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Innovation and Integrated Structures of the Innovations in Modern Russia

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ABSTRACT

Integration processes contribute to the unification of educational, scientific and innovative capabilities of the leading educational centers in Russia. Formed a large market of educational services, increasing the scale of research and innovation work. Note that due to the association of universities, as well as through the effective use of various resources of universities combined probabilistic resulting indicators of the quality of educational services and innovations. Areas of high school with educational institutions at all levels requires a vertical type of links, it will give the opportunity to receive advanced education and research innovation of the corporation. On the scale of the region's integration institutions and bodies of vocational education determines the need to consolidate efforts for the employment of graduates, professional development and retraining, etc. The process of combining, merging dictate the need for a radical transformation of the education system to meet the requirements of the emerging knowledge economy, bringing adaptability and flexibility to adequately respond to current and future needs of socio-economic development of Russia and the world.

Keywords: Knowledge-based Economy, Regional Economics, Economics of Education
JEL Classifications: A2, D8, P25

1. INTRODUCTION

In the XXI century innovative activity - The problem is more fundamental and priority than, for example, market reforms, since the latter also falls under the definition of innovation.

Society can progress only to the extent that it produces innovation. Innovation is the basis of socio-economic systems, determines the rate and extent of growth in the past, structural changes in them. The course and direction of development of socio-economic systems is determined by the introduction of these new tools and methods of human activity, allowing to overcome the limitations of available resources and in turn give rise to new needs, goals, values and forms of their economic realization. However, the inherent property of the irreversibility of the evolutionary process does not mean absolute translational motion to the heights of progress. The contradictory combination of progressive and regressive tendencies inherent trait of any development in general, and social and economic - in particular.

The contradictory trends of social and economic development is manifested through different degree of innovation activity of economic systems. Of particular importance acquires the relationship today. Innovation is not just organically inherent in a modern economy, they become a way of existence and its specific results (Shkurkin et al., 2015). Common problems associated with efficiency, economic growth, increasing the welfare of the population, are solved only to the extent that it creates the result of cash resources. In turn, give rise to new needs, goals, values and forms of realization of their economic, so it seems theoretically meaningful and relevant analysis of the underlying mechanisms and sources of innovation. Scientific evaluation of the causes of

depression relative innovation motivations of economic actors will allow to correctly identify ways of increasing the effectiveness of management of innovative processes in the different economic levels (Babakhanova, 2015).

2. RESEARCH METHODOLOGY

Theoretical and methodological basis of the research work constitute the fundamental domestic and foreign scholars on the theory of innovation in social and economic systems management (Kobersy et al., 2015). The study was conducted by applying the principles of the system approach, methods of economic, logic and a set of specialized software.

Information and empirical basis of the study was formed on the basis of official data of federal and regional bodies of the statistical service of the Russian Federation, Internet resources, copyright research, tabular, graphical visualization techniques of statistical information and resources.

3. MAIN PART

Investigation of this problem it seems appropriate to start with the characteristics of the concept of "innovation," as in the current literature is ambiguous it is revealed that the difference is largely explained by researchers approaches this complex and multifaceted issue. For example, Dihtl and Hershgen argue that under the "Innovation meant the introduction of new products, which should distinguish a genuinely innovative products and new only in the production program of the entrepreneur. Genuine innovations require new decision consumers' problems … or satisfy the need for which was not there before the goods…" (Dihtl and Hershgen, 1999).

Quite common is the definition of innovation as "the process of introducing new products, services and manufacturing processes" (Didenko, 1990). In this respect, the judgment is characteristic B. Kingston that innovation – "the process of converting a new idea or invention into socially significant products that have fundamentally new technical and economic parameters or the transformation of ideas into concrete objects" (Ivanov et al., 1990).

The main drawback of this approach to the interpretation of the innovation lies in the fact that they are associated with the process of development of new products or technology, not taking into account the changes in the socio-economic sphere. Meanwhile, their value is constantly increasing due to the fact that the very basis of technical improvements in production is largely determined by the quality of the organization and management of the industrial enterprise.

In modern literature is very common is the ambiguous nature of innovation. For example, according to Gvishiani and Gromeka, the innovation, on the one hand, "a process of the invention to adjust the technical stage of practical use when it starts to give an economic effect", on the other hand, - "final result of this process, i.e. the invention is brought to the stage of commercial use of the product or product that results from the process of innovation in the first meaning of the term" (Gvishiani and Gromeka, 1990).

A similar judgment saying Blyakhman that considers innovation (technical, technological, organizational, social and economic) as a "purposeful change, deliberately introduced into the process of reproduction to better meet existing or formation of a new social need. By innovation we mean the process of creation, development, distribution, and the result - new products, technologies, forms and methods of organization of production, labor and management, bringing economic and social effects" (Blyakhman, 1993).

By definition, Lapin, innovation and innovation - is a "complex process of creation, dissemination and use of new practical tools (innovations) to the new (or better meet the already known) social need; at the same time it is a process of innovation coupled with the changes in the social and the real sector, which performed its life cycle" (Lapin, 1995).

As a result, ambiguity in the interpretation of the term "innovation" leads to a shift of concepts, which complicates the process of goal-setting. This, in turn, entails a different approach to understanding the effectiveness of innovation. Therefore, in our opinion, should be a clear distinction between the concepts.

Note that many researchers believe that innovation should be seen as a change of state of an object (system). For the first time such an approach to the definition of innovation suggested Schumpeter, who introduced the concept of a scientific revolution, "the implementation of 11 new combinations". According to Schumpeter, new combinations are changes in production and market (Schumpeter, 1982).

Prigogine defines innovation as "… a deliberate changes made in the implementation of environment (organization, population, society, etc.) are relatively stable elements of the new… innovation process, i.e., some transition from one state to another" (Prigogine, 1989).

In our view, determining the content of innovation, we should proceed from the fact that, on the one hand, its purpose is to meet the public demand, on the other hand, it is a means, the use of which makes it possible to obtain a certain economic impact.

In this regard, it can be argued that innovation - An innovation (product, service, and technology) embedded in industrial activities in order to obtain certain economic benefits on the basis of meeting certain social needs.

This successful combination of the best solutions of consumer problems with the ability to produce a specific effect pioneered the use of ideas, inventions, solutions allows us to speak about the appearance of innovation.

To determine the role of innovation in the enterprise must consider the objective necessity of their implementation:

- Firstly, the creation and use of innovations, on the one hand, due to the competitive struggle of manufacturers, on the other hand, is a decisive factor in competitiveness;

- Secondly, the pioneers of innovation have the opportunity to obtain additional income as a result of a temporary monopoly on the market;
- Third, radical innovations are virtually single means relying on a small industrial company that can turn into major corporations.

In our view, it is worth noting the importance of the impact of different reasons indicated above on the innovative activity of industrial enterprises. Competition is a necessary and indispensable cause of innovation due to the fact that non-competitive manufacturer will not survive in the market environment, while reasons related to profit and an increase in the scale of production, stimulate the industry to achieve a certain position in the market.

Innovation is the result of the innovation process, under which, in our opinion, it is understood the set of work processes for the development, implementation and practice of the invention (plans, ideas) in industrial activities.

At the same time, in our opinion, it is appropriate to consider innovative activity as the organization of work on the stages of the innovation process in the implementation of various innovations within a particular industrial enterprise.

The innovation process consists of the unequal terms of content and results steps, each of which has a degree of independence and autonomy, the existence of organizational and economic features associated with forecasting, planning, fantasizing, incentives, etc. Therefore, for the effective implementation of the innovation process must be unity of integration of its constituent stages as dysfunction of at least one of them calls into question the effectiveness of the entire innovation process.

In the literature, the structuring of the innovation process is carried out in different ways. According to Dagaev (1999), the innovation process can be represented as a chain of innovation, reflecting the linear sequence of steps, as the generation of ideas, testing the technical feasibility and needs analysis of the market, creating a prototype, integrated testing, improving the technical characteristics, probing the market, organization of large-scale production and marketing of large-scale, market expansion. Similar approaches to the determination of the structure of the innovation process and are in the foreign literature. Thus, according to data cited by Ivanov et al. (1990) American authors, with varying degrees of detail adhere schemes: Research - development - production - marketing - sales. Or more detailed version: Basic research - applied research - development - market research - design - market planning - Pilot production - market testing - commercial production. Santo highlights such structural elements of the innovation process, "basic research, applied research, pilot production and development, preparation for production, production, marketing" (Santo, 1990).

Dihtl and Hershgen (1999) referred to the following stages of the innovation process: The search for ideas, selection of ideas, analysis, development of product concepts and prototypes, testing, access to the market. Slovak economists Vodachek and Vodachkova dismember the innovation process into phases: The "science - research - development - production – consumption" (Vodachek and Vodachkova, 1989), which are then divided into stages.

From the above definition, it follows that, despite some differences in the name of the individual stages, as well as their total number, there are no fundamental differences in the definition of the structure of the innovation process. The level of detail and the availability of a particular stage in the structure of the innovation process due consideration of the level and purpose of the investigation.

Based on the fact that modern industrial production came to a level of development where further increase its effectiveness is impossible without the use of scientific knowledge seems legitimate inclusion in the initial stages of the innovation process of the papers related to the research. Accordingly, the final stage of the innovation process is due to produce a result - innovation, i.e., it ends with the introduction of changes in the activity of the industrial enterprise. In general, the structure of the innovation process can be represented as follows: Basic research, applied research, experimental development, innovation (implementation in production), to enter the market.

The most important feature of innovation is the innovation cycle, unambiguous definition of literature which has not yet been worked out.

According to some authors, the innovation cycle is seen as "an interconnected set of works from the search for new ideas and concepts of natural science and technical capabilities to their applied research, engineering design, pilot testing, implementation, development and practical application of scientific and technological solutions" (Dobrov et al., 1994). In the view of Blyakhman (1993), an innovative series of innovations - is the process of its creation, implementation, use and obsolescence. Baryutin believes that it is advisable to introduce the innovation cycle as a sequence of four phases:

1. The emergence of innovation;
2. The introduction into the sphere of operation;
3. Distribution;
4. Improving (Baryutin, 1990).

The innovation cycle Yakovets considering as part of scientific and technological cycle, which implies "between the birth of new scientific and technical ideas (theories, scientific field) and its materialization in a new generation, or the direction of technology and the time when this technique, having exhausted its potential, is replaced in production and consumption of new, more effective, which realizes the idea of a higher level" (Yakovets, 1993).

Indeed, innovation is based on the satisfaction of specific social needs, but the replacement of one another innovation is not due to the exhaustion of the possibilities of its improvement, as indicated above. This process is deterministic especially the emergence of the possibility of more effectively solve the problem of which was sent prior innovation. And, of course, any innovation is based

on a specific scientific knowledge, principle, idea, etc., but the practical use (this applies primarily industrial use) occurs in the presence of the conditions of economic benefits in the short or long period of time.

So, the basic approaches to the interpretation of the term "innovation", comments and develop their own approach to the understanding of the term "innovation". Further research logic dictates offer "generator" of innovations to identify the participants, stakeholders, and the area of their interaction.

In our study, a priority role for the partnership of government and business, which involves the effective cooperation, to this end, it is advisable to the formation of scientific and educational innovation Corporation (Neuquen) as the institutional center to stimulate innovations on the basis of horizontal and vertical relations of the university - with the bodies and agencies of the VPO different level. Note that the horizontal links are assumed between institutions of higher education, such structures already exist in the territory of the Russian Federation. For example, "Southern Federal University," which included "Rostov State University," "Rostov State Academy of Architecture and Art," "Rostov State Pedagogical University," "Institute of Technology" in the city of Taganrog and "Siberian Federal University," which consisted of "Krasnoyarsk State University," "Krasnoyarsk State Technical University," "Krasnoyarsk State Academy of Architecture and Construction," "State University of Nonferrous Metals and Gold" (Sfu-kras.ru, 2015).

Integration processes contribute to the unification of educational, scientific and innovative capabilities of the leading educational centers in Southern and Siberian Federal Districts, which formed a large market innovation is increasing the scale of research and innovation work. Note that due to the association of universities in the functional structure of each, as well as through the effective use of various resources combined universities resulting probabilistic indicators to improve the quality of educational services. Areas of high school with educational institutions at all levels requires a vertical type of links, it will give the opportunity to receive advanced education and research innovation Corporation (Science and Education Innovation Corporation [SEIC]).

On the scale of the region's integration institutions and bodies of vocational education determines the need to consolidate efforts for the employment of graduates, professional development and retraining, etc. With the formation of SEIC in the region develops unified educational field, interdepartmental barriers are eliminated, there will be a joint activity of universities and vocational training, taking into account different levels of intra-regional needs. Indicate the direction of responsible international orientation by combining education systems for the effective functioning of the scientific and educational innovation corporations and institutions of vocational education, represented by the internal structure of SEIC within the VPO is the fullest help to stimulate innovations on the level of the regional economic system.

Today, every university seeks to define the dynamics of development in parallel with the development of the regional industry and fit in difficult conditions of the local economy. We emphasize that the best university is defined as a structure, afford to choose the right direction towards the execution of orders in the production of high-quality educational services, spurring domestic applied research and development of innovative activity choices necessary for regional development.

The process of combining, merging dictate the need for a radical transformation of the education system to meet the requirements of the emerging knowledge economy, bringing adaptability and flexibility to adequately respond to current and future needs of socio-economic development of Russia and the world.

It is advisable to emphasize that education and science are considered by us as a single multi-purpose complex, a number of important functions: Providing industries with qualified personnel, development of new technologies, research, etc.; and universities and high-tech sector of Russian science - as strategic partners interested in stimulating innovations of educational services and to improve the quality of education and research.

The stated aim can be achieved by the voluntary association of human, intellectual, material, technical, informational and administrative resources on the basis of the association (or treaty) association of universities, academic institutions, government research centers, technology parks, innovation and technology centers and innovative companies.

Integrated structure in the form of SEIC have the potential inherent in leading institutional centers to stimulate innovations of educational services. In view of this is determined by the presence of high training requirements demanded in today's globalized economic processes, accelerated development of scientific and technological revolution and the internationalization of economic activities. Another characteristic of the scientific-educational innovative corporate incentives as centers of innovation is the flexible adaptation to work in high-commercialization of the social sphere. SEIC able to offer to the market and applied the classical forms of education, to establish the form of continuing education, synthesizing pre-university, university and post-graduate training types. The scientific potential of SEIC able both to produce innovative products in the form of their own research and development to ensure production of new goods and services and to assist economic actors in their production by implementing information and analytical support, and software professionals of varying skill levels. Scientific and educational innovation corporations able to carry out more effective training, minimizing transaction costs society and to actively influence the formation of regional educational policies.

The objects of the internal integration activities of science through stimulation of innovation:

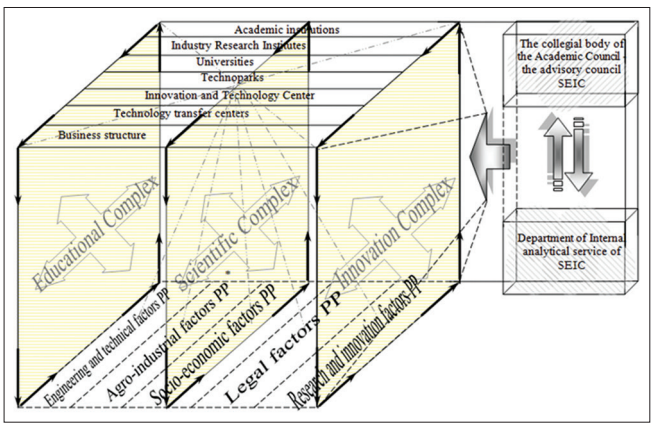
- New organizational and economic models of chairs and joint structures academic profile;
- Joint scientific-educational and innovation centers;
- A program of basic and applied research for the development of priority scientific and educational areas of regional significance;

- Mechanisms for the establishment and operation of centers for collective use unique equipment;
- The right to object jointly created intellectual property, commercialization mechanisms within the boundaries of the region;
- Plans for the preparation of doctoral and graduate students in scientific and educational fields, as well as programs targeted training of specialists for innovative firms in the interests of SEIC;
- Collective bodies SEIC and joint structures.

Currently, integrated structure of academic science and higher education established in more than 60 regions of Russia, including Krasnodar-based Kuban State University. In this example, we are talking about training, research and innovation complex, which includes 154 joint educational and research center (University of California) and 116 centers of collective use of scientific equipment (MSC). The educational, scientific and innovative complex of Kuban State University to develop innovative projects carried out in areas such as biotechnology, new types of crystals for lasers, membrane technology, the search for oil and gas, new fonts, and others. It should be noted that the activities of scientific and educational innovation corporation subject - functional, broader institutional reforms within the scientific and technical spheres and determined, in particular, the provision of quality educational services for the nanotechnology industry is distinguished by a corporate-integrated structure of SEIC, as a consequence - to provide the basic elements of the national innovation system highly professional staff, for example in the field of nanotechnology, nano-scale physics and nano-materials, as well as innovative management, based on the needs of industrial enterprises.

The structure of the scientific and educational innovation as a leading corporate center to stimulate institutional innovations can be schematically represented as a cube (Figure 1), the upper base of which is a structured presentation of departmental infrastructure SEIC apex of which determines the human, scientific and technological policy, the center of innovation activity SEIC are academic institutions. The base model of the regional scientific-educational innovative corporation: The engineering, socio-economic, agro-industrial, legal, scientific and innovative

Figure 1: Model of regional research and educational innovation as a leading corporate center to stimulate institutional innovations. Notes: Regional development



factors of regional development. In our view, these factors have a significant influence on the formation, operation and future development of such a corporation, we further reflected in Figure 1. Connect the vertical plane of the cube, which defined functional load form a complex of educational, scientific and innovative value.

Controls Corporation collegial body of the Academic Council - the Advisory Council SEIC, at least 50% composed of representatives of industry, academia and industry, especially among the strategic partners of the university which are complex agreements on cooperation in the field of education and science, including to encourage innovations and to improve the quality of educational services. As a result, formed the mechanism of realization of feedback from business organizations, monitoring relevant for research and educational innovation corporate segments of the labor market and educational services, effective adaptation to changing demands, an active impact on the labor market and educational services, the implementation of advanced training for the knowledge-based and high-tech industries.

SEIC helps attract capital and financial-industrial groups of other areas, including through training for this business structure, implementation of applied research and development of new technologies.

The organizational structure of the regional scientific-educational innovative corporations should be based on systematic and constantly transformed depending on the new targets related to the provision of quality educational services and production of innovative products.

Thus, the application of a new model of scientific and educational innovation corporation contributes to the modernization of financial management at the expense of SEIC controlling presence of external actors.

To improve the effectiveness of the results of SEIC advisable to establish their own financial institutions with which the system would have worked out the interaction partners. In this context we propose the establishment of an investment company, which will provide customers a full range of services in the domestic securities market.

Science complex model (Figure 1) develop indicators to measure the quality of innovation and educational services, comparing the levels of quality achieved with these and defining their prospects. Innovative methods of improving complex models and ways to improve the generation of innovations corporation. In turn, the interaction of these systems ensures efficient development of all scientific and educational innovation corporations and expansion of the list of commercial products, the main of which are scientific, innovative services and innovative line of research in the field of continuing education with orientation to the segment of additional education.

The integration of vocational education institutions, research institutes, industrial institutes, etc. in scientific and educational

innovation allows a corporation to achieve synergies in addressing the problem of increasing the quality of educational services of higher education of the territorial aspect. The effective operation of scientific-educational innovative corporations in the region contributes to a holistic educational environment, overall activity is organized to improve the quality of educational services tailored to regional needs.

The operation involves SEIC international background to the creation of an optimal educational mega-systems of professional educational institutions, providing continuity between the inner segments and power systems, the development of new types of multi-level educational institutions.

The proposed structure can significantly increase the stimulation of innovation, to meet the needs of the labor market in the region. Functioning multi-level scientific and educational corporation will enable innovative professional educational institutions to carry out their activities on the basis of integration interaction, principled orientation to the educational and socio-economic aspects. Driving integrative interaction of scientific and educational innovation corporations and business structures is shown in Figure 2.

At the same time it should be noted in the market all economic entities are in the same administrative level. Functional interactions with companies and organizations in the region with both the elements of an economic system based on the principles of coordination, autonomy, systemic, complementarity and indivisibility, in which there are structures that produce end innovative products and determine the direction of improving the quality of educational services VPO.

4. CONCLUSIONS

Thus, firstly, the model SEIC contributes to more efficient use of the potential scientists of the university and the city. The corporation introduced the newest educational and informational technologies, which ultimately improves the stimulation of innovation of educational services, due to the quality of which increases the rating of universities in the educational market.

Secondly, the development of SEIC and innovations, as well as improving the quality of educational services makes it possible to ensure the convertibility of higher education on the international level and provide promising opportunities of the Russian Federation to step up activities in international division of labor in the field of education in the context of globalization.

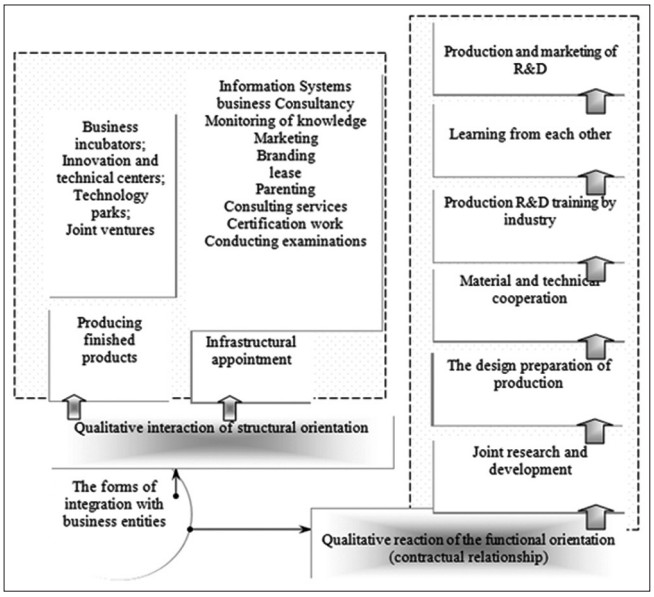
Third, if the scientific and educational innovation corporations, reduced costs and time cycle from scientific idea to the prototype and new technologies. The cooperation of the teaching staff of the university with the experts of partner institutions SEIC gives a sharp impetus to the development of scientific and innovative activities.

Fourth, scientific and educational innovation corporation replenish the revenue part of the budget in the mechanism of stimulation of innovation by the proceeds from the sale of own products, dividends from participation in joint ventures and organizations.

In summary, we note:

- Public-private partnership is considered by us as a means of interaction between the state and business structures in the form of collection development resource capital (the highest form) for the mechanism of stimulation of innovation Shelter in higher vocational education.
- Scientific and educational innovation corporation as an institutional center in the mechanism of stimulation of innovation is based on integrative internal structure, diversification of training and promotes synergies.

Figure 2: The integration of scientific and educational cooperation innovative corporations and business entities in the region



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