

ISCKMC 2020**International Scientific Congress «KNOWLEDGE, MAN AND CIVILIZATION»****GLOBAL TECHNOLOGY TRENDS: REGIONAL ECONOMY IN
SEARCH OF NEW GROWTH MODEL**

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Abstract

Currently, humanity is faced with the effect of global scientific and technological shifts underlying diverse transformations in the economy and society. Innovative renewal of the technological base, modernization of development institutions, spread of integration methods of economic and management activities, widespread use of advanced service platforms, network communities with the increasing role of the state in solving priority problems of innovative development are becoming the main determinants of economic dynamics at both national and regional levels. As a result, the search for effective ways of regional growth adequate to the increasing complexity of system-forming relations inherent in a new type of reproduction becomes especially relevant. The objective of the work is to study modern transformation processes underlying economic actors functioning for the development of proposals aimed to stimulate regions innovative activity. The work focuses on the use of the main provisions of the ecosystem approach, methods of systemic, logical and comparative analysis, scientific generalization and systematization. The problems of managing the innovative development of domestic regions are identified, and the most important provisions and principles of overcoming the inertial mode of functioning are determined. The feasibility of using the advantages of the ecosystem approach in determining the innovative priorities of regional policy has been substantiated. A functional model for development and implementation of programs for the innovative development of regions providing for the need to identify the innovative competence of the region as well as the possibility of attracting various stakeholders of the innovation process to its implementation is proposed.

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Keywords: Scientific and technological shifts, innovation process, regional management, ecosystem approach, structural and functional mode



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1. Introduction

Nowadays, achieving long-term economic benefits becomes possible only due to the transition to an innovation-oriented development model (Acemoglu et al., 2018; Cooke, 2001; Kurhonen, 2001; Shumpeter, 1952; Tumenova, 2020). At the same time, the majority of the problems arising during innovative activity of socio-economic systems including regional ones are due to the complex interaction of new geopolitical, social, economic, and technological factors. As a result, the search for ways of regions innovative development adequate to the increasing complexity of system-forming relations inherent in the modern type of reproduction is actualized.

2. Problem Statement

The work is based on the assumption that the global nature of the emerging scientific and technological shifts radically changes the approaches to economic, managerial and rule-making issues. As a result, it is required to develop proposals for restructuring the regions production landscape, which would allow the industrial sector and, consequently, the entire regional economy to increase innovation (competitiveness) by organizing more effective communications and coordinating joint activities of participants in the economic process and all parties interested in it, widespread use of new technologies in management.

3. Research Questions

The article examines the issues of developing an innovative growth model at the regional level with regards to modern transformation processes and technological shifts underlying the conditions of economic actors functioning. Specifically, the following aspects have been studied:

1. Global structural and technological shifts in modern world economic dynamics.
2. Problems of managing the innovative development of the constituent entities of the Russian Federation, which we consider as full-fledged participants in market relations, and measures to stimulate the innovative activity of domestic regions.

4. Purpose of the Study

The purpose of the study was to study the influence of modern trends in world economic dynamics on socio-economic processes and develop proposals to stimulate the innovative activity of regional economies.

5. Research Methods

The methodological basis of the work was ecosystem approach axiomatics aimed to reconcile the multifaceted goals of regions development with the specifics of their natural and economic systems. During the development of proposals, existing theoretical developments in the field of innovation management, theory of regionalization of economic processes, organizational management, structural and

technological dynamics of economic systems were used. In the course of the research, the methods of systemic, logical and comparative analysis, methods of scientific generalization and systematization were applied.

6. Findings

The study of structural and technological tendencies of modern world economic dynamics made it possible to identify the following trends that have the most significant impact on socio-economic processes.

1. The dynamics and quality of economic growth are increasingly dependent on technological shifts based on innovation, which is manifested in the outstripping rates of high-tech industries development, an increase in high-tech production and innovative activity of economy sectors.

2. New generation technological industries are emerging at the intersection of digital technologies and the real world. Modern platform solutions are helping to build a sharing economy. Big data technologies act as a critical resource for generating knowledge and value contributing to data-driven innovation. Digital hubs maximize the following network effects:

- using the intellectual capital of consumers, partners, suppliers when creating a product,
- collecting and managing personal data (Lin, 2011).

Thus, the use of network services, namely, advanced service platforms based on modern IT technologies (artificial intelligence, the Internet of things, robotics) and human-machine interaction benefit accumulating the necessary data for releasing new customized (personalized) types of products and services. By engaging consumers in the development of personalized products, web technologies enable customer-driven innovations to evolve. According to (Russell et al., 2011), the ability to customize manufactured products is becoming a key competitive advantage in the global market.

3. Scientific and technological development accelerates during products life cycle, the period of research, development and implementation of innovations are reduced, which results in the fact that competitiveness is increasingly determined not by price but by technological factors.

4. There is an interpenetration of science and production. Specifically, science is increasingly oriented towards the needs of the economy with a significant increase in business interest in innovation. As a result, the transfer of knowledge from the scientific sphere to the production one acquires a permanent, purposeful nature, the share of extra-budgetary funding for R&D is increasing, the absolute value of the resources involved in the innovation process is growing, and interdisciplinary research is expanding. At the same time, the relationship between knowledge, innovation and economic benefits is formed within the framework of a new integral model, in which the role of the institutional environment is sharply increasing. The industrial era was characterized by one-dimensional innovation process (the consistent advancement of knowledge from fundamental science to applied science and further to the sphere of production) but in the post-industrial era it has become multidimensional (knowledge circulation between different institutional sectors through direct and feedback links). Thus, over several decades, the model of creating innovation has undergone a serious historical evolution and become fundamentally more complicated due to closed innovations by individual manufacturing companies

(Shumpeter, 1952) to end-user innovations, then to the concept of strategic innovations, and finally to open business innovations in conditions of mass outsourcing (Chesbrough, 2003).

5. The innovation process is becoming more complex and systemic. Innovation encompasses not only technological change but also social and managerial spheres. There is an increase in their socio-economic impact, information sources are becoming more diverse, and the number of participants in innovative activities is growing. A completely new networked model of innovations emerges when they are created collectively by members of the network community, who enter into collaborative relationships and form a specific ecosystem (the concept of collaborative innovation networks) (Gloor, 2006). The intensive development of ICT leads to a hierarchy delayering as a result of spreading networked forms of business organization, development of horizontal links that facilitate access to knowledge and information. As well, the development of the network environment results in a more complicated structure of economic systems. Networked communities being innovative ecosystems, which are networks of sustainable connections between people, organizations and their solutions arising on the basis of joint strategies for the desired transformations, are formed (Emerson et al., 2011). Such networks can be formed at different levels (from internal to global ones) and designed for the interactive nature of the emergence of innovations and their collective nature. The innovation process interactivity means that it becomes distributed, dispersed (diffusion) and decentralized even if it is centrally funded by the state (MacGregor & Carleton, 2012). Streams of innovation are dispersed between the official and business circles, universities, research centers, members of professional communities and individual information spheres making up a single complex of applying knowledge and technology in the modern economy. Today, not only in developed economies but also in many developing ones (for example, China), territorial innovation ecosystems designed to achieve world-class innovation effects are being formed. They are innovative hubs or similar network communities that allow territories to continuously renew the goods they produce and flexibly react to technological and market changes (Cruz & Teixeira, 2011).

6. Coordination and integration of innovative activities in the framework of international scientific and technical cooperation is increasing as a result of the growing openness of the economies of various states. In the industrial era, the industrial production was organized in the form of national value chains, and international corporations developed foreign trade in raw materials and finished products. Notably, the further intensification of international economic relations and the development of ICT led to markets globalization and the ubiquitous formation of global value chains (Gereffi & Lee, 2012). In order to save costs, high-tech corporations in developed countries have adopted a massive offshoring strategy, outsourcing labor-intensive, least profitable stages of the value chain to developing countries with cheap labor leaving them with high-yielding knowledge-intensive stages associated with innovations and services development (Beckert, 2010). As a result, global chains began to horizontally penetrate into sectors and countries, providing a growing diversification of the world economy. This practice has caused a radical restructuring of vertically integrated forms of business organization. It has been described in the literature as a process of shrinking hierarchies or downsizing and decentralizing governance of classical corporations (Asheim, 2002). It resulted in the changing the models of a centralized corporation and a distributed network company, as a horizontal network structure built on the cooperation of many independent small and medium-sized firms.

7. The role of political will and participation of the state in the development of the economy potential to disseminate innovations and technological solutions is significantly increasing, which ultimately determines the competitive positions of states in the world. From the standpoint of developing public policy, the spheres of interaction within the framework of the triad “state-society-business” are expanding and allowing a new look at the classic dilemma between horizontal and vertical structural policy, the need to prioritize and implement broader measures that cover all sectors of the economy to varying degrees (Akcigit & Kerr, 2018; Gibbs et al., 2005). This process directly affects the prerogatives of public administration being education, science, intellectual property protection, innovation and investment policy, a favorable business climate formation.

8. New generation technologies significantly enhance human intellectual capabilities and accelerate production processes. In modern conditions, for the first time in history, the rise in production is based solely on productivity growth, when the labor market does not grow but, on the contrary, the development of new technologies leads to its contraction. Consequently, in the next 20 years in sectors related to routine work, up to 47 % of jobs can be automated. Technological factors of labor market contraction are superimposed on population aging. For Russia and its regions, the negative trend of decreasing the number of the employed developed in the early 1990s continues to be extremely pressing, highlighting the need for continuous productivity gains to support sustainable growth (Tumenova, 2019).

9. Transition to the fifth, and, moreover, to the sixth technological order significantly changed the role of the natural factor in ensuring economic growth. If this factor was considered as one of the main sources of economic dynamics until the 1980s, today it is becoming an increasingly tangible limiter.

Summarizing the above, we can note that the formation of a fundamentally new world order, the need to achieve management goals based on the main provisions of the ecosystem approach, namely, the economic, environmental and social balance of the regional Green Building Councils development become especially relevant. Thus, the concept of ecosystem management aims to coordinate the multidimensional problems of regional development concerning the interrelationships of economic agents, models of their economic activity and interactions with the functioning environment. Put it otherwise, it implies improving the population quality of life without significant damage to the environment based on the principles of sustainable nature management.

In the context of a transition to a new technological order, building an effective mechanism of positive structural and technological shifts formation makes regional government bodies to be prepared, politically motivated, capable of making non-standard decisions. At the same time, the analysis concerning the shortcomings of modern management of domestic regions innovative development carried out in the course of the study, revealed the following:

First, a poor coordination of activities both between regions and different levels of government. Regional projections are vaguely outlined in the strategies, forecasts and initiatives developed and presented at the federal level. When making unified decisions for heterogeneous subjects of the Russian Federation, there is a high probability of miscalculations.

Secondly, the low quality of regional development strategies developed in isolation from global socio-economic, structural and technological trends and insufficient use of the comparative advantages of other regions. The consequence of this is a decrease in the diversity of regional strategies with an

excessive duplication of priorities, ineffective use of budget funds and the emergence of wrong signals for private investors.

Thirdly, such efficiency barriers as weak interagency and inter-level coordination, lack of financial security.

These problems are aggravated by the systemic challenges of the country spatial development, which is still characterized by historical imbalances in regional labor markets, ineffective location of production and infrastructure. All this results in the prevalence of the inertial scenario of regional development leading to the depletion of the investment potential of business, structural deformations (simplification of the production structure), undermining the possibilities of innovative growth, strengthening the domestic regions competitiveness.

Additional efforts are required to overcome this situation. Moreover, it is critical to attract not only significant financial resources but also the latest management technologies aimed to implement the following most important principles of overcoming the inertial mode of functioning:

- priority of the cognitive environment aimed at the effective use of regional intellectual resources, their predominance over material ones;
- strategic continuity of innovative and adaptive development of regions;
- integration of the interests of the state, business, scientific community and society within the framework of social consensus;
- complexity of development institutions;
- innovative alignment, which allows the diffusion of progressive innovations not only in high-tech sectors of the economy but also in traditional industries, and a number of other ones.

Assuming that the growth of the regional economy can be ensured by structural diversification based on the identified priorities for enhancing innovation, we have proposed a structural and functional model for the development and implementation of programs for innovative development of regions (Fig. 1).

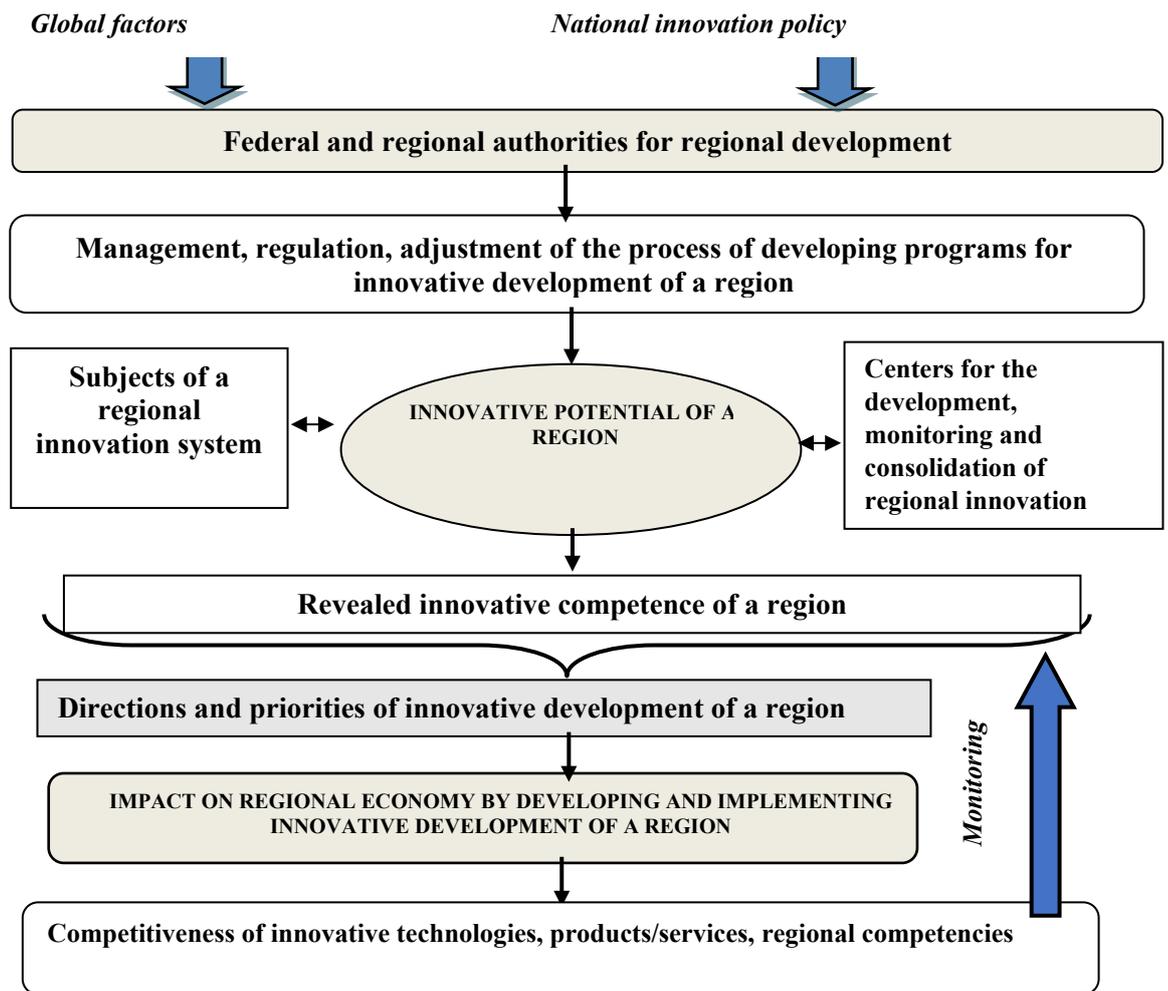


Figure 1. Model for development and implementation of programs for innovative development of regions

The model provides for the need to realize the innovative potential of a region on the basis of the identified innovative (key) competence as well as to involve various stakeholders of the innovation process in the implementation selected by the innovative development of the region. At the same time, an important role is assigned to regional authorities responsible for correct identification of priorities and selection of an adequate set of innovation policy instruments.

7. Conclusion

The solution to the problems of the regional economy dynamization is associated with the development and implementation of territorial projects, programs, investment schemes for innovation-oriented development focused on the identified innovation competence of a region. At the same time, the directions for enhancing innovation are associated with ensuring the availability of digital technologies, their active penetration into everyday life through the development of new tools for interaction of economic agents on the principles of inclusiveness, priority of the cognitive environment, strategic continuity of the innovation process as well as the integration of the interests of the state, business, the scientific community and society within the framework of social consensus.

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