



THE MAIN PROVISIONS OF THE THEORY OF INNOVATION OF RAILWAY TRANSPORT

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ABSTRACT

Ushbu maqolada bugungi kundagi globallashuv jarayonlarida yoshlarimiz internet tarmoqlaridan to'g'ri foydalanish, information xurujlardan qanday ximoyalalanish mumkinligi ularning salbiy oqibatlarini, axborot xurujlarining turlari ularga qarshi kurashish usullari keltirilgan.

Currently, in most developed and developing countries of the world, the state policy is being implemented to develop national innovation systems. The key priority of the innovation policy is the commercialization of breakthrough research and development, since the results of management activities for the creation, implementation, promotion of new goods and services on the market largely affect the effective functioning of the country's economy.

The term "innovation" comes from the Latin "novatio" (update, change) and the prefix "in" (lat. "in the direction"). Literally "innovatio" - "in the direction of change." The concept of "innovation" appeared in scientific research in the 19th century, but it became widespread in the 20th century. thanks to the work of J. Schumpeter. It was Schumpeter who first applied this term in economics.

Innovation is a specific form of human life and thought activity. Its implementation and comprehension (especially systemic)

as a set of actions and thoughts organized in a special way at different stages of the development of society, in various types and models of economic systems, was not the same. It should be noted that social conditions significantly influence the propensity to invent and implement innovations - the "technological creativity of society" as defined by Joel Mokyr. He identified three main conditions that contribute to the technological creativity of society:

- First, the presence of a cadre of "inventive and enterprising innovators, able and willing to challenge the physical environment in order to improve their lives."

- Secondly, "economic and social institutions should encourage potential innovators by creating the right incentive structure for them."

- Thirdly, "innovation requires diversity and tolerance." The original form of existence of innovations in economic systems was empiricism, sensory



experience embodied in various customs, traditions, and legends.

It is no coincidence that the very concept of "innovation" first appeared in the scientific studies of culturologists in the 19th century and meant the interpenetration of elements of different socio-cultures. Only at the beginning of the twentieth century, the economic theory of innovation began to stand out and take shape as a specific theory of life and thought activity.

The historical process of its emergence, formation and development can be described as the origin, development and transformation of the economic experience of innovation, the economic thought of innovation, the economic doctrine of innovation and the economic theory of innovation. In modern science, innovations are considered as the most important factor of socio-economic development and are an integral part for the formation of the society of the 21st century*.

One of the global trends is the intensification of competition between innovative systems and "traditional" production systems for the necessary resources. Economic development has a certain dialectic: on the one hand, this development is generated by the intensification of scientific and technological progress; on the other hand, and the result of it leads to an increase in the level of technological development.

That is why the theory of innovation is extremely relevant today, especially for such an industry as rail transport, which "provided truly invaluable services to mankind in the development of civilization." According to the definition given in the monograph "Theory and Mechanism of Innovation in a Market Economy", "The essence of innovation is

the use of achievements of the human mind (new ideas, discoveries, inventions, improvements, etc.) to improve the efficiency of activities in a particular area - in the manufacture of new means or products of labor, the use of more efficient technologies, energy sources, the creation of new weapons and means of protection against it, the development of new architectural and artistic styles, the improvement of forms of labor organization, financial, trade or socio-political institutions, forms of international cooperation etc. The list of possible innovations and areas of their application is inexhaustible - as inexhaustible is the inventiveness of the human mind and the diversity of fields of activity, the versatility of human interests.

Although innovative practice has existed for many millennia, innovations became the subject of special scientific study only in the 20th century. The formation of the foundations of the theory of innovation took place within the framework of the formation of the general theory of cycles and crises, primarily in the economic and technological spheres. A powerful cornerstone in the foundation of the theory of innovation was laid by N.D. Kondratiev.

The Russian economist linked technological and economic innovative waves with radical changes in other spheres of society: "... wars and social upheavals are included in the rhythmic process of the development of large cycles and turn out to be not the initial forces of this development, but a form of its manifestation. But once they have arisen, of course, they in turn exert a powerful, sometimes perturbative influence on the pace and direction of economic dynamics. "Long waves of Kondratiev" or, in other



words, "Great Kondratiev cycles" have approximately half a century duration and consist of two stages - upward and downward, and four phases - recovery, rise, decline, depression.

According to his research, the first such cycle began in 1803 and continued until 1843; the second cycle - 1843 - 1896; the third began in 1896. According to modern researchers, this cycle continued until 1947. Two more cycles have been identified that correspond to the theory of N.D. Kondratieff: 15 Upward stage Downward stage fourth cycle (1947 - 1983) and fifth (from 1983 to approximately 2018). (The indicated cycle boundaries are approximate and vary in different studies).

It seems that in the approach to this problem one should agree with the opinion of V.A. Mau, that although there is no strict evidence for the existence of Kondratiev's "Big Waves" and cannot be due to the lack of a sufficient number of statistical observations, and the author himself considered his conclusions only as a hypothesis, but this hypothesis is "interesting and potentially productive".

An analysis of the long-term innovative development of railway transport also confirms the thesis about the productivity of N.D. Kondratiev. P. Sorokin, an associate of Kondratiev, laid the foundations for the theory of innovation in the socio-cultural sphere, understanding it in a broad sense - not only as art and culture, social and political relations, but also the dynamics of scientific discoveries and inventions, interstate and civil wars. In published in 1937-1941. In his four-volume "Social and Cultural Dynamics", he studied, in particular, the dynamics of technical inventions over more than 5 millennia of

the history of a civilized society, as well as the largest innovations observed in other areas of the spiritual life of society.

Noting the presence of long-term fluctuations in sociocultural dynamics, expressed in a change in the predominance of sensual and integral sociocultural types, Sorokin denied the existence of a general trend of historical progress, considered these fluctuations aimless, which is hard to agree with. They gave quantitative estimates of innovative waves in a number of areas of spiritual development.

The Austrian-born American economist Joseph Schumpeter, who studied the problems of the conjuncture, the history of economic doctrines and the economic system, argued, based on the theory of Kondratieff's Big Cycles, that it is innovations that bring to life long waves of business activity; he viewed them as "manifestations of the technological revolution and its consequences". He wrote that when innovations are introduced into the economy, there is a so-called "vortex of creative destruction" that undermines the balance of the former economic system, causing obsolete technologies and obsolete organizational structures to leave the market, leading to the emergence of new viable industries, as a result of which there is unprecedented growth of the economy and the well-being of people.

"Innovation is the act of changing production functions." In his theory of innovation, J. Schumpeter first substantiated the central role of the entrepreneur-innovator as the creator of new combinations of production factors, new markets and technologies. In the classical theory of the three factors of production (labor, land, capital), he is thus up to added the fourth factor -



entrepreneurial ability. By entrepreneurship, he understood not so much the ordered activity of independent economic entities of a market economy as the activity of those who actually, at their own peril and risk, carry out new combinations of factors of production, using inventions and discoveries, i.e. innovations.

Thus, according to A.A. Akayeva, "...innovations act as a locomotive of economic recovery, determining its efficiency and growth in labor productivity. Consequently, the way out of a deep cyclical crisis is associated with a "storm of innovative innovations" paving the way for the emergence of a new big Kondratievsky cycle." The problem of the relationship between innovation and economic growth was the subject of research by Nobel Prize winner Simon Kuznets.

In his Nobel lecture, he formulated a number of new approaches to the theory of innovation, developing the ideas of Schumpeter:

1. Kuznets introduced the concept of epochal innovations underlying the transition from one historical era to another. "Significant breakthroughs in the development of human knowledge, those that established the dominant sources of sustained growth over a long period of time and covered a large part of the world, can be called epoch-making innovations. And the shifting course of economic history may permit a division into economic epochs, each characterized by an epoch-making innovation and the hallmarks it engenders.

2. The revolutionary acceleration of economic growth rates in the industrial era was caused, according to Kuznets, by an epoch-making innovation - the accelerated

development of science became a new source of growth.

3. Discussing the social consequences of innovations, Kuznets notes that they can be both positive and negative. The economic function of the state is to stimulate their growth and structural changes, to analyze, select or discard the legal and institutional innovations necessary to form a new production potential. Without innovation, science languishes; the wave of innovation serves as a breeding ground for the flourishing of scientific research.

4. Technological innovations are interconnected with innovations in other areas of society. In 1975, a monograph by Heinrich Mensch "Technological stalemate: innovations overcome depressions" was published in Germany. The German scientist was the first to establish that it was during periods of depression that the economy was most receptive to innovation. Depression encourages the search for new approaches and opportunities for survival. Heinrich Mensch called this fact the "trigger effect of depression", meaning that depression triggers an innovation process that is unevenly cyclical and ends with the formation of clusters of innovations.

The American researcher K. Freeman argued that this happens during a revival in the process of diffusion, and diffusion is the process of spreading and linking innovations into one system that forms a single cluster of innovations. Apparently, the time of launching the innovation process takes a significant period, covering the phase of depression and partly the phase of recovery. Only relatively recently, M. Hirooka, based on the analysis of empirical data, proved the existence of a close correlation between the diffusion of innovations and large Kondratiev cycles



and confirmed that the diffusion of innovations, due to the mechanism of self-organization, selectively collects a powerful cluster of innovations along the rise of the large Kondratiev cycle.

In the works of Yu.V. Yakovets, innovations are considered as part of scientific, technical and economic cycles, as the basis for overcoming the crisis, a model of the relationship between scientific, technical, economic, educational, organizational and managerial cycles and their innovative phases is proposed.

Among modern theories of innovative economy and technological cycles, an important place belongs to the concept of "technological modes" by S.Yu. Glazyev, which significantly develops the theory of innovation. In accordance with his interpretation, a technological mode is a group of technological aggregates connected to each other by the same type of technological chains and forming reproducible integrity.

S.Yu. Glazyev and other domestic economists identify five technological modes in the evolution of social production (the first and second are pre-industrial modes, the third and fourth are industrial in nature, the fifth is associated with the introduction of electronic technologies). Currently, the sixth technological paradigm is being formed, in which bio- and nanotechnologies, bioinformatics, CALS are of decisive importance. technologies and development of global information systems.

In economically developed countries, resources are intensively redistributed from the industries of the fourth to the industries of the fifth and sixth technological modes, i.e. are directed to the

development of information technologies, biotechnologies, new energy sources.

Based on the research of scientists, it can be noted that each Big Kondratiev cycle is accompanied by a wave of innovations caused by a large-scale technological revolution. Author of the book "Technological revolutions and financial capital. Dynamics of Bubbles and Prosperity", Carlota Perez defines the technological revolution as a powerful cluster of new dynamically developing technologies that can generate a long-term development trend and a significant recovery in the economy.

Innovations provide a significant pace of economic development if they penetrate into many of its areas and are universal. Relevant innovative technologies are often referred to as "applicable technologies". Thus, considering the whole path of development of the theory of innovation, one can see that the ideas of cyclical dynamics of Nikolai Kondratiev, Pitirim Sorokin, Joseph Schumpeter, Gerhard Mensch were the basis for the further development of this scientific direction.

There is a fairly large list of definitions of innovation applicable to various areas of human activity, and discussions continue as to which definition is more perfect. The works that to the greatest extent reflected and regulated innovative development, and also contributed to the creation of an international standard for the concept of innovation, are known as the Frascati Manual and the Oslo Manual.

The Frascati Guide, adopted in the Italian city of Frascati in 1963, is constantly updated and improved by a group of national science and innovation experts from the Organization for Economic Co-operation and Development (OECD).



The Oslo Manual was adopted in Oslo in 1992 and is a methodology for collecting data on technological innovation. In accordance with the developed understanding, innovation is the end result of innovative activity, acting in the form of a new or improved product introduced on the market, a new or improved technological process used in practice or in a new approach to social services.

Based on the fact that in modern conditions, innovations (as well as inventions) can be not only technological (which improve and improve the methods of manufacturing products and services) or technical (new or improved means of production), but also marketing (realizing the needs for a product or service in new markets), and organizational (focused on the functional and optimal organization of production), the concept of "invention" loses its universality and acquires specificity for understanding.

It can be concluded that every invention is an innovation, but not every innovation is

an invention. According to the above, innovation can be the basis of all types of innovations, the invention - mainly technical and technological innovations.

As noted in the paper, in the economic literature, macro-inventions are distinguished, which are the basis of long-term development, and micro-inventions that complement and contribute to the development of macro-inventions. The analysis made it possible to conclude that "macro-inventions are very similar to the concept of "epoch-making innovations", and micro-inventions - with the concept of "improving innovations". The value of scientific inventions for the innovative development of railway transport. Based on the foregoing, significant progress in the development of the theory of innovation should be noted. At the same time, innovations are not just organically inherent in the modern economy, their generation and diffusion become both its specific result and way of existence.

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