

## Applying the Cluster Approach to the System of Preparing Human Resources for Activity in a Region's Innovation Economy

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**Abstract:** Russia's fledgling innovation economy is generating new requirements and approaches to training and re-training highest-qualified specialists prepared to develop and commercialize innovations. No less topical are the issues of developing the mechanisms underlying the interaction between the education market and the labor market, as well reconsidering and fine-tuning these positions amid the adaptation of Russia's business sector to the WTO regimen. In this article, the author defines the major aspects of the process of "fitting" the system of higher education into the present-day realities of the world economy and explains the need for implementing this process through the instrumentality of the cluster approach.

**Key words:** Innovation • Intellectual and technological resources • Cluster approach

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### INTRODUCTION

The development of the innovation economy in Russia is triggering radical changes in society's social-economic activity. However, currently the situation on the education market does not correspond to that on the labor market. Besides, the rigorous, determinate and inertial organization of higher education makes it hard to timely trace the situation on the market and meet the ever increasing demands of those who place orders for educational services [1], which makes topical the issue of developing the mechanisms underlying the interaction between these markets, including interaction between educational institutions and institutions and enterprises from various fields and areas of activity with a view to promoting new technology in production and management, as well as preparing human resources and enhancing their qualification levels for engaging in innovation activity [2]. Partnership can be formed with:

- Institutions of executive authority (regulatory bodies), which can be viewed concurrently as customers (commissioners) and consumers (users) of the services; their primary function is formulating a list of competencies for graduates in various

specialties, developing on their basis educational and professional standards and implementing control over the application of these standards;

- Enterprises and institutions within the real sector of the regional economy (self-regulated institutions), which also influence the development and application of standards and regulation of demand and supply on the labor market;
- Other institutions and establishments that consume the services of institutions of higher learning on a paid basis, participate in its development (including through work in a board of guardians and other bodies), implement long-term target programmes and projects in concert with colleges and commission scientific-research activity.

The economy's innovativeness implies a transition to an intensive type of enhanced reproduction, which is grounded in scientific-technical progress and innovation activity as factors ensuring the competitive advantages of social-economic systems [3, p.7]. The need for developing the innovation component of Russia's economy has been, time and time again, substantiated in both the works of Russian economists and official documents of the government of the Russian Federation, the country's ministries and agencies.

**Methods:** On December 31, 2010, the Ministry of Economic Development of the Russian Federation presented on its official website the text of the *Innovation Russia-2020* strategy project. It was stated in the document that the strategy was aimed at tackling the challenges and threats faced by Russia in the area of innovation development by means of putting together a clear-cut system of goals, priorities and instruments for state innovation policy. The strategy sets out the long-term benchmarks for the development of the subjects of innovation activity, including the institutions of government authority at all levels, science and the entrepreneur sector [4].

**Main Part:** The development of the economy is impossible without the use of human potential through the process. Likewise, innovations are not suspended in airless space – someone surely produces and brings them out to the market. Thus, innovation implies not only contrivances and inventions but a huge systemic process propelled by people. It is this why the primary objective set out in the Strategy is the build-up of human potential in the area of science, education and technology. This objective includes enhancing the population's susceptibility to innovation: innovation products and technology; radically expanding the "class" of innovation entrepreneurs; fostering in society an atmosphere of tolerance to risk; promoting innovation entrepreneurship and scientific-technical activity.

The majority of publications on this subject point out that the primary issue in implementing the Strategy for Russia's innovation development is the deficit of human resources capable of bringing the country's intellectual and technological resources together and ensuring the commercialization of innovations on the internal and global markets.

Amid the evolvement and development of a region's innovation system, becoming all the more apparent and sought-after is the function of higher education and the need for boosting the role of colleges in the innovation process.

Omsk Oblast possesses considerable scientific potential characterized by having academic, sectoral and college science education on offer and their close interaction (4 academies, 6 universities, 9 institutes, 15 branches of institutes of higher learning) [5].

Colleges are gradually engaging in innovation activity, taking part in carrying out applied studies funded at the federal and regional levels and projects undertaken in concert with scientific-research institutes, design

bureaus and innovation business enterprises. Among the promising areas of the development of innovation activity at colleges are creating technology parks, innovation centers and college-based technopolises, as well as boosting the interaction with small, medium and large businesses through economic-contractual work.

Colleges define the human resource potential of a region's innovation development and facilitate promoting innovative ideas and getting them to specific producers. Relying on the findings of marketing studies into the innovation market, colleges can more effectively than other subjects of the innovation system conduct research studies and come up with innovations that can be put into practice in the future.

Using the chains "college – scientific-research institute (SRI) – enterprise" or "college – enterprise" makes it possible to develop those specific projects that can be implemented at enterprises and will, consequently, be funded.

The major types of innovation activity practiced by SRI's and colleges are conducting one's own scientific research studies and experimental activities and engaging in in-budget and out-of-budget funded work [2].

It is becoming more topical for colleges to look for grants that would fund their research studies and other work and prepare highly-qualified scientific human resources.

Gaining special significance is colleges' commercial activity and cooperation with small innovation businesses, innovation centers, etc.

The most significant outcomes of colleges' innovation activity are: having taken part in innovation projects and programmes; having received grants; having released scientific and learning-practice literature on promising innovation areas; having received in-budget and out-of-budget funding for innovation projects and college development; having done work in the way of preparing specialists for innovation activity; etc.

The other niche that, in the author's view, should not be overlooked by modern colleges is reorienting and adapting businesses to the WTO regimen, which calls for engraining into the work of financial institutions more efficient methods for managing credit, market and operational risks and bank oversight over the sufficiency of capital and transparency of the capital management system, which would ensure objective appraisal of the quality of banking and financial services by consumers. This facilitates the constant boosting of the competitiveness of the country's economy through the robust funding of innovation projects.

Currently, it is not funds and investments but human resources, information and commerce that define the competitiveness of the country, its territories and enterprises operating under the WTO regimen. The capitalization of such enterprises depends on their location. Not taking this into account makes it extremely hard to be successful competing.

The WTO regimen is equally tortuous for all those who have not yet gained enough experience working on the global market. The regimen is likewise tortuous for those entrepreneurs who believe that in Russia you are better off knowing your way around in non-standard situations and living by chaotic market-Soviet principles of production organization and complying by the directives of government officials. When it comes to the WTO, government officials normally learn from businesses, while in Russia, on the contrary, officials often teach how to do “competitive” business using instructions they themselves have made up, which constantly change and oftentimes inadequately reflect the modalities of the international regulatory framework.

For these WTO conditions not to become a real threat to Russian entrepreneurs, one has to know and be able to do everything one’s competitors know and can do – these competitors can be more narrowly-specialized but are oriented towards attaining practical goals. In the management system of competitors from the WTO, man is a functional unit within a quality management system (QMS) [4]. Furthermore, to be able to pick up western standards in the shortest time possible it is necessary to deploy in the country a network of educational institutions wherein western and national specialists with hands-on experience in dealing with business under the WTO regimen could pass that experience on to Russian entrepreneurs [6]. These processes should be handled by hired professors and practitioners who are proficient equally well in western and Russian practice. For instance, China has achieved tangible results competing with western companies on WTO markets, having enlisted the services of Chinese professors successfully employed in the US and the EU countries [7].

In Russia, a number of enterprises have been able to modernize themselves over the course of the last 10 years and now, essentially, conform to WTO standards, but there are very few of them (no more than 5%). However, these enterprises are mainly based in Russia’s several territories (the capital, the central region and Western Siberia) and operate in several economic zones with a high cost of manpower. These enterprises successfully acquire foreign assets and compete with local companies on both

the Russian and external markets. Their experience shows that by far the main requirement for such enterprises on the part of the WTO is the quality of management and the transparency of corporate governance and financial reporting, the latter being a reference point for investors and customers. Such enterprises are highly competitive [8]. Note that they are competitive not just locally but globally as well. The WTO is a find for such enterprises, since it helps reform tax and customs policy, which is really topical to them and reduce the volume of financial reporting to fiscal authorities.

In order to prepare Russian business for successful operation under the WTO regimen it is, above all, important to engage in professional personnel training. The international experience of enterprises which have had success in doing business under the WTO regimen shows that they spend on the training and certification of their personnel no less than 20% of their total expenditures. In Russia, these figures are much lower and currently equal no more than 0.8% for small and medium businesses and 12% for large businesses. Special attention should be given to the study of disciplines on global standards, regulations, certificates, international accreditation and license agreements [9]. It is impossible to compete in the WTO without having resolved this issue first.

Next, it is important to put together at an enterprise a single system of managing the quality of resources, products and services. In this regard, the major focus should be on the quality of management so as not to allow defects in products and services turned out and engage productive human and financial resources. Such quality management systems must encompass not just the production but financial activity of the enterprise as well. Finally, it is important to put together a transparent system of financial reporting based on the International Financial Reporting Standards (IFRS) and in the long run adopt the global financial reporting system, the way it is done by successful corporations within the WTO [10].

Today, leading European countries are boasting an enviable culture and level of the education system, relying on the management of knowledge, including the acceleration of learning and creation of new competencies as a strategic resource of firms. In the West, the management of knowledge, that is the determination and filling the “what the firm knows” and “what it must know” gap, is closely associated with strategic management, that is the filling of the “what the firm can do” and “what it must do” gap. However, just identifying these gaps is not

what the true gist of the problem is about and is not what the management of knowledge is limited to in European countries. The second problem with the management of knowledge is as serious: methods for engraining knowledge in the firm's actions – this is what gets undivided attention today. All the more so as the management of knowledge is seen in new conditions as the major component of the enterprise's innovation policy. For this reason, requirements on the level of personnel preparation grow like never before.

Currently, as practice shows, the level of business (professional) education of those employed in commerce is unsatisfactory: the overwhelming majority of entrepreneurs do not have not only specialized professional education (higher or secondary) but do not possess enough knowledge on the basics of economics and entrepreneurship.

To resolve this problem, Omsk Institute (branch) of Russian State University of Trade and Economics (RSUTE) is engaged in the distance training and re-training of both its graduates and active entrepreneurs. The distance business learning system enables one to have a shot at improving one's qualification level at any time and at any place where there is access to the Internet.

Therefore, resolving this issue necessitates the use of the cluster approach.

Scientists at Omsk Institute of RSUTE have worked out a principal scheme for such a cluster. It factors in the experience of Russia's regions across various sectors of the economy, including the experience of Tatarstan, where already 14 sectoral science-education clusters have been formed. Also factored in is the main thesis of the founder of the cluster development concept Michael Porter: prospective competitive advantages are created on internal markets.

What is special about the scheme is that it does not require the creation of a special managing company, which would require considerable amounts of resources.

The advantage of using the cluster approach in application to regional economic development lies in being oriented towards the development of small and medium high-tech and innovation industrial business.

The active interaction of the scientific-educational community, the government and business establishments as part of the commerce-education cluster, that is the three key drivers of the innovation process, engenders innovativeness as a characteristic inherent to the cluster. The innovation process as part of a cluster is stimulated through an intensive exchange of knowledge, competencies, ideas and other immaterial values between

business establishments and educational institutions, with the government acting in the background, as well as through uniting one's resources needed for the creation and commercialization of innovations (capital, ideas, the material and technological base and administrative and legal support).

The innovation process as part of a cluster is described using the "triple spiral" concept which defines the character of the interaction between the production sector, universities and the government in the process of generating new ideas, turning them into innovations and, next, bringing them out to the market. The author construes the "triple spiral" as a non-linear, non-static model that describes the roles of the major subjects of the innovation process, which partially interlap and interchange: universities become entrepreneurs through the creation of business incubators on their platforms; the industrial sector turns to science in putting together its own educational establishments and knowledge centers and conducting scientific research studies for its own needs and the government becomes a venture capitalist due to the need to support innovation initiatives and render financial support for specific venture projects. Thus, the "spiral-shapedness" of this model is attributable to the fact that the three key subjects of innovation development as part of the cluster keep interchanging roles, partially filling in for each other and concurrently continuing to fulfill their traditional functions.

## CONCLUSION

The primary use of the commerce-education cluster is the creation of a system of propagating new knowledge and technology in the area of commerce and economics education, science and commerce, as well as the stimulation of innovation activity that will result in the creation of a special form of innovation – the gross innovation product.

The cluster's important distinctive characteristic is, above all, its innovation orientedness. The reason behind uniting enterprises and educational institutions in clusters is apparent: it is advantageous to both. For it is a powerful instrument for boosting the competitiveness of one's product, reducing costs of production and, above all, preparing really well qualified specialists.

The cluster's major advantage is that it allows for the joint use of equipment and conducting of interdisciplinary research studies (e.g., at the premises of Omsk Institute (branch) of RSUTE, where graduates from professional

secondary institutions of learning can pursue courses of study leading to a Bachelor's degree). This is a basis for creating new forms of "uniting knowledge", stimulating the emergence of "new patterns" in the integration process and in the course of joint activity and enhancing the calibre of human resources.

Inferences. In conditions of uncertainty and increased competitiveness in the global environment, the most progressive and efficient method for preparing human resources for activity in the innovation economy at the regional level is the cluster approach. Its major strength is in bringing together all of the region's levels — from the authorities to specific sectoral firms — and helping achieve a holistic vision of a region's economy (or industry). The logic behind the development of the world's most successful global enterprises and most economically developed regions and countries suggests that clusterization is a logical stage in the evolution of the forms of comprehensive organization of economic activity, which makes it possible to amalgamate the singular and the universal, balance out the interests of the man, the company and the region and plot a vector for their concerted common-goal-oriented development.

## REFERENCES

1. Telnov, Y., 2010. The Model of Continuous Profession-oriented Learning in the E-environment Based on a Competence Approach and Academic Knowledge Management. The 11<sup>th</sup> European Conference of Knowledge Management Systems. Porto.
2. Anisimov, Y.P., 2008. The Role of Institutions of Higher Learning in a Region's Innovation Development. In. Vest. Region., 1: 8-11.
3. Innovation in the Educational Process in Omsk Institute (Branch) of RSUTE: A Collective Monograph. Omsk: Published by Omsk Institute (branch) of RSUTE, 2011, pp: 300.
4. Cumming, B.S., 1998. European Journal of Innovation Management. Bradford, 1(1).
5. Oskolkov, M. Omsk Oblast: With Innovation – into the Future / [Electronic Resource] – Access regimen: [www.tpp-inform.ru/tpv\\_online/410.html](http://www.tpp-inform.ru/tpv_online/410.html).
6. Smirnov, V.A., 2010. Educational Clusters and Innovation Learning in College: A Monograph. – Kazan: RIC Shkola, pp: 102.
7. Sveiby, K.E., 1997. The New Organizational Wealth, Managing and Measuring Knowledge-Based Assets. — San Francisco.
8. Russia and World Trade: In at Last? Date of view: 10.12.2011. [www.economist.com/node/21536649](http://www.economist.com/node/21536649).
9. Russian Hopes of WTO Entry Boosting Debt Grade Dashed by Rating Companies. Date of view: 10.12.2011. [www.bloomberg.com/news/2011-11-20/russian-hopes-of-wto-entry-boosting-debt-grade-dashed-by-rating-companies.html](http://www.bloomberg.com/news/2011-11-20/russian-hopes-of-wto-entry-boosting-debt-grade-dashed-by-rating-companies.html).
10. Lovchinsky, N., 2012. Business under the WTO Regimen: Rules for Successful Integration. Business Volgograd, 6(58).