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RFC: ATI120618V12

Revista Dilemas Contemporáneos: Educación, Política y Valores.
<http://www.dilemascontemporaneoseducacionpoliticayvalores.com/>

Año: VII Número: Edición Especial Artículo no.:128 Período: Noviembre, 2019

TÍTULO: Modelando el desarrollo innovador de los territorios del norte de Rusia.

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RESUMEN: El término "modelo de innovación" es actualmente uno de los más mencionados en relación con la evaluación de las perspectivas de participación de Rusia en la economía mundial, una característica de la dirección de las reformas económicas, la confirmación de la naturaleza y características de la etapa actual del desarrollo socioeconómico. El modelado, como proceso de construcción, permite desarrollar y profundizar la teoría y la metodología del desarrollo innovador de las regiones. El objetivo principal del artículo es considerar el proceso de modelar el desarrollo innovador de los territorios del norte de Rusia. El artículo analiza principales indicadores que caracterizan el estado, el nivel y la definición de las áreas problemáticas en la implementación del desarrollo innovador de los territorios del norte.

PALABRAS CLAVES: desarrollo innovador, territorios del norte, potencial de recursos naturales, infraestructura innovadora, índice de potencial científico y tecnológico.

TITLE: Modeling the innovative development of the Northern Territories of Russia.

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ABSTRACT: The term "innovation model" is currently one of the most mentioned in relation to the evaluation of Russia's participation prospects in the world economy, a characteristic of the direction of economic reforms, confirmation of the nature and characteristics of the current stage of socioeconomic development. Modeling, as a construction process, allows to develop and deepen the theory and methodology of the innovative development of the regions. The main objective of the article is to consider the process of modeling the innovative development of the territories of northern Russia. The article analyzes main indicators that characterize the state, level and definition of problem areas in the implementation of the innovative development of the northern territories.

KEY WORDS: innovative development, northern territories, natural resource potential, innovative infrastructure, index of scientific and technological potential.

INTRODUCTION.

The implementation of the RF Government Decisions in recent years related to the strategy of transferring the Russian economy to an innovative path of development requires certain efforts by federal and regional government bodies to develop, support and coordinate the activities of participants in the innovation process, to ensure positive shifts in the reform of national and regional innovation systems and significant improving their basic parameters and organizing economic management.

The Russian economy has sufficient scientific and production potential and resources to overcome negative trends due to the activation of internal capabilities and competitive advantages. Russia has

serious prerequisites for the successful construction of the Russian innovation economy, which were noted by academician S.Yu. Glazyev a decade ago, and have not lost their relevance today. First of all, this is (1):

- A high level of education of the population and spiritual traditions that orient people towards creative work, social justice and partnership, self-realization of the individual in the interests of society.
- Developed scientific and production potential, the presence of mature production and technological structures in a number of areas of modern and latest technological structures.
- The presence of its own scientific schools and unique advanced technologies in promising areas of science.
- Significant amounts of free production capacity in high technology industry.
- Rich natural resources, providing most of the domestic needs for raw materials and energy, as well as a steady inflow of foreign exchange earnings.
- A huge territory and a capacious domestic market, providing a wide variety of life and needs of the population.
- The historical traditions of a great power and a well-deserved world authority, forcing the world community to reckon with Russian national interests.
- A large amount of unrelated savings, the involvement of which in the economic turnover can double investment activity.
- A powerful intellectual capital, including scientists, teachers, engineering workers, skilled workers.

All of the above will help the Russian economy switch to an innovative development path in the near future.

DEVELOPMENT.

Materials and methods.

The works of foreign and domestic scientific economists on the problems of innovative development and identifying problem zones of the northern territories are the methodological basis of the study, as well as legislative and regulatory acts on state support for innovation clusters, decrees and orders of the Government of the Khanty-Mansiysk Autonomous Okrug - Ugra on creating conditions for development systems of innovative development of the region.

Scientific research is supposed to be carried out using economic methods of comparative and system analysis.

A regional innovation system is defined as a set of actively interacting participants in innovation activity involved in the processes of creating, disseminating and using new knowledge in order to master various kinds of innovations in the region and having a comprehensive socio-economic impact on the region.

The development of innovative systems in the regions is fragmented, in accordance with the vision and capabilities of regional authorities and does not have a common methodological base. When studying the experience of Russian regions, the system is formed under the influence of many factors that are objective for a particular territory, including its size and location, the presence of natural and labor resources, historical development features, established institutions and forms of entrepreneurial activity. In this regard, in different regions there are various models of the regional innovative system. Difficulties in the formation of a regional innovation system are determined by climatic, geographic and infrastructural conditions, and uneven economic development (2).

In identifying the problem areas of innovation policy, an analysis of the main indicators relating to this aspect was carried out on the example of the Autonomous Okrug (3).

The basis of the study is the rating of innovative development of the constituent entities of the Russian Federation, created by the Institute of Statistical Studies and Economics of Knowledge of the Higher School of Economics, in which the following indicators are calculated and analyzed.

Table 1 - Values of the Russian regional innovation index of Khanty-Mansi Autonomous Okrug-Ugra.

2017							RRII rank change, 2015 to 2014	2016	
RRII Group	RRII rank	RII	ISEU Rank	Intp rank	ID rank	ICIP Rank		RRII rank	RRII Group
III	46	0.3143	5	74	60	43	four	fifty	III

The Russian Regional Innovation Index is the final index, which is formed as the arithmetic average of the normalized values of all included in the rating. Based on the value of the integral indicator, the regions are distributed on the basis of cluster analysis into four groups. The higher the group number, the better the innovative development of the subject. For Khanty-Mansi Autonomous Okrug-Yugra, the value of RII in 2015 amounted to 0.3143, which is 0.0082 higher than the value of 2014. Despite the fact that in the general rating the okrug rose to 4 positions and took 46th place, it remained in the middle of group III, which indicates a lag in the innovative development of the autonomous okrug according to one or another criterion (4).

The subindex of socio-economic conditions of innovative activity is an aggregate assessment of their economic, educational and informational potential, demonstrating the basic capabilities for creating, adapting, mastering and implementing innovations. The subindex consists of several blocks: the main macroeconomic indicators, the educational potential of the population and the level of the information society. In 2017, ISEU is 0.508. Among the main macroeconomic indicators, GRP can be distinguished per one employed in the region's economy (thousand rubles), which takes 3rd place in the country. The remaining indicators are below the average for Russia. In

terms of educational potential, the district is among the ten best regions in terms of adult education (from 25 to 64 years) with higher education, the normative value is 0, 589. Due to the fact that there are not enough universities and relatively small, in comparison with other regions, the number of young people, Ugra takes 77th place. Due to the level of development of the information society, the district takes the 2nd place, but is the absolute leader in the proportion of households with access to the Internet, in the total number of households.

Subindex scientific and technical potential of the Autonomous Okrug in 2017 year amounted to 0.218, which is 0,006 less than in the previous year. As a result, the district moved from 73 to 74 places. In general, it should be noted that the level of scientific and technological potential is at a rather low level.

The value of the innovation sub-index is less than the previous one, and amounts to 0.198 in 2015, but among other entities, the district takes 60th place in terms of this indicator. However, in terms of the proportion of organizations that rated the reduction in material and energy costs as the main result of innovation, in the total number of organizations that carried out technological innovations (by industrial production organizations) (%), which amounted to 0.519 in the year 2017, Yugra takes the 4th place in Russia.

Thus, we can conclude about the trend of uneven innovative development of the Khanty-Mansi Autonomous Okrug-Ugra.

The average value of the Russian regional innovation index of the subject of the Russian Federation for the year 2017 and subindexes (methodology for determining the arithmetic mean value):

Table 2. Calculation of the average values of the regional innovation index.

Indicator	Values	Output
RII (Russian Regional Innovation Index)	$(0.5753 \text{ (Republic of Tatarstan)} + 0.1637 \text{ (Jewish Autonomous Region)}) : 2 = 0.37$	Khanty-Mansi Autonomous Okrug-Ugra in 2015 lags behind the average value by 0.0557
Subindex "Socio-economic conditions of innovation"	$(0.7752 \text{ (Moscow)} + 0.1911 \text{ (Jewish Autonomous Region)}) : 2 = 0.48315$	The indicator is above the average and ahead of it by 0.02505
Subindex "Scientific and technical potential"	$(0.5482 \text{ (St. Petersburg)} + 0.1325 \text{ (Republic of Ingushetia)}) : 2 = 0.34035$	Khanty-Mansiysk Autonomous Okrug - Ugra is on the 74th place, and the indicator is below the average value by 0.12255
Subindex "Innovation Activities"	$(0.6773 \text{ (Republic of Mordovia)} + 0.000 \text{ (Chechen Republic)}) : 2 = 0.33865$	The average value of this index exceeds the value in the Khanty-Mansi Autonomous Okrug-Ugra by 0.14065
Subindex "The quality of innovation policy"	$(0.8108 \text{ (Republic of Tatarstan)} + 0.000 \text{ (Nenets Autonomous Okrug)}) : 2 = 0.4054$	The value of the Ugra index lags behind the average by 0.0293

Based on these calculations, we can conclude that of the 4 components of the structure of the RII, the Khanty-Mansi Autonomous Okrug - Ugra exceeds the average value for only one sub-index.

Results.

The creation of a balanced system of innovative development of the regional economy and the creation of an innovative cluster is possible on the basis of state support.

The expected results of the formation and development of the innovation cluster will be:

- The regional system of new high-tech industries with a high level of profitability.
- Developed intellectual resource of the Autonomous Okrug.
- Experimental innovative projects involving significant innovative technologies for other regions of the country.
- Developed fundamental and applied research and development.

As a result of state support for innovative development in the Autonomous Okrug, a regional innovation system will be created that integrates research and development, higher education, engineering business, innovation infrastructure, intellectual property market institutions, mechanisms for stimulating innovation in the interests of developing clusters and Ugra as a whole. Identification of problem areas in the implementation of the innovation policy of the Khanty-Mansi Autonomous Okrug-Ugra and ways to solve them, taking into account the modeling of the regional innovation system.

Table 3 - Identification of problem areas in the implementation of the innovation policy of the Khanty-Mansi Autonomous Okrug-Ugra and ways to solve them.

Problem areas of innovation policy of Khanty-Mansi Autonomous Okrug-Ugra	Solutions
Low coefficient of renewal of fixed assets	The increase in new machinery and equipment creates the conditions for increasing the output of better and more competitive products, which will increase the technical potential of the district
Low number of students studying in higher educational institutions (under the bachelor's, master's and specialty programs); Low graduate degree	Reducing prices for education in higher education institutions by reducing the cost, providing benefits in the form of discounts or other subsidies from the state. Also, in the district it is possible to create higher education institutions, since most of the programs from them are branches of educational institutions in other regions
Inadequate research and development funding	Increased subsidies from the budget of the Khanty-Mansiysk Autonomous Okrug; Partnership with large commercial organizations (PJSC Lukoil, PJSC Gazprom, PJSC SIBUR Holding, etc.)
Lack of creation of production technologies and developments and, as a result, lack of revenues from the export of these technologies	Further training of scientists and researchers of Ugra in the best innovation centers of the country; Synergy as a result of attracting scientists and researchers from other regions of Russia
Lack of specialized (consultative) bodies on innovation policy (support of innovation) under local authorities of the Khanty-Mansi Autonomous Okrug-Yugra	The creation of such bodies as a certification center (certification body), a professional association of innovators, a register of innovators and competitions (awards) for innovators will allow to consolidate innovation activity at the proper level, and will also stimulate researchers to improve product quality.

Discussion.

The regions of the Far North outstand with special climatic conditions and are the regions, which are characterized by common social, economic, legal and other factors. Harsh climatic conditions, large distances require the participation of the state in shaping industrial infrastructure (road traffic networks, power grids etc.) [LL Bogomolova, IV Takmash e va, RK Araslanov, AB Zelinskaya, 2017, USA].

The Khanty-Mansiysk autonomous okrug - Yugra is the sector-specific oil-and-gas producing region with a limited number of basic industries represented in its regional economy and well developed additional and auxiliary industries. In a geopolitically volatile environment and applied sanctions a particular importance is given to regions that are able to promptly reorganize their economies in order to develop the resource potential which is capable to provide the population with own-produced goods and services. Due to recent geopolitical developments, the Khanty-Mansiysk autonomous okrug - Yugra has faced new tasks and objectives that involve maintaining the high standard of human welfare based on balanced sustainable economic growth as well as on import substitution of goods, labor and services [L. Bogomolova, A. Shumeyko, R. Araslanov, A. Buzmakov, 2015 Italy].

Development of small and medium enterprises in the autonomous okrug as well as in Russia is taking more increasing political, social and economic meaning (Lyubov L. Bogomolova, Development of the government support for import substitution in small and medium enterprises of northern regions. Polish Journal of Management Studies // Serially publication of Faculty of Management, Czestochowa University of Technology, volume 1, no.2, 18 p, 2016).

Today, the main parameters of the regional policy implemented on the territories of the Far North of Russia, condition the extracted natural resources. The level of production of minerals has a direct effect on socio-economic development of these regions, as well as on infrastructure. As the conducted studies showed, the main problem of revitalization of the economy of Russian Northern regions is that currently there is no single strategy for their development [LL Bogomolova, IV Takmash e va, RK Araslanov, AB. Zelinskaya, 2017, USA].

CONCLUSIONS.

The construction of a regional innovation system defines the task of searching for, selecting models, methods and approaches that ensure the adoption of effective decisions at the stage of their design, operation and subsequent evaluation of performance. The concept of a regional innovation system is actively mixed with the concepts of “cluster”, “innovation network”, “learning region”, as a result, the properties of the system change.

The following features and characteristics of the regional innovation system (RIS) are highlighted:

- The systemic nature of the phenomenon, but a smaller scale with a higher level of specificity compared to the NIS.
- Innovative activity is carried out in a specific geographical, economic, political and social space, determined by the specifics of the region.
- Innovative abilities are tied to local communities, organizations and people, cultural values.
- Local regional factors are of decisive importance: attachment to resources, the labor market, sources of knowledge, the market, institutional regional infrastructure.
- Sources of knowledge do not have to be within the boundaries of a given territory.
- The interaction and interconnections of business, universities, infrastructure within the region and in relations with NIS and RIS play a large role other regions.

- The network principle of building RIS is more developed due to social relations, active and stable interaction of different native elements of the system, local traditions and institutional factors.
- Active interaction between actors potentially leads to the union of firms into clusters and forms the specialization of the region.

For basic tasks, modedirovaniya innoatsionnoy need:

- The development of a strategic partnership system and the expansion on its basis of the volume of scientific research commissioned by enterprises and organizations that are part of the emerging innovation cluster of the Autonomous Okrug.
- Development of intersectoral relations of the territory with enterprises in order to develop intellectual potential.
- The development of sustainable ties between science, education and industry of the district;
- development of technologies and methodologies for the search for promising high-tech areas based on the creation of advanced technologies.
- The study of the needs of high-tech sectors of the economy and social sphere in order to help ensure their competitiveness.
- Expanding the capabilities of infrastructural support of the process of creating the final market-oriented product.
- Strengthening the belt of innovative companies around the leading universities in the region.

Thus, given these problems and taking appropriate measures, it will be possible to achieve a tangible result and move up several positions.

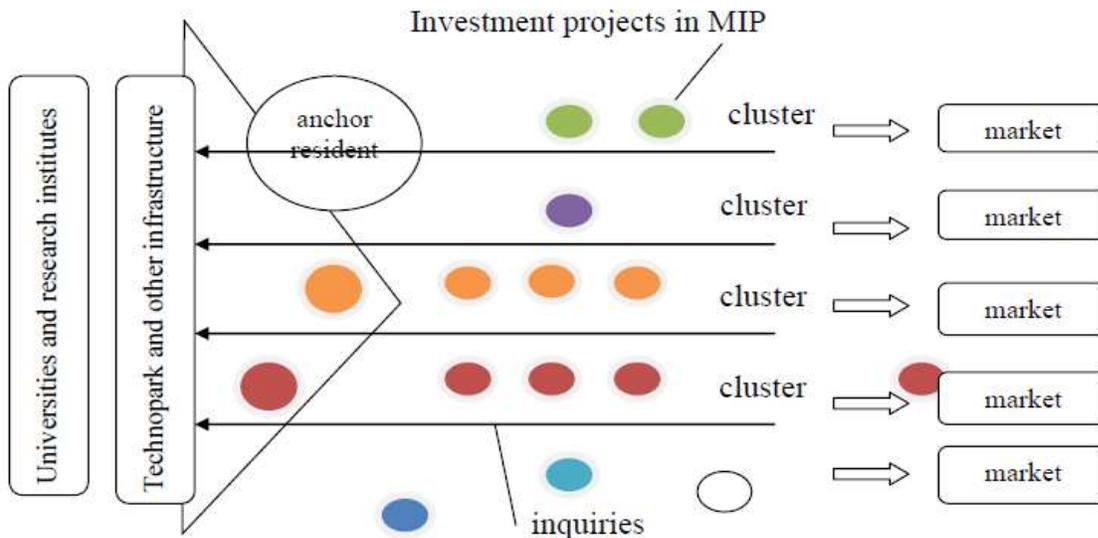


Figure 1 - The author's model of innovative development of the northern territories of Russia

The current state of innovation processes in the Khanty-Mansiysk Autonomous Okrug-Ugra leaves much to be desired. Despite the existence of individual results, in general, the regional innovation system has not been formed. Taking into account the identified issues, a model is proposed that meets modern requirements, takes into account the experience of innovative development in other regions and countries, and also reflects the strategic guidelines laid down in the Strategy for Socio-Economic Development of Ugra until 2030.

The lower part of the figure shows the formed situation when innovative projects appear randomly, are implemented by small innovative enterprises independently, without interaction with the market and innovative infrastructure, which leads to non-implementation of the project due to market rejection, the duration of the preparatory stages, and high base costs. Therefore, the model of innovative development of the region should be built taking into account the implementation of the following mandatory characteristics:

- The completeness of infrastructure services.
- Interaction of key participants.

- Distribution of roles (functional).
- Focus.
- Availability of requests.

According to strategic documents, the processes of clustering the economy are among the priority for the Autonomous Okrug. At the same time, the isolation of clusters from markets and / or science and education directly affects their performance and competitiveness. The same problems are characteristic of innovative processes. Thus, it is necessary to identify the demanded infrastructure support services and to debug the interaction of all key subjects of the innovation system in order to achieve a common synergistic effect.

The main participants here are universities and research organizations, as they are engaged in training and conducting research that could potentially become the basis for innovative projects. At the same time, it is necessary to overcome the trend when initiative research of the scientific community is divorced from market requests by identifying and studying these requests. Obviously, this is not the task of scientific personnel. This function is implemented by analytical centers, but in the regions such centers can be formed on the basis of basic infrastructure organizations, for example, technology parks.

Thus, innovative projects should be born on the basis of scientific research that takes into account the demands of the market, and then implemented in a technology park with a subsequent transition to an industrial park. All this is realized in cooperation with other participants in the clusters, the main of which is the anchor participant - a large (in some cases medium) company, interested in market development, supporting scientific and innovative development. Such a company stimulates primary demand, supports innovators in the early stages, and subsequently can buy out a business or invest in its development.

Speaking about the distribution of roles, we can draw a parallel with the distribution of labor, when there is a qualitative differentiation of labor activity. Therefore, it is very important that each subject of the innovation system clearly knows his functional and area of responsibility, so that the actions of services are not duplicated, and the narrowing of specialization increases professionalism.

The proposed model will allow us to create innovative products demanded by the market, minimize the temporary loss of their implementation and increase the interest of the regional innovation system in joint cluster projects.

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RECIBIDO: 12 de octubre del 2019.

APROBADO: 14 de octubre del 2019.