About Forming Innovational Systems in Regions of Russia

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Abstract: Such factors as expanding of the innovational area, increasing of the innovational activity of business units, enlarging of the share of science-intensive products and use of intellectual capital become main competitive advantages in the international arena. The formation of innovational economy in Russia will allow not only to decrease the dependence of social and economic development on the business environment of the oil and gas sector but also to strengthen macroeconomic complex and increase the level of the population’s life. Taking into account the specificity of the state structure of Russia, the development of the country economy much depends on the level of the development of separate regions, the efficiency of increasing the potential by each of them and the completeness of its further use. Taking into account the increasing role of innovation in forming competitiveness, basic efforts of regional government must be directed to the creation of advantageous conditions of the development of the innovational area. It can be achieved by stimulating the development of regional innovational systems.

Key words: Regional innovational system • Regional innovational infrastructure • Economic safety • Regional innovational competitiveness • Regional institutional system

INTRODUCTION

Recently, theoretic and practical developments have been paying great attention to the issues related to the development of regions because they are rather individual territories as far as it concerns the availability of necessary resources and making decisions on choosing the priorities and directions of the innovational and social and economic policies. Taking into account the specificity of regions, as well as limitation in the form of various resources, the innovational position is more active in some sectors and less active in others. More than that, depending on the peculiarities of the region development, the direction and efficiency of innovations change. Defining the efficiency of innovations and their actual importance for a specific territory, some authors classify innovations to intensive and extensive ones depending on whether the results of their implementation contribute to intensified or, on the contrary, extensification of the social reproduction respectively [1]. Herewith, the extensification is understood as a resource quantitative modification in order to increase the issue of products and in the intensification the same goal is achieved through the economy of the used materials. Thus, the realization of events due to which the price of the used resources is saved is the resource-saving direction of the intensification.

To the author’s mind, the system of indicators of the manufacturing industry intensification includes two groups: the first one consists of the indicators that characterize factors of the manufacture intensification and include: scientific-technological progress, concentration, specialization, combining and cooperation, improving field and territory structure, improving management, planning and organization of the manufacture, etc. The second one consists of the results of these factors activity namely: tempo of growth and labor incremental capacity, indicators of absolute and conditional labor force release through various factors, indicators of capital productiveness and capital coefficient changing over time, indicators of economic effect from various factors of the manufacture intensification, as well as the growth of profits from the scientific-technological progress, etc.
Intensification directions may differ in various regions: in the Far East and in the Northern Russia it is possible to concentrate on labor saving. In old manufacturing regions of the Ural (in Sverdlovsk, Chelyabinsk regions and the Udmurtian Republic) it is urgent to choose the fund saving direction of the intensification. Taking into account high development of metallurgical and mining industries, material saving is actual for the Belgorod region. Thus, the region can choose the direction of the innovational area development on the basis of the proposed classification because it is the most important factor of the growth of the economic entity’s social and economic efficiency of the competitiveness. Herewith, there will be specificity in forming the innovational infrastructure elements and regional innovational system in general.

In addition to the innovations direction, regional economic safety is also an important factor influencing the peculiarities of the formation of the regional innovational system [2]. It is understood as the state of the region economy and its governmental institutions whereby the following is guaranteed: protection of regional interests, social direction of the regional development strategy even under disadvantageous conditions of internal and external processes development, the region stability and steadiness, its economy ability to constant renewal and self-improvement. Taking into account the specificity of the innovations that presume a liberal share of intellectual labor and weak protection of copyrights in Russia [3], it is necessary to jointly regard the issues of innovational development and economic safety.

**MATERIALS AND METHODS**

While analyzing the manufacture intensification, it is important to find the quantitative estimate of those who contribute to strengthening the intensive character of the social reproduction and those who contribute to the extensification process in the innovations structure; or in other words, innovations of intensive and extensive type. According to the authors who classify innovations as intensive and extensive ones, the formation of new approaches to understanding and explaining the sense of the social reproduction intensification process and further development of the system of market production relations development is significant for qualitative changes in the development of the region economy.

The indicator that reflects the share of products received due to the manufacture intensification factors is defined through the manufacturing function that is the simplest two-factor model of the economic growth:

\[ P = \alpha F_t^\alpha L_t^\beta, \]

where

- \( P \) is the products volume (gross, marketable, net, etc.) in t year;
- \( A \) is an indicator of reduction to the unified size of products, funds and labor expenses, taking into account the influence of the factors that were not considered in the model to the products volume growth;
- \( F_t \) and \( L_t \) are the volume of manufacturing funds and labor outlays accordingly;
- \( \alpha \) and \( \beta \) are indicators of the malleability of the products growth depending on the growth of manufacturing funds and direct labor.

If \( \alpha+\beta >1 \), it means that the social production increases due to the factors of the manufacture intensification. In this case, in order to define the share of products received due to the intensive factors, the following model is made:

\[ P = \alpha F_t^\alpha L_t^{1-\alpha \beta}, \]

\( e^{\alpha \beta} \) characterizes the growth of the products volume due to increasing the efficiency of the used manufacturing resources.

The share of intensive factors is defined in the following way:

\[ S_{if} = \frac{C}{\alpha f + (1-\alpha)m + K}, \]

where \( C, \alpha, f \) and \( m \) are annual average tempos of manufacturing funds accession and labor outlays.

**Main Part:** Many factors influence the formation of the regional innovational system: geographic situation of the region, availability of various resources, the region specialization established historically, interests of the regional government as for the development of the innovational area, institutional system of the region, that can contribute or, on the contrary, slow down the development of innovations in the region.
Table 1: Classification of regional Institutional Systems and Their Characteristics

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<th>Institutional system type</th>
<th>Characteristics</th>
<th>Innovational process implementation</th>
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<td>Linear</td>
<td>Exact division of the institutes functions to researching, manufacturing, educational, etc. Absence of strong links in performing the innovational process. Availability of individual cases of interrelation in the context of performing innovational projects.</td>
<td>The innovational activity is performed due to the efforts of separate enterprises without any support of the regional government.</td>
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<td>Integrated education and research</td>
<td>Integration of the manufacturing industry and educational areas in order to prepare qualified staff.</td>
<td>By virtue of the interrelation of the manufacturing industry and educational institutes, workforce capacity being necessary for effective innovational activity is formed.</td>
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<tr>
<td>Integrated research and innovational</td>
<td>Integration of the manufacturing industry and scientific institutes in order to perform innovational activity.</td>
<td>By virtue of the integration of researching and manufacturing areas the primary stages of the innovational process are performed without any difficulties.</td>
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<tr>
<td>Convergent</td>
<td>Integration of all areas of the region livelihoods, their effective interrelation in the context of the innovational activity.</td>
<td>All stages of the innovational process are performed within the unified regional system.</td>
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We can propose the following classification of regional institutional systems of the innovational activity on the basis of the level of integrating researching areas and the manufacturing industry (Table 1).

These regional institutional systems of the innovational activity development are in the order of the government’s support complicating and strengthening. The linear system lacks institutes that contribute to the development of the innovational activity; the innovational activity is developed locally without any encouragement. The integrated education and research system stipulates the availability of Internet portals, websites of educational establishments, agreements on the interrelation between manufacturing enterprises and educational enterprises, conduction of joint conferences, forms, etc. The integrated research and innovational system is notable for the government’s interest in the development of the innovational area in the region. It is expressed by the availability of legal and regulatory framework providing privileges for enterprises that perform the innovational activity and the availability of the system that makes the interrelation of research institutes and the manufacturing industry, financing of socially important projects, etc. possible. The convergent system is the most complicated because it means the interrelation of the whole living environment of the region: financial, manufacturing, educational, research, legal and regulatory, etc. It aims to increase the region competitiveness that stipulates stable social and economic development and improvement to the population prosperity.

The questions on the regions stable development have been discussed for a long time and include a great number of various views. Today it is assumed that the region stable development means the system of views and ideas about new establishing of social attitudes in the whole system of the society and nature [4]. Herewith, two notions are focused on: person’s needs and limitations of the person’s activity. Moreover, it means the transfer to new civilized relations that considerably limit the person’s activity related to influencing the environment. Last time the concept of the stable development tends to acquire a new direction which is “encouraging” for the biosphere and limiting for a person. While implementing it the society gets safe environment and optimistic perspective for the development in the future. Thus, the provision of the region stable development under the changing conditions of the environment is one of the top-priority directions of the world economy development. Basing on the latter condition, the authors propose a more sophisticated notion of the region stable development being as follows: leading the current object state to its desired state in accordance with its needs and opportunities provided by the environment. This notion fully satisfies both the approach to the region development through the indicators of the development intensiveness and formation of the institutional system. In the first case we mean such external conditions as territorial, geographic, demographic, historical, social, etc. In the second case we mean legislative, institutional, social, financial and other conditions within which either the region specification or the performance of the innovational process within an institutional system is chosen.
Fig. 1: Model of the region innovational development

Besides, in their work the authors propose the notion of the system for managing stable development of the region. It means the combination of well-disposed and interrelated goals, tasks, strategic directions and priorities of the region development, management approaches, principles, techniques, approaches, processes and their owners, functions, personnel, labor means and object, structure and potential. All of them guarantee that the current state of the region will be led to the desired one in accordance with the existing needs of the population and opportunities provided by the external environment while conducting the mission of this region.

The illustrative model of the region stable development that combines intensification principles, maintenance of boundaries of the regional economic safety, the most effective use of the innovational potential and the direction to the innovational activity activation can be presented as follows (Fig.1):

Effective regulation of the regional economy development contemplates continuous process of the multi-criteria assessment of digressions that appear in social and economic areas in order to adjust the optimal course of its development [5]. The formation of criteria of economic development and the discovery of digressions that appear on their basis is based on the factorial approach to the assessment of the innovational potential, innovational activity and the life quality of the population on regions. The factorial approach is related to the introduction of six basic factors of manufacture: human, technical and technological, natural-resource, institutional, organizational and informational [6].

Herewith, it is necessary to mention that the assessment of the economic safety is based on the analysis of the population’s life quality that defines the life accession, i.e. “the difference between the number of years given to a person by the nature and that he will actually live due to his knowledge” [7].

Resume: The most efficient institutional system is the convergent one. This system requires the obligatory availability of the relevant legal and regulatory framework that regulates the area of intellectual property, preferential taxation in case of performing the innovational activity, availability of relevant institutes [8]. Their functions include promotion and all kinds of contribution to the development of the innovational activity as well as issues related to financial support of the innovational projects, establishing relations between various structures entering the structure of the innovational process, etc. Herewith, we can speak about the inextricable connection of political, economic, cultural, national, demographic, religious and social factors, which reciprocal action leads to stable development of the region [9]. However, the Russian experience shows that in the majority of regions the institutional system of the innovational activity is developed poorly. Most often these are integrated research and education systems that wish to displace to integrated research and innovation systems. There is a weak interrelation between educational establishments and representatives of business. There are no strong links that allow to perform joint developments, students are weakly involved into the researches and developments.
This is also due to the unavailability of the necessary legislative and statutory standards that protect copyrights, stimulate the innovational activity and are directed to activate the creation of innovations and their further commercialization [10].

CONCLUSIONS

Thus, while forming the regional innovational system, it is necessary to take into account issues of economic safety, stable economic development and interests of the territory population.

Generally, as far as it concerns regions of Russia it is possible to speak about weak development of the innovational system. One can mostly notice its separate elements that almost do not interrelate with one another. Herewith, the science block represented by a great number of educational establishments in the majority of regions can be considered to be as a strong one. We can consider the division of the science into educational and researching until recently as a negative feature.

In regions either there is no legislative and statutory support of the innovational activity in the form of relevant legal acts or it is purely formal.

The interest in creating such elements as scientific cities, technology parks, technopolises, has appeared relevantly recently. That’s why these structures cannot be so much effective and useful for the country economy as a whole as it can be observed in the economy of foreign countries.

Herewith, the interest in activating the innovational activity on all levels of the government can be regarded as a positive feature of the development of regional innovational systems in Russia.

ACKNOWLEDGEMENTS

The work was performed within the context of Thematic plan-2012 of Perm State University by order of the Ministry of Education and Science of the RF (theme 6.3824.2011).

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