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REVISTA INCLUSIONES
REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

CUADERNOS DE SOFÍA
EDITORIAL

THE ROLE OF MULTIPLIERS IN THE FORMATION AND IMPLEMENTATION OF REGIONAL INNOVATIVE DEVELOPMENT PROGRAMS

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Abstract

Under current conditions, an important direction of ensuring innovative development and the task of implementing sustainable economic transformations associated with this process is the improvement of management tools, the development, implementation of new approaches and management criteria to achieve the necessary pace of innovative development of the country's economy.

Keywords

Innovative development – Development directions – Model system – Region – Multiplier

Para Citar este Artículo:

Uandykova, Mafura Kusmanovna; Stepanova, Diana Igorevna; Shchepetova, Svetlana Yevgenievna y Zbrishchak, Svetlana Gheorghievna. The role of multipliers in the formation and implementation of regional innovative development programs. Revista Inclusiones Vol: 7 num Especial (2020): 119-133.

Introduction

The innovative development of the country and its regions is one of the fundamental factors of the country's global competitiveness in the coming decades. Innovative development is the main factor in increasing the productive labor forces, increasing the welfare of the population and, therefore, a factor in solving global economic and social problems. The sequential movement along the three main groups of directions becomes important[1]. The first group of these directions is technical-technological, the second one is monetary-financial and the third one is socio-political. The main thing in this concept is that technical-technological innovations today are not decisive and not sufficient for the prosperity of the country and the world. Under current conditions of globalization, monetary-financial and socio-political innovation groups are becoming significant, but their development is noticeably lagging behind the group of technical-technological innovations. Innovative development is considered in this article as economic growth due to innovations introduced in three equal layers of the country's economy: technical-technological innovations *in the real sector*, monetary-financial innovations *in the financial sector* and socio-political innovations *in the administrative sector* of the national economy of any country in the world.

Literature review

The issues of managing innovative development in general and in regions in particular are a subject of research by many foreign and domestic scholars. Thus, the works of Van Dyun, J. Bernal, B. Lundvall, G. Mensch, M. Kalecki, B. Twiss, S. Metcalf, R. Nelson, C. Freeman, A. Kleinknecht, J. Clark, L. Sute, Yu. P. Adler, G.G. Azgaldov, A. Anchishkin, K.A. Bagrinovsky, L.A. Baev, M.A. Bendikov, V.S. Vikulov, Ya.S. Glazyev, O. Golichenko, G. Ya. Goldstein, V.I. Gunina, A. Dynkin, V. Ivanov, N. Ivanova, B.S. Kuznets, Yu. Yakovets should be mentioned.

The scholars discussed the following issues in their works: the relationship between various types of innovations[2]; technological innovations are classified into basic, improving and pseudo-innovations; the issues of long-wave fluctuations occurring in the economy were studied[3], a concept of "landmark innovations" were introduced, science is defined as a new source of growth, the role of the state in stimulating   growth   and structural   changes[4];   innovations and factors as a process with economic content, assessment methods, project management, conditions for innovation development, the characteristics of the life cycle, methods and models for project evaluation were defined[5];

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[1] N. A. Nazarbayev, The Fifth Way. International Information Group "Interfax". Interfax Information Website. 2019. Available at: https://www.interfax.ru/interview/101426

[2] J. Bernal, Science in the History of Society (Moscow: Foreign Literature Publishing House, 1956) y S. Kuznets, Modern Economic Growth: Research and Reflection Results. Nobel Lecture. Nobel Laureates in Economics: a View from Russia (Saint-Petersburg: Gumanistika, 2003).

[3] Al. Kleinknect, Innovation Patterns in Crisis and Prosperity: Shumpeter's Long Cycle Reconsiders (Hong Kong, 1987); A. F. Leshchinskaya, Financial Management: Lecture Course (Moscow, 2017) y V. V. Brinza; Zh. K. Galiev; N. V. Galieva; N. A. Zhdankin; E. V. Ilyicheva; A. R. Kalinin; I. A. Larionova; A. F. Leshchinskaya; A. V. Myaskov; M. Kh. Peshkova; I. M. Rozhkov y D. P. Tibilov, Development of Science in the Field of Environmental Economics and Management of Enterprises of the Mining and Metallurgical Industries of Russia (Moscow, 2017).

[4] S. Kuznets, Modern Economic Growth: Research and Reflection Results. Nobel Lecture. Nobel Laureates in Economics: a View from Russia (Saint-Petersburg: Gumanistika, 2003).

[5] B. Twiss, Management of Scientific and Technological Innovations (Moscow: Economics, 1989).

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the interconnections of all stages of management cycles were studied[6] , etc. Currently, economic science is seriously studying the issues of technological changes and their role in innovative development. However, the deep interconnections and interdependencies in the structure of innovative development have not been systematically studied, without a systematic consideration of which *a separate analysis of particular problems does not add up to a holistic view of innovative development.* As a result, the insufficient use of the general laws of technological changes preserves the gap between the macro-, meso- and microlevels of economic analysis, as demonstrated in the methodology for assessing GCI (at the macrolevel), or the implementation of strategic innovative development programs (meso-, microlevels). It means that only the impacts on macroeconomic indicators of individual innovations are studied, or simply the general innovative activity in the economy (of a country, a region, an organization), changes in industry and inter-industry proportions, shares of GDP and other macroeconomic indicators are studied at the mesolevel. Meanwhile, the relationship between the diffusion of innovations, the possibilities of innovative development and certain structural shifts has not been virtually studied. Such relationship, dependence can be stated at best.To develop an effective mechanism for managing the innovative development of a country and its regions, it is important to understand, clearly present such interconnections as the integration of individual innovation processes into integral development directions, the nature of structural shifts and explanation with the necessary degree of completeness. Consequently, in the process of implementing the innovative development of the economy of a country and its regions, it is important to develop the main integral directions by which it is possible to assess RID levels, determine the innovativeness of the economy and due to what factors, i.e. to define *the innovation paradigm.* The innovation paradigms, on which current approaches are based, focus mainly on science, technology and economy and have limited responses to the process of global economic and institutional changes[7]. As noted by J. Stilgo, R. Owen and F. McNachten, a technological innovation paradigm has shifted toward a wider dialogue between research, technological innovation and social development[8].However, there is growing concern that the dominant structures in the field of economics and innovation no longer provide an adequate solution to and analysis of the problems of today's globalizing and rapidly changing world. On the one hand, most countries rely on the traditional western innovation paradigm to discuss and solve major global problems. Although developed economies have perfected their main innovation paradigms - such as the role of organized innovations and strong national innovation systems in Finland and Sweden, however, the experience of innovation management in countries with emerging economies is not sufficiently taken into account.

Materials and research methods

Considering the evolution of innovative paradigms by the criterion of their impact on the market (including at the exogenous level), one can divide the existing innovation paradigms into three main categories. As below in Table 1.

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[6] Yu. V. Yakovets, Cycles. Crises. Forecasts (Moscow: Nauka, 1999); Yu. V. Yakovets, Innovation: Theory, Mechanism, Government Regulation: Textbook (Moscow: RAGS, 2000) y Yu. V. Yakovets, Globalization and Interaction of Civilizations (Moscow: Ekonomika Publisher, 2003).

[7] J. Jay, "Navigating Paradox as a Mechanism of Change and Innovation in Hybrid Organizations", Academy of Management Journal Vol: 56 num 1 (2013): 137-159.

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Category	Approach	Source	Description	Disadvantages
1. Based on partial elements	such as consumer supportive innovations	proposed by American scientists	consumers create innovative ideas and products; not only new products appear, but also a qualitative change in the ratio of values in the market occurs - disruptive innovations; supporting innovations - improve the product, a new market is developing.	lack of investment among product manufacturers, a quick change of products on the market, for non-reorganized companies is fraught with bankruptcy
2. Includes paradigms focused on horizontal interaction and integration of such factors as knowledge, resources, etc.	design-based innovations	developed by European, Asian: Korean, Japanese, Chinese scientists	design-driven innovations that are not subject to laws of the market and create great business opportunities;	do not consider vertical integration, and therefore there may be a risk of being overly open and lacking core competency.
	open innovations (OI)		take into account both technological and social benefits, and not only direct benefits.	
	innovation knowledge		innovation knowledge takes into account social processes, the transformation of knowledge as a result of the interaction of formalized and informal knowledge	
	complete (total) innovation		based on the unity of technological and non-technological innovations, participants in time and space.	
	convergence of innovations and economics		interpenetration, embedding technology, knowledge, economics - the ecosystem	
3. Simulated innovations and secondary innovations	existing innovations with competitive advantages are used	research by scientists from India and China (modest innovations)	includes responsible and social innovations.	attention is focused only on the conceptual cultural or social aspect of innovation, thereby ignoring the importance of technological factors.

Table 1
Description of traditional innovation paradigms
Source: developed by the author based on materials[9]

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[9] R. Verganti, "Design, Meanings and Radical Innovation: a metamodel and a research agenda", Journal of Product Innovation Management Vol: 25 num 5 (2008): 436-456; I. Nonaka y H. Takeuchi, "The Company - the Creator of Knowledge", The Origin and Development of Innovation in Japanese Firms. Olympus Business CJSC (2003): 86-101; X. Qingrui; C. Jin; X. Zhangshu; L. Jingjiang; Z. Gang y W. Yong, "Total Innovation Management: a Novel Paradigm of Innovation Management in the 21st Century", Journal of Technology Transfer num 32 (2007): 9-25; Q. Xu; G. Zheng y J. Chen, "Theoretical trace and framework of overall innovation management", Chinese

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The three types of traditional innovation paradigms presented in Table 1 ignore the leading and significant role of the strategic approach, the implementation and transformation of innovative values at the macroeconomic level - a strategic one for national and regional economies, without consideration forlinkages and dependencies. In the work "Holistic Innovation: An Emerging Innovation Paradigm" Chinese scientists from China - Jin Chen, Ximing Yin, Liang Mei- introduced a new innovation paradigm - Holistic Innovation (HI), based on a strategic vision of innovative development. It connects the four main elements of holistic innovations with concepts: "strategic", "total", "open" and "collaborative", i.e. all traditional current paradigms are interconnected with organic integration into holistic innovations with a focus on the implementation of the overall Innovative Development Strategy and achievement of sustainable growth[10]. Thus, in the new innovation paradigm the traditional innovation paradigms (total, open and collaborative ones) are based on a strategic vision, on effective and organic unification, vertical integration and dynamic development of strategic leadership and full coordination. This goes far beyond the partial, horizontal and static innovation management paradigm (Table 1). By integrating internal and external resources, it is possible to achieve multidimensional integration between a strategy, technology, markets and culture. In modern scientific literature, the directions of regional innovative development are considered mainly in the context of formation and development of regional innovation clusters, as a vector of innovative development in general. The cluster theory is initially associated with the works of M. Porter[11], the development of research by E. Dahmen, P. Krugman, G.B. Kleiner, R.M. Kachalov, S. Rosenfeld, V. Feldman, L.A. Alexandrova, I.A. Baev, M.V. Vinokurova, M. Enright, M. Dunford, T. Kotler, T. Copeland, V.A.Slepov[12] and others. Currently, this approach is estimated by experts to be used by more than 50% of the countries of the world[13]. Moreover, the traditional and diversified cluster models are distinguished. The essence of the traditional model is that the regions, acting as the most important foundations of the development process, spatially localize the economic activity in their territories, creating the major share of the added value, and have advantages that can reduce production costs and,

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[10] J. Chen; X. Yin y L. Mei, "Holistic Innovation: An Emerging Innovation Paradigm". International Journal of Innovation Studies num 1 (2018): 1-13.
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[13] E. B. Lenchuk y G. A. Vlaskin, "Cluster Approach in the Strategy of Innovative Development of Foreign Countries", Forecasting Problems num 5 (2010); Yu. S. Artamonova y B. B. Khrustaleva, Cluster Policies and Cluster Initiatives: Theory, Methodology, Practice (Penza, 2013); G. A. Khmeleva, "Areas of Development of Cluster Policy in the Conditions of Innovative Development of Regions", EUP Fundamentals num 3 Vol: 15 (2014) y O. S. Glazkova, "The Influence of Innovative Territorial Clusters on the Socio-economic Development of Regions", Discussion num 4 Vol: 56 (2015). Available at: https://cyberleninka.ru/article/n/vliyanie-innovatsionnyh-territorialnyh-klasterov-na-sotsialno-ekonomicheskoe-razvitie-regionov.

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therefore, possible competitiveness of manufactured goods[14].Among the factors contributing to such development, P. Krugman and M. Porternote local natural resources, geographical location, human capital, institutional environment and,as a matter of course, the possibility of the best concentration of innovative-technological activities with increasing returns, due to the possibility of accumulation and dissemination of knowledge[15]. A diversified regional clustering model is characterized both by horizontal and vertical intersectoral integration with the expansion of the scale of activity with indicators of its breadth, connectivity, scale. According to A. Malmberg et al. (in the work "Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness"), such strategy is most able to provide competitive advantages, since it creates the opportunity for the formation of new knowledge and technologies, localizing innovative processes within the territory and diffusion of innovations beyond the limits of one industry (associated with it), thus obtaining the flow of knowledge (Fig. 1)[16]. Strategic programs of industrial-innovative development of many countries are built on this approach, i.e. based on cluster building of regional development[17]. However, despite the wide opportunities provided by such direction of regional innovative development as the creation of innovative clusters, in the author's opinion, this approach does not take into account the systemic interconnection of general economic development and its integrity. The cluster approach lacks proper returns, as a result of which the interdependence and the relationship between innovation clusters, ensuring competitiveness, entrusted with diversification, cannot fully solve the problems of regional innovative development.

←→	Innovative process in the local area
→	Innovation diffusion process
←	Knowledge flow process
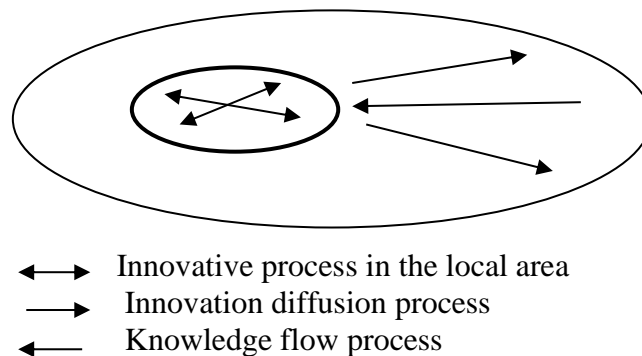
Figure 1
Knowledge accumulation processes in regional innovation clusters
Source: based on materials[18].

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[14] A. Scott, "Regions, Globalization, Development", Regional Studies Vol: 37 num 6 (2003): 579-593.

[15] M. Porter, Competition (Moscow: Williams Publishing House, 2001) y P. R. Krugman, Geography and Trade (Cambridge MA: MIT Press, 1991).

[16] A. Malmberg; O. Sölvell y I. Zander, "Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness", Geografiska Annaler: Series B, Human Geography Vol: 78 num 2 (1996): 85-97.

[17] A. Petrov, "Innovative Pharmaceutical Cluster as a Point of Economic Growth of Sverdlovsk Region", Regional Economy num 1 Vol: 3 (2010): 199-203.

[18] A. Malmberg; O. Sölvell y I. Zander, "Spatial Clustering, Local Accumulation of Knowledge and Firm Competitiveness", Geografiska Annaler: Series B, Human Geography Vol: 78 num 2 (1996): 85-97.

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Innovative clusters do not take into account many aspects. Thus, Petrov[19] noted their shortcomings in his work: the possibility of obsolescence of technologies and a decrease in their competitiveness in the domestic and foreign markets, due to a conflict of interests outside the cluster; reduction of participating enterprises due to the monopolization of any industry in the cluster; lack of incentives for continuous updating of production and sales, due to limited competitors in an isolated cluster; the uniqueness of each cluster leads to a significant complication of evaluating the effectiveness of its functioning, due to the lack of possibility to compare with other clusters, at least in the domestic market[20].The most significant thing in the RID implementation is the determination of the level of implementation of the elaborated development programs, the possibility of determining their effectiveness and ensuring the growth of living standards of the region's population, i.e. social orientation.

Using the general methodology of the cluster approach as the basis, it is important to find new management technologies for the regional innovative development of regions, taking into account the solution of systemic problems, systemic development patterns and systemic principles of organizing the economic space, such as: expediency, goal orientation, interconnectedness, hierarchy, complexity, dynamism and adaptability, performance, all on the basis of integrity and strategic focus on economic growth.

In the article "The Fifth Way" N.A. Nazarbayev[21], considering the origins of the systemic global crisis of 2008 and the ways out of it, systematically divided modern innovation into three key innovation groups: technical-technological innovations (real economy) explaining the change in countries' technological patterns; monetary-financial innovations (financial sector), the progress of which determines the change in monetary-financial structures of countries and the world; and the third group includes socio-political innovations (management sector). Also, it was noted that understanding and delimitation and, at the same time, holistic consideration of these groups play a significant role in understanding the very essence of the crisis and out of it as "contradictions between the pace and levels of development of technological, monetary-financial and social-political structures of each country and the world as a whole"[22]. The essence and nature of the crisis partly lies in the inconsistency between the pace of implementation of the three mentioned innovation groups.

Research results and their discussion

Based on this approach, the authors consider important in the regional innovative development the consistent movement in the three above-mentioned main groups of directions. The development of a deeply substantiated long-term development strategy for a region, including the innovative component, is a necessary task that requires a completely different approach, taking into account a holistic understanding of development in three directions, and should be based on the following.

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[19] A. Petrov, "Innovative Pharmaceutical Cluster as a Point of Economic Growth of Sverdlovsk Region", Regional Economy num 1 Vol: 3 (2010): 199-203.

[20] X. Wu; R. Ma; Y. Shi y K. Rong, "Secondary Innovation: The Path of Catch-up with "Made in China", China Economic Journal Vol: 2 num 1 (2009): 93-104.

[21] N. A. Nazarbayev, The Fifth Way. International Information Group "Interfax". Interfax Information Website. 2019. Available at: https://www.interfax.ru/interview/101426

[22] N. A. Nazarbayev, The Fifth Way… y S. B. Bayzakov; E. V. Vasilchuk y A. K. Kurmangalieva, Models of Eco-economic Systems at the Regional Level. Materials of the International Scientific-Practical Conference "Baitursynov Readings - 2019" (2019): 242-253.

Firstly, knowledge of development directions. It is important to take into account the technical-technological resources of a region, a monetary-financial component of regional development and its sectoral divisions, and socio-political resources, including managerial ones that must be involved simultaneously, taking into account mutual influence and a single focus with strategic goals.

Secondly, in accordance with the modern regional development theory, it is necessary to create an institutional environment for a competitive economy, which requires a scientifically sound approach, a theoretically verified tool for the formation and implementation of innovative development programs, taking into account a comprehensive systematic analysis of strategic objectives in the three development directions mentioned, which is possible only with appropriate approaches to the development of regional development strategic programs, a clear description of the goals and management criteria, quantitative assessment and analysis, i.e. system modelling.

Thus, the analysis of the existing innovative development paradigms, the generalization of all approaches to managing innovative development and the analysis of development trends made it possible to substantiate the author's interpretation of the concept of innovative development as an increase in the rate of economic growth due to innovations introduced in three equal directions of the country's economy. Such interpretation characterizes both the qualitative and quantitative characteristic of development, defines it as a systematic and structural approach to the entire volume of innovative processes in their interaction, which are based on innovation, innovative products (innovative manufacturing methods) and the innovative form of services and management itself. This requires the introduction of innovative approaches to the management of innovative development to make economies more productive.

In a three-layered economy, the function of analyzing and determining the goals of the country's sustainable development remains with the administrative sector of the economy, and more specifically - with the ministries of national economy and finance, which, together with the National Bank, are responsible for the formation and implementation of fiscaland monetary policies in the countries of the world. In the proposed three-layered version of the innovative development of the national economy, a qualitative difference appears between the growth rates of micro- and macroeconomics. Moreover, there is a new opportunity to take into account the purchasing power of national money in a single analysis model.

One of the main advantages of the three-layered version for innovative development is the opportunity presented for assessing the contributions of each sector of the national economy separately and taken together to economic growth.

In this regard, the study of productivity of the three main local (regional) resources in a single system of models for assessing the effectiveness of eco-economic, financial and human resources is of great importance. It implements the ability of different sectors of the national and regional economies to fulfill their innovative potentials within the framework of certain production-economic relations.

In economics, a multiplier generally refers to an economic factor that, when increasing or changing, causes an increase or change in many other related economic variables. As for GDP, a multiplier effect leads to the fact that an increase in total production will be greater than the resulting change in costs.

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According to J. Keynes, a multiplier is a coefficient showing a quantitative assessment of the additional effects of investments, in addition to those that can be measured immediately. The larger an investment multiplier, the more efficiently it creates and distributes wealth throughout the economy, i.e. leads to an increase in national income, which increases to a much greater extent compared to the initial investment, due to the following effects: a primary effect, such as income and job growth, a secondary effect, etc., giving a multiplier effect. In economics, a multiplier generally refers to an economic factor that, when increasing or changing, causes an increase or change in many other related economic variables. Keynes assumed that any infusion of government spending creates a proportional increase in total income for the population, since additional costs will affect the economy and showed that any amount used for investment will be reinvested many times by different members of society[23]. Thus, the authors assume that, among other things, it is necessary to consider the mutual influence of industries, local eco-economic, financial resources, administrative resources, their productivity, as well as to consider public administration of the country's economy as a whole on a national scale. This approach consists in using the general multiplier effect, which takes into account additional indirect advantages, which then affect the overall development.

The need to effectively manage the regional innovative development is based on an understanding of the reproduction and capitalization processes taking place at the regional level[24]. Consideration of the region's economy in the form of three layers and corresponding development directions, taking into account the multiplier effect of each, will allow for a holistic approach to the development of regional economies, the lack of which is currently causing imbalances in the structure of regional economies. So far, in the commodity-based economies, this effect has been manifested due to the volumes of raw material production and, mainly, their prices. This naturally caused an increase in the cost of intermediate products, then it extended to the development of related industries, giving impetus to the economy of the country as a whole[25]. Nevertheless, this increased structural imbalances, the gap in gross regional product, increasing the dependence of the economy on external prices. The consequences of the crises of 2008 and the end of 2014 showed the failure to use such multiplier effect. Obviously, to obtain a meso- and macroeconomic effect, an integrated review of the regional economy in all development directions is important. Such three-level system of analysis of socio-political progress is harmonized with scientific, technological and socio-economic progress.

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[23] J. Keynes, The General Theory of Employment, Interest and Money (Moscow: Bizneskom CJSC, 2013).

[24] V. A. Slepov; M. E. Kosov; V. K. Burlachkov y O. A. Grishina, D. M. "Sakharovю Shadow banking: Reasons of emergence and directions of development", International Journal of Civil Engineering and Technology Vol: 10 num 2 (2019) 1747-1754; V. A. Slepov; V. K. Burlachkov; T. P. Danko; M. E. Kosov; I. I. Volkov; O. A. Grishina y V. D. Sekerin, "The country's economic growth models and the potential for budgetary, monetary and private financing of gross domestic product growth", European Research Studies Journal Vol: 20 num 4A (2017): 488-500 y A. V. Sigarev; M. E. Kosov; O. B. Buzdalina; R. A. Alandarov y I. N. Rykova, "The role of chains in the Russian retail sector", European Research Studies Journal Vol: 21 num 1 (2018): 542-554.

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Figure 2 shows a logical model of the innovative multiplier for the three-layered economy of the regions, where the multiplication effect is obtained due to the accumulation in the innovation field of all innovative flows from all three directions of the regional economy development.
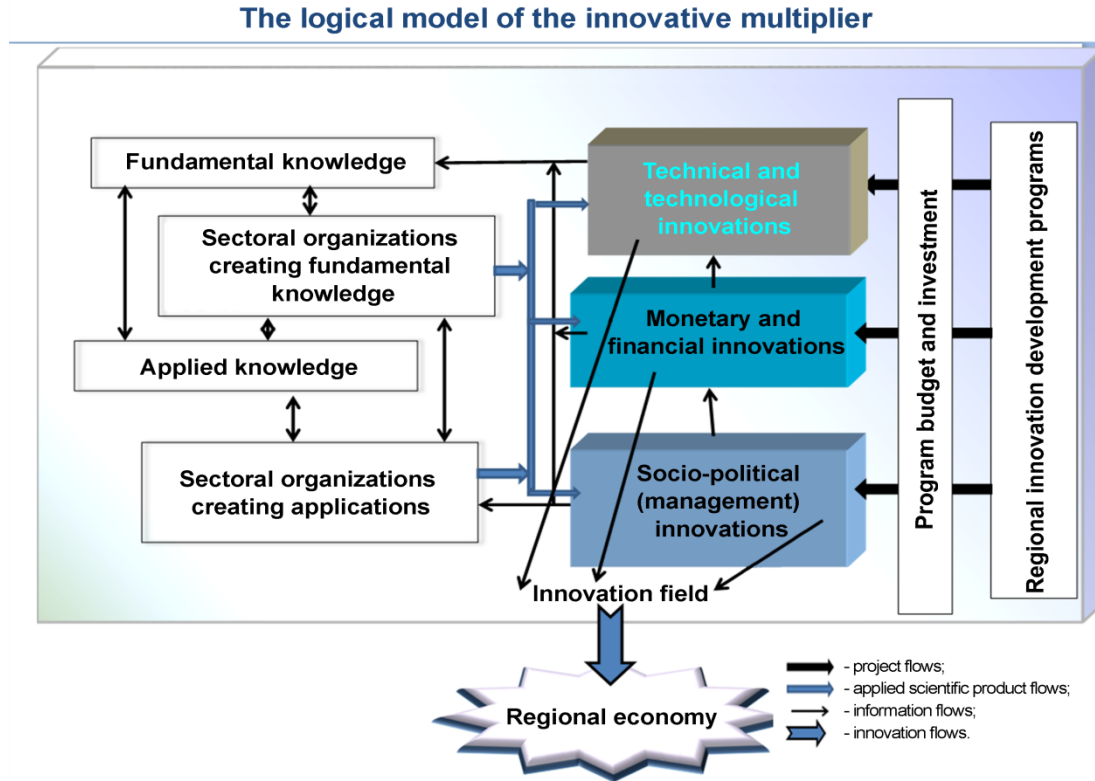

Figure 2
The logical model of the innovative multiplier
Source: Developed by the author based on materials[26]

Applying such integrated approach to innovative development, the economy receives a multiplier effect due to the interaction and interconnection between all development directions, allows getting results in all sectors of the economy, creating additional jobs, growth in income, profit of industries and companies, and innovative development of all regions in general, eliminating structural imbalances in the regions.

Justification of the model for assessing the productivity of local eco-economic resources in the country's regions

Let us consider a three-layered economy and an analysis model system of such economy that relies on the productivity[27], first, of local eco-economic resources - QP in the regions or a sector of the country's economy $\mu=NGDP/QP$, where $NGDP+QP=X$ represents the full amount of costs in its region or sector of economy. Hence, a multiplier

[26] G. V. Sokolov, "The Role of the Innovative Multiplier in the State Economy", Industrial Economics num 5 Vol: 31 (2019).

[27] S. B. Bayzakov; E. V. Vasilchuk y A. K. Kurmangalieva, Models of Eco-economic Systems at the Regional Level. Materials of the International Scientific-Practical Conference "Baitursynov Readings - 2019". 2019. 242-253.

of scientific and technological capacity (STC) in a region or a sector of the country's economy - *c* is determined as a function of the productivity of local resourcesby the following formula - c=μ/(1+ μ).

Secondly, it relies on the productivity of financial resources - η=TW/TR, where TR represent the accumulated part of the nominal GDP (NGDP) created in a region or a sector of the country's economy, since NGDP=TW+TR, where TW is a consumed part of a product created in a region or a sector of economy in nominal value. Hence, a multiplier of socio-economic capacity (SEC) in a region or a sector of the country's economy - q is determined as a function of the productivity of financial resources by the following formula - q= η/(1+ η).

Thirdly, it is based on the productivity of a laborer's "mental" resources - μ*η=c/(1-c)* q/(1- q), which represents the product of productivities of local eco-economic resources and financial resources. Hence, a multiplier of socio-political capacity (SPC) in a region or a sector of the country's economy - c*q is determined as a function of human capital productivity by the following formula -c*q= μ/(1+ μ)*η/(1+ η).

Figure 3 presents a system of multiplier models of the three-layered economy calculated on the basis of the corresponding resource productivities, by which it is possible to assess the country's economic development and its innovative capacity.
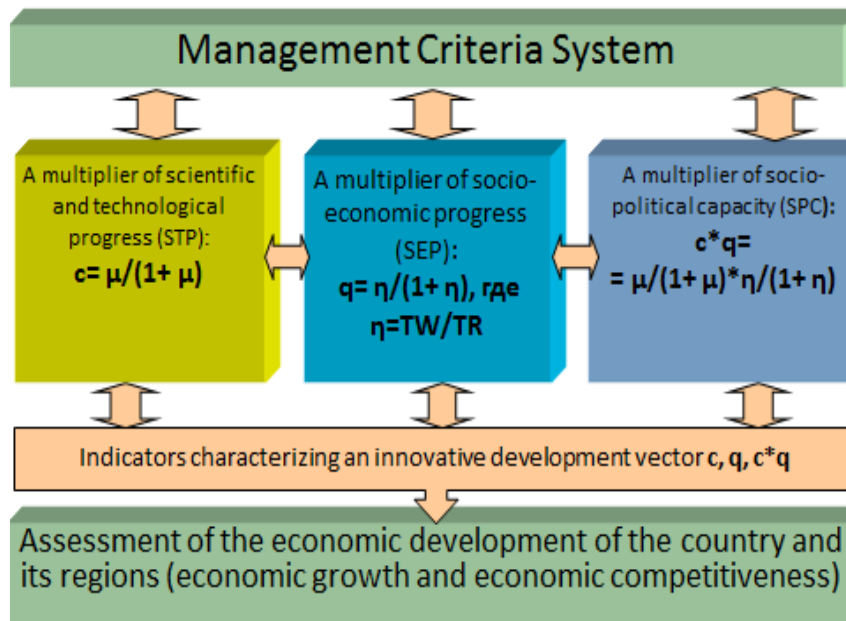
Figure 3
A system of multiplier models of the three-layered economy
Source: developed by the author based on materials[28]

The use of the presented multiplier models allows determining the functions of scientific and technological progress, the functions of socio-economic progress and the

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[28] S. B. Bayzakov; E.V. Vasilchuk y A. K. Kurmangalieva, Models of Eco-economic Systems at the Regional Level. Materials of the International Scientific-Practical Conference "Baitursynov Readings - 2019" (2019): 242-253.

assessment of socio-political progress in development by year. The presented innovative multipliers adapt the economic system to dynamic changes and social needs, ensuring the efficiency of economic development.

Conclusion

The analysis of the existing innovative paradigms, as well as the areas of innovative development (ID) necessary for the formation and implementation of regional ID programs allows developing the concept of ID with due account for the qualitative difference in the growth rates of the economy and system management, systematically considering the whole range of program-targeted documents for holistic areas of development. Due to the importance of regional characteristics, it helps to study the underlying problems of developing economies based on resource productivity, formulate ID programs and comprehensively evaluate development and innovative capacity.

The use of an innovative leverage in the form of a system of development management criteria - innovation development multipliers and their assessment, based on the systemic interaction of three key innovation groups and the productivity: 1) local eco-economic resources in the country's regions or a sector of economy - a multiplier of scientific and technological capacity as a function of local resource productivity, 2) financial resources - a multiplier of socio-economic capacity, as a function of financial resource productivity, 3) a multiplier of socio-political capacity - human capital productivity.

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