

Innovation-driven growth model of regional systems of human resources

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Abstract

Innovation-driven growth model of regional systems of human resources is considered in the article. The system is based on their classified evaluation taking into account life-cycle phases: crisis, pre-crisis, after crisis, norm. Partial evaluation criteria and potential for development of human resources, according to which there should be developed supporting or restricting measures of state policy in socially-labor sphere, are suggested.

Key words: HUMAN RESOURCES, MODELING, PARTIAL ESTIMATION CRITERIA, RANGING, CLUSTERING, INTEGRAL CRITERION

Human resources as an object of research have all the characteristics of complex economic system, namely: the presence of active elements (people), multi-qualitative (cable) connections (economic, information, social, etc.) between them, multivariance of development and its essential dependence on a condition of environment, dynamism of changes, their cyclic (wave) character, change of steady (equilibrium) and unstable conditions of human resources in time and so forth. Therefore naturally there are such all-system problems of modeling of estimation of human resources [1, 2, 3]:

1. Multidimensionality and as a result of its adequate formalization (measurement) – multicriteriality of aims, multi-attributiveness of states and traces (vectors) of development of human resources.

2. Uncertainty of identification of a state and vector of development of a human resources due to statistical errors during registration and group of primary information, and also multivariance (scenary) of future development.

3. Nonlinearity is connected with effect of synergy

and multiplication of application of human resources both in time (process of use), and in space (mobility process). For example, for Ukraine essential violation of proportionality of human resources both in space (inequality of regions), and in time (cyclic, wave, unsteady developmental character) is the fact.

4. Situationality of application of human resources, which is caused by possibility of their effective use only in certain working conditions according to preparation and qualification.

5. Structuredness (connectivity) – is the presence of hierarchy of distribution of human resources in space (according to areas, regions, districts, cities, etc.) and coherence in time.

6. Elasticity of human resources is connected with the effects of their complementarity and substitutiveness in relation to application of other (material, power, financial) production factors.

7. Response time is the presence of time interval between the moments of application of human resources and results of their use (for example, unsynchronization in time between preparation by

educational institutions and demand of production for experts of corresponding direction and qualification).

These all-system problems of human resources evaluation, first of all, are connected with their system complexity. Therefore there occur a number of modeling tasks, which are necessary to be solved on a complex estimation of a state and development of human resources of the region:

1. Decomposition of an object of evaluation in space and time.

2. Determination of qualitative and quantitative levels of estimation of human resources according to research objectives, that is formation of adequate recommendations of management about development of human resources. Various approaches to determination of qualitative level.

3. Determination of the list of primary estimated indicators of condition and development of human resources (completeness, group, high-quality elimination minor factors, relativity, statistical security) for each level of hierarchy.

4. Formation of private criteria of estimation of a state and development of human resources (standardization, quantitative elimination of minor factors, informative strength, achievement of the maximum independence between criteria due to accounting of pair correlation between them, or use for space modeling of orthogonal functions of criteria (orthogonality is a special case of linear independence).

5. Ranging of human resources according to the condition and potential of development.

6. Clustering of human resources according to the changes of condition and development, that is their relation to one of the classes - norm, pre-crisis, crisis, after crisis.

7. Formation of recommendations for bodies of regional government of appropriate level.

The analysis of approaches to economic diagnostics of regions [4, 5, 6] shows the relevance of use of such system of indicators in complex assessment of human resources, allowing to estimate both their current state, and potential of development, mobility [7, 8]. Thus, it makes sense to differentiate administrative measures depending on a stage of development of the system: norm, pre-crisis state, crisis state, post-crisis state.

The system of indicators of complex assessment of human resources of the region is focused on the corresponding model of ranging and clustering, which has two-level structure of the system of criteria and considers objectively the present uncertainty of the end results on certain conditions. For this purpose at the lower level all the separate criteria of an assess-

ment of human resources need to be divided into two groups - criteria of a condition of human resources and criterion of development potential of human resources. At the second level each of the specified groups of criteria turns into the corresponding integrated criterion of condition and development (mobility potential). In normalized space of two integrated criteria it is possible to carry out clustering of human resources of regions, areas and districts of Ukraine depending on a stage of their development: norm, pre-crisis state, crisis, post-crisis state.

The indicators forming integrated criterion of condition are the criteria of stability of regional human resources system, and connected with its functioning and regulation from the management structure. These are the restrictive indicators reflecting such parameters of the system, the values of which are necessary to be minimized and greater deviation from a minimum complicates normal functioning of the system, breaks its homeostasis. For this group of restrictive indicators their minimum values can be considered as signs of "ideal" near which, the system can function, without changing structure and forms, on the same element base. Optimizing task on an extremum in this case is set as a task on a minimum, and the regulating measures are destined to hold system within the accepted values of these parameters. Degree of approximation to "ideal" defines condition of the system, degree of its stability, homeostasis.

The indicators forming integrated criterion of development are the criteria of system capability, receiving new elements, forms and structures. They reflect such parameters, the values of which are necessary to be increased in order the system could get a new impulse for development. The minimum value of such criteria is possible to be considered as factor of "anti-ideal", from which the system should be remotored to the maximum from the point of view of ensuring of potential for development. These criteria are reasonably to consider as control parameters, which cannot be considered as restrictive ones as in case of regulation, but it is possible to set their value as objective for system development.

The given classification model of development of human resources of regions allows to define belonging of each estimated regions to one of four qualitative classes characterizing extents of development of regional human resources in the general context of cyclic development of economy of the region, namely the following classes: «crisis», «pre-crisis», «after crisis», «norm».

On the basis of obtained estimates of human resources of regions, the development of differentiated

measures of regional policy on the social and labor sphere of certain regions is possible.

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