiveness can largely indicate the long-term prospects of socio-economic development of the region[9, 10]. The developed tools make it possible to very effectively identify weak and strong regional positions in the system of higher education development and to develop on this basis appropriate corrective measures at the state level.

5. Conclusions

In conclusion, it should be noted that the activities of regional government agencies in the framework of research on the use of higher education as a regional resource should be in the formation of the "vector" of scientific activity of the region and ensure the most rapid development of regional higher education in a given direction.

Planning the development of the regional system implies the need for the formation of the trajectory of the transition of the regional system from the "current" system state to the "desired" with the existing restrictions on the regional resources used in the process of this "transition". It is obvious that certain trajectories of "system movement" of both extensive and intensive (innovative) nature will be formed as solutions to this problem. Of course, for any system, an intensive development path is more preferable, which, in turn, is not always possible for the system, since the resource of knowledge that the region has, and the mechanisms for its use are not always sufficient to form such a path of development. The resolution of this problem implies the active participation of regional authorities in the development of the higher education system, as well as more intensive implementation of the results of scientific and educational activities of higher education in the social and economic life of the region.

The weak development of higher education or its complete absence,

in fact, deprive the region of a certain independence, placing it in additional dependence on other systems - regional, national, economic, etc. At the same time, the necessary condition is also the involvement of Federal state bodies, the coordinating role of which should be to form a balanced development of all regional systems of the country.

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