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**STRATEGIC PLANNING OF TECHNOLOGICAL
DEVELOPMENT OF THE REGION**

E. V. Sumina (a)*, I. A. Misineva (b), E. L. Sokolova (c), E. A. Kraus (d)

*Corresponding author

(a) Reshetnev Siberian State University of Science and Technology, 31, Krasnoyarsky Rabochy Av., Krasnoyarsk, 660037, Russian Federation, sumina@sibsau.ru

(b) Reshetnev Siberian State University of Science and Technology, 31, Krasnoyarsky Rabochy Av., Krasnoyarsk, 660037, Russian Federation, imisineva@mail.ru

(c) Reshetnev Siberian State University of Science and Technology, 31, Krasnoyarsky Rabochy Av., Krasnoyarsk, 660037, Russian Federation, elizaveta-sokolova@yandex.ru

(d) Reshetnev Siberian State University of Science and Technology, 31, Krasnoyarsky Rabochy Av., Krasnoyarsk, 660037, Russian Federation, eak.05@mail.ru

Abstract

The article reveals the current global economic situation due to both technological challenges, the digitalization of the economy and the consequences of the global economy from new threats. The international economic environment and technological challenges, the cyclical nature of economic development determine the need for new methodological approaches to strategic planning of the technological development of the region taking into account the characteristics of each country and the mezzo-factors of the region. The article analyzes the evolution of theoretical approaches to strategic management and planning, identifies factors and discloses the mechanism of strategic management of the region's technological development. In the process of preparing the article, the following methods of scientific research were used: methods of systemic and formal logical, scientific analysis and synthesis, comparative analysis, economic and statistical methods, and other methods. The purpose of this study is to reveal the essence of the process of strategic planning of technological development of regions, the definition of strategic alternatives for technological development of the Russian economy. The advantage of this work is the formulated conceptual basis for the development of a strategy for the technological development of the region based on the formation of its innovative advantages.

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Keywords: Strategic planning, technological development of the region, innovative advantages of the region.



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1. Introduction

Technological development of Russia today depends on the overall situation in the global economy, which is characterized by many experts and scholars as a complex associated with a new formation - the digital economy based on information and communication, digital and conditions of the developing crisis caused by many reasons. The natural decline in productivity in traditional sectors of the economy of the industrial era is determined by the further development of the global socio-economic situation and the selection of priorities for the country's technological development. Many leading economists have noted a slowdown in productivity growth, which began back in the 1970s. The formation of an innovative economy leads to a serious change in the sectoral structure of the economy (Yasin et al., 2013).

This trend is significantly reflected in both the regional industrial and technological specialization, and the potential of scientific and technological development of the economy as a whole. Previously staged strategic guidance to more than double the level of investment in R & D and R & D to 2.5-3% of GDP and the share of innovative products in the international market to 30% (Kudrin, 2016).

Unlike the information economy, which is dependent on Internet technologies, the digital economy is a more comprehensive and complex stage of economic development. These conditions put forward new requirements for the level of innovation activity and effectiveness of the regional socio-economic systems.

1.1. The evolution of theoretical approaches to strategic management and the role of technology

The main focus of the study should be the conditions for ensuring the effectiveness of innovation and strategic management of the region's technological development, the identification, preservation and technological development of priority sectors of the region's economy, taking into account new threats and the consequences of reducing production on the one hand and the possibilities of using the digital industry.

During recession phases (periods of depression), the economy is structurally ready for basic innovations, which are subsequently manifested by results with a corresponding multiplying effect. Further, their distribution, with simultaneous improvement innovations, leads to growth (Mensch, 1979). At the present stage, Russia has been confronted with the difficult task of maintaining the stability of the financial system by implementing radical economic, social, and institutional transformations as soon as possible. Mensch (1979), identifying the weaknesses of the theory of Schumpeter (1982) in the diffusion of innovations, determined the role of technological basic changes precisely in the conditions of economic recession. Determining the necessary approach to the strategic planning of the technological development of the region, it is necessary to take into account existing theories and the modern paradigm in the field of strategic management.

Ansoff (1989) defines strategy as "a set of rules for making decisions that guide the organization in its activities" (p. 120). Chandler (1962), the author of one of the pioneering works in the field of strategic planning, believes that strategy is "the definition of the main long-term goals and objectives of the enterprise and approval of the course of action distribution of resources necessary to achieve these goals". Strategy as a way of responding to external opportunities and threats, internal strengths and weaknesses Ansoff (1989) defines such management as a combination of strategic planning of leadership opportunities and management of the process of strategic changes. According to Mintzberg et al. (2000), a strategy is a combination of five "p":

- Plan (development direction);
- Principle of behavior (following a certain behavior model);
- Position (the location of certain goods in specific markets),
- Perspective (the main method of enterprise action);
- Planning (Strategic) - a set of actions and decisions leading to the development of specific strategies that become the basis for the organization in achieving its goals.

The strategy is defined in his work as “a set of rules for making decisions that guide the organization in its activities” (Ansoff, 1989, p. 89).

The fundamental question in strategic management is how companies achieve and maintain a competitive advantage. The most important contribution to solving this issue was made in the 1980s by the theoretical approach developed by Porter (2010). Symbols of the transition to a qualitatively new stage began at California Conference in 1990, where Hamel and Prahalad (2002) published an article, which became the catalysts of the resource approach in strategic management.

If the first stage was generally characteristic of the priority aspects of the domestic activity of the firm, for the second - focus on the external environment, the feature of the third phase was the return to the updated IP-based internal capabilities and competencies.

1.2. Competency-based approach in strategic management of the region’s technological development

Text founders resource concepts in strategic management can be considered by Barney (1991). It is defined in his writings, internal expertise and resources as a basis for competitive advantage. Earlier, Ansoff (1989) introduced the concept of competence grid (1989), by which he meant a generic list of skills and resources. The concept of key competencies in relation to socio-economic systems was first introduced in the mid-90s of the XX century by Hamel and Prahalad (2002). Key competencies are a set of interconnected skills and technologies, not a single skill or technology that creates exceptional customer value. This is a systemic organizational knowledge aimed at obtaining a synergistic effect from coordination, diverse production skills. Hamel and Prahalad (2002) identify the following features of key competencies:

- value for the consumer;
- differentiation from competitors, ensuring the competitiveness of the company;
- "Horizon", providing a transition to the markets of "tomorrow".

The strategic architecture is a master plan for the deployment of new functionalities, a plan for acquiring new or moving existing competencies and a new configuration of the system of interaction with consumers. It shows the organization what actions need to be taken at a given time in order to implement the desired alternatives in the future.

Using the terminology and the main provisions of the theory of Hamel and Prahalad, the process of strategic development of the enterprise on the basis of key competencies, in our opinion, can be represented by the circuit diagram shown in the figure. The main stages of strategic development in the framework of the new concept are presented in Figure 01.

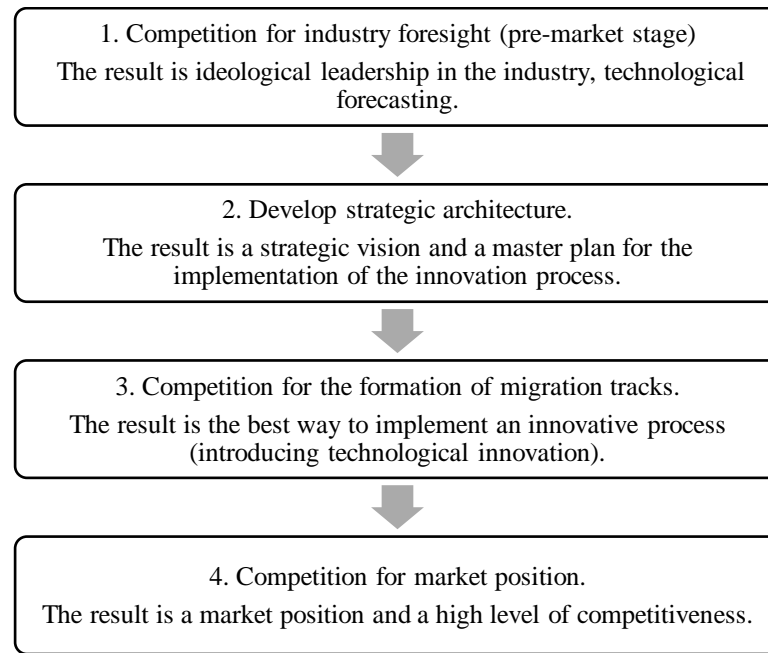


Figure 01. Stages of strategic management based on the resource (competency) approach

Competition for sectoral foresight is a competition for the consolidation of the company's position as an intellectual leader, influencing the direction and shape of changes in the industry.

Competition for the formation and definition of “migration paths” as well as competition for intellectual leadership is premarket or non-market in the sense that there is no direct competition between products between firms. This competition is no longer for a new opportunity, but for the best path to its implementation, for the active formation of a future industry structure.

Competition for market position and market share is competition between real products or services for market position based on common parameters - cost of consumption, quality, price. At this stage, the principles of the classical approach in strategic management work.

Teece et al. (1997) were among the first to introduce the concept of “dynamic abilities” (the ability of a system to change, ahead of competitors), suggested and justified that timely response and quick and flexible implementation of innovative products in combination with the managerial ability to coordinate effectively and redeploy internal and external competence becomes the basis for the strategic development of the organization.

The term “dynamic” means the ability to update competencies in order to achieve compliance with a changing business environment; The term "capacity" underlines the key role of strategic management in a proper adaptation, integration and migration of internal and external organizational skills, resources, and functional competences in accordance with the requirements of a changing environment.

The category of “ability” should be disclosed for the region.

Region as a territory that can be separated from other territories by administrative and geographical criteria, which has special climatic conditions, industrial and scientific research potential of strategic development. In the Russian law, this is part of the territory of the Russian Federation within the boundaries of the territory of a constituent entity of the Russian Federation. The strategic planning in Russia is carried out at the federal level, the level of districts and regions, the municipal level. At the federal level, the

following strategic documents are being developed strategic planning documents developed as part of the goal-setting, which include:

- The annual message of the President of the Russian Federation to the Federal Assembly of the Russian Federation;
- Strategy for socio-economic development of the Russian Federation;
- Strategy of the Russian Federation's national security and public policy framework, doctrine and other documents in the area of the Russian Federation's national security;
- Strategy for scientific and technological development of the Russian Federation;

Defining the strategic alternatives of scientific and technological development of Russia and its regions must take into account existing approaches in strategic management and planning.

1.3. International experience and strategic alternatives for technological development of Russian regions

Japan and some of the new industrial countries of Southeast Asia are invading the international technology business. As participants in the international technology business, they concentrated their resources on buying up promising high-tech innovations at the last pre-market stage. By this time, it is already well known about the potential sales market, about production and technological resources and the features necessary for the production of innovations. It remains only to organize the final revision of the innovation and its launch in production.

Japanese model as well as the US, the process involves the creation of a priority, but the emphasis is on specific technologies. Over the past 10 years, the technology of building large tankers has been replaced as the leading technology for the manufacture of robots. In other words, at the state level, technological advantages are determined that must be achieved, and their development is stimulated so that the entire national economy can be transferred to new technologies.

Over the years, Japan has been a world leader in the share of R&D expenditures. The main participants in innovative investment in the country are FIGs, the corporate sector, which provides financing for about 2/3 of innovations. The state plays an exceptionally active role in the overall coordination of research in the country, in the implementation of large-scale R&D development programs and the encouragement of private companies.

Particularly important advantages for Japan and some other new industrial countries can be achieved mainly by shortening the time for engineering and development, production development and high-quality superiority of products, which allows them to stay ahead or at least keep up with new markets. In terms of the speed of development and launch into production, the Japanese are far ahead of Americans and Europeans (Denisov, 2000).

Innovation is the basis for the development of the economy in transition, in connection with scientific and technological progress, there is a transition from lower modes to higher and more progressive. These processes define key technologies and new training requirements. The industrialization and scientific and technological policy of the USSR, which took place in the thirties of the last century, was also

determined by the transition to a new technological structure, which allowed us to form productive forces in accordance with the new requirements of the world economy.

Changing the paradigm of strategic management of the region due to the influence of mezzo-factors regional development and new technological challenges, the advent of the digital platform as a basic component of technological development in various socio-economic and technological systems. Traditional strategic management paradigm not only shows the relationship with the technological development as a core component of many includes technology as a factor in determining the choice of strategy.

From the position of regional management and strategic planning, this is implemented through a system of strategic documents that determine priorities on the basis of technology imports and borrowing (copying), the inclusion of administrative, sometimes coercive measures, switching to innovations and regulation on the implementation of these technologies in various industries and public spheres.

A new approach to the strategic planning of the technological development of the region, based on completely different mechanisms for determining technological priorities, specialization of the region (Foray et al., 2009) and natural diffusion of knowledge. The strategic planning of technological development of the region in the most successful international examples of Japan, the USA, China, Korea and other countries is based on natural market mechanisms for creating competitive advantages of industries, increasing the capacity of regional markets for innovative products, and the production need for technological updating with the aim of scientific, technical and technological advances in the international market.

In this regard, the development of key competencies (core skills) that are difficult to copy by competitors and which give stability to competitive advantages and the ability to change them is an uncontested way of strategic planning and implementation management at the regional and national level of the country.

Thus, the strategic alternatives for the technological development of the region's economy can be divided into two groups in accordance with the existing approaches to strategic development (the traditional one has developed as catch-up development, including the search and adaptation of existing scientific and technological innovations with a predominantly directive mechanism for introducing them into the manufacturing sector) The second most acceptable way in modern conditions is the strategy of technological advances and the creation of new industries, given the many technological priorities for the innovative development of the region on the basis of natural market mechanisms for their selection and motivation for the technological renewal of industries in the region, the formation of new industries.

1.4. Organizational conditions for the implementation of the strategy of scientific and technological development of the region - the formation of Advanced Special Economic Zones (ASEZ)

Orientation to the system of long-term technological priorities and advanced development requires the formulation and determination of the basic principles of the advanced development of territories. ASEZs as preferential territories are called upon to become local territorial industrial complexes stimulating the socio-economic development of the region. It requires a definition of the principles of accelerated

development, which implies a faster pace of economic growth by increasing the share of high-tech industries, the formation of a certain organizational environment that stimulates innovative activity.

The concept of accelerated development of territories in the context of technological development of the region should be developed taking into account external trends, internal socio-economic goals and objectives of regional development related to increasing competitiveness and national security; increasing the demand for innovative high-tech products by stimulating natural market mechanisms, finding the optimal balance between the scale of budget subsidies and tools to stimulate research, development, and technological renewal; an increase in the share of high-tech products in the structure of a regional product, a concomitant increase in interest in the high-tech services sector and non-technological innovations (organizational, managerial, marketing, consumer), due to an increase in information and communication technologies; increasing the investment attractiveness of the high-tech sector of the regional economy, increasing efforts to find new effective tools and forms of public-private partnerships, developing and strengthening feedback mechanisms with public authorities, forms of public control in order to increase the level of social effects of innovative projects and programs; promoting the innovative development of the region by creating favorable conditions, stimulating innovation and increasing investment attractiveness.

ASEZ with appropriate methodological support marks a fundamentally new approach to using the institutional conditions of preferential territories. The status of a ASEZ resident provides a number of advantages compared to residents of other preferential territories and zones (SEZ and ZTR), including income tax benefits (0–5% for the first 5 years); 0% import and export customs duties; 0% VAT on imports for processing; 7.6% of insurance premiums instead of 30% for the investor the first 10 years; free land and finished infrastructure; expedited exporter's VAT refund procedure; “One window” for the investor; free customs zone; simplified state control; accelerated and lightweight procedures for obtaining a building permit.

Russian economist Glazyev (1993) sees the key idea of accelerating the development of the economy as the basis for overcoming the crisis in the accelerated formation of basic industries of a new technological order, the development and implementation of a mechanism for implementing the targeted program of accelerating economic development, which includes measures to increase investment in the development of its constituent production and technological complexes, creating favorable this macroeconomic environment and the formation of appropriate institutions and management contours; creating a strategic planning system, including setting priorities for economic, scientific and technological development. By definition of Sukharev (2013) leadership strategy (pioneer strategy) is “a form of development when a country is a trendsetter in the field of science and technology, the social consumption standard. Moreover, this leadership can be based on a special mode of functioning of the "center – periphery” (p. 3).

The first aspect of technological development is the consideration of organizational conditions stimulating innovative activity. Innovation process - a set of works aimed at creating and commercializing new knowledge in the form of scientific and technical products, improving production technology, translating new knowledge into a product. It should be noted that a number of researchers emphasize the role of incentives and competencies and the importance of technological learning processes: “national institutions, their systems of incentives and competencies that determine the degree and direction of technological training (or activities that generate change) within a country” (Pavitt, 2006, p. 40).

1.5. The process of strategic planning of technological development, which allows to form Innovative Advantages of the Region (IAR)

Planning technological development of the region shall consist of a system of interlocking regulations on technology foresight, goal-setting, ensure the organizational conditions for the implementation of scientific and technological priorities areas, evaluate the impact of innovative activity. Based on the results of international studies of factors determining the innovative result, for example, in the works of Pavitt (2006), the innovation process is three overlapping processes: the creation of new knowledge; turning knowledge into a product, system, process or service; further bringing the latter in line with market demand. In this regard, the accelerated introduction of innovations can be represented as a certain system characteristic.

The innovative advantages of the region as a new term represent the superiority of the region in terms of the effectiveness of innovative activities and the creation of the best stimulating conditions for the introduction of scientific and technological innovations in various industries and areas of the region, the creation of organizational conditions for innovative development through the use of natural market mechanisms; these are "changing" advantages of the region's economy, its ability to anticipate the identification and implementation of technological innovations (Sumina, 2015). Preferential administrative, tax conditions and established organizational mechanisms to support interaction, increase the level of competence of participants in innovative processes in certain territories ensure the achievement of the region's technological development goals. IAR is a combination of certain components of the region's innovative potential, which allow to achieve superiority of regional economic systems in terms of the ability to identify and implement industry and scientific and technological priorities, economic advancement in the context of institutional support for continuous innovative development (Sumina, 2018).

The theoretical disclosure and justification of the essence of the region's innovative advantages, with the growing role of the regional aspect of the country's economic development, becomes a necessary conceptual basis for strategic development in ensuring the goals of economic diversification and the implementation of the technological breakthrough strategy ahead of technological development.

At the regional level, innovative activity also consists in ensuring the effectiveness of innovation, the response to technological challenges with the formation of the corresponding industrial potential. The formation of IAR as the target parameter of the scientific and technological development of the region is associated with the following algorithm for planning the scientific and technological development of the region.

The first stage involves the analysis of innovative, resource, industrial potential for the development of the region, the definition of scientific and technological priorities for the development of the region. The second and third stages are aimed at coordinating and approving the selected innovative priorities. The fourth stage includes determining the zone of interaction of participants in the innovation process. The fifth stage is aimed at the formation and development of existing organizational forms, includes the formation of cluster structures and other cooperative forms, allowing to obtain maximum resource and competence effectiveness. The sixth stage includes ensuring the organizational conditions for the innovative development of the region. The seventh and eighth stage are included in the block of development of

competencies for the formation of IAR. The ninth final stage of the formation of IAR includes an assessment of the results of the technological development of the regional economy. In order to assess the effectiveness and level of development of IPR at the final stage of the methodology, taking into account the investment potential and infrastructure of the ASEZ, it is proposed to identify areas for assessing the level of technological development of the region based on IAR (Sumina, 2018).

2. Problem Statement

The article is devoted to the problem of the methodological substantiation of the strategic planning of the technological development of the regions under the difficult conditions of the growing economic crisis and the interrelated consequences of the coronavirus infection pandemic. There is a need to identify targets and priorities for the technological development of the region, determine the level of need for innovative transformations of industries in order to obtain social and economic effects, create the necessary administrative and organizational environment, implement a set of anti-crisis measures to support business as a participant in innovative processes.

3. Research Questions

The object of the research in the article is the strategy of technological innovative development of the region, especially the implementation of technological innovation processes in various sectors of the region's economy in the current economic situation and global technological challenges.

4. Purpose of the Study

The purpose of this study is to develop a strategic planning process for the technological development of the region, to study theoretical approaches to strategic planning and to determine the necessary organizational conditions for ensuring the innovative performance of the region.

5. Research Methods

The methodological basis of this work involves basic research of Russian and foreign scientists in the field of scientific and technological development, strategic management, regional economy. In preparing the article used the following methods of research: methods of system and formal logic, scientific analysis and synthesis, comparative analysis of economic and statistical methods.

6. Findings

The findings can be claimed in the management of the process of technological transformation of the region. Discloses the innovative potential of ASEZ, the role of preferential conditions in regional needs of the economy in technological innovations.

The article conducted a study of theoretical approaches to the strategic planning of the technological development of the region. A new conceptual approach to the planning of technological development based on the formation of innovative advantages of the region is presented, the corresponding target indicators are formulated and the planning stages are defined. As a result of planning and evaluation based on the

innovative advantages of the region (IAR), an integral indicator of the formation of IAR is determined. In addition to quantitative indicators of IAR assessment, qualitative indicators of the level of development of IPR can be included in the system of target indicators. The ninth final stage of planning the technological development of the region on the basis of IAR is to assess the level of IAR formation, which includes the determination of indicators of economic efficiency, the effectiveness of the organizational conditions of innovative activity, the resource one, and the determination of the level of development of competencies of participants in innovative activity. The scorecard is adaptable to the characteristics of the region and the current economic situation.

7. Conclusion

The difficult economic situation and the catalytic effect of the self-isolation regime during the coronavirus infection pandemic on the speed of introduction and use of digital technologies have revealed limitations - on the one hand, and advantages on the other. Innovative activity in the face of growing crisis in the economy is not a contradiction.

Given the most vulnerable sectors of the Russian economy in the context of a pandemic of coronavirus infection and a drop in productivity in traditional industrial sectors of the economy, new needs arise (digitalization, increasing the flexibility of production processes) and technological priorities.

The main conceptual provisions on which strategic planning of the region's technological development is based on setting target indicators for the development of IAR include the following aspects:

- Localization and concentration of managerial influences;
- A set of measures to stimulate and support the entrepreneurial sector of the economy with priorities in high-tech industries (necessary anti-crisis measures to support the financial system, financial support for business, tax, credit and rental vacations).

The strategic planning of the technical development of the region in the context of digitalization and the economic downturn is built on the principles of selectivity and leading technological forecasting, and a marketing justification, taking into account the social effectiveness of the technological update project and the introduction of innovations.

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