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Prospects of creation of regional innovation cluster

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Abstract

The article substantiates the need of creation a regional innovation cluster of biotechnology. The article briefly describes the methodology for stratifying focus groups of innovation recipients in a regional cluster, which will be important in developing a sound socio-economic and personnel regional policy, determining the set of measures and actions of the national and local government, management of the enterprises, centers of innovation for innovative development of regions.

Keywords: cluster, region, innovation, focus groups, stratification

Today one of the most promising areas of innovation development of the Republic of Belarus is the introduction cluster models into the practice of management and control, which suggests the widespread in our country this form of integration of science, education and industry, as clusters.

An important area of management tasks within the framework of regional innovation cluster is the development of an appropriate model of development. In this regard, the high scientific and practical relevance of the development tools of structuring and strategic evaluation of the focus group of beneficiaries in the project of innovation cluster - recipients of innovations.

Innovation needs of enterprises-participants of the regional innovation cluster is largely determined by the accumulated problems of their activities. The domain of definition of these problems is in two main dimensions: financial management, and production management. Combining stratification ideas with known locations of project management technology can complement the model of strategic development of enterprises in regional innovation cluster monitoring system that allows to understand how to effectively solve the most acute problems and to reveal the innovative potential of a member of the cluster [1].

There is growing interest in the creation of clusters from the scientific community and public authorities. World experience shows that there are three options for the formation of clusters, with each of them must be part of the university: 1) clusters as a result of cooperation between enterprises; 2) clusters on the basis of innovative structures (technoparks and business incubators); 3) clusters around or technological research universities.

In Brest region Polesky State University is developing as a research center, providing the integration of research, learning and application of research results in practice [2, p.8]. Nowadays Polesky University has sufficient capacity to become a scientific center of regional innovative biotechnology cluster in the Brest region.

Historically developed agricultural specialization of the

regional economy will also affect the specialization of a regional cluster dynamically developing agro-industrial complex of the region provides more than 27% of the national export of food-products. The agrarian specialization of the Brest region is manifested in the structure of industry, in which the largest share is occupied by the food industry (48% of the total volume of industrial production). An important segment in the structure of the region's production is also occupied by machine building and metal working (14%), light industry (4.5%), construction industry (4.4%) and furniture production (5%) [3].

The focus group of the innovative cluster of the Brest region can be represented by more than 300 enterprises of the agro-industrial sector. To assess the problems of each potential cluster participant and develop innovative projects that solve these problems within the innovation cluster, a stratification technique for the subjects of the agro-industrial complex as the focus group of the regional innovation cluster project is needed. The developed methodology will allow to allocate segments within the target group, depending on their problems, innovative capabilities and needs. Stratification will be based on, firstly, assessing and comparing the performance indicators of enterprises of the target group for a number of periods, and secondly, comparing the performance indicators before and after entering the cluster. From the stratification follows groups of problems and packages of innovative solutions for enterprises participating in the regional innovation cluster.

The results of the stratification of focus groups according to the methodology developed by the authors are addressed to: regional authorities for making objective personnel and organizational decisions and assessing the effectiveness of previous measures; a center for innovative developments to focus projects on the needs and problems of individual strata of the focus group; to the enterprises-participants of the innovative cluster for assessing their positions in the region and developing a strategy for raising it.

References

- [1] Ignatenko J V 2016 Stratification of target groups of innovation recipients in an innovation cluster *Economy and Banks* 2 80-6
- [2] Shebeko K K 2015 The concept of creating an innovative scientific and industrial cluster in the Polesky region / K.K.Shebeko, V.N.Shtepa, S.P.Vertai *Economy and Banks* 2 8-14
- [3] *Official site of the Brest Regional Executive Committee* Access mode: <http://www.brest-region.gov.by> Data of access: 20.03.2017.